FORMULA STUDENT GERMANY

INTERNATIONAL DESIGN COMPETITION

July 31st - August 5th 2012
Hockenheim

formula student germany

PROGRAMME 2012

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A SPECIAL THANKS GOES TO THE NUMEROUS VOLUNTEERS WHO CONTRIBUTED SIGNIFICANTLY IN THE REALISATION OF THE SEVENTH FORMULA STUDENT GERMANY

GREETINGS
GRUSSWORT

Dr. Ludwig Vollrath, Tim Hannig

Dear friends of Formula Student Germany,

In 2012 Formula Student Germany remains true to its tradition of advancement. Not only are there more internationally established teams that participate, but also is the level of technological development displayed ever increasing.

At the same time Formula Student Germany is changing more and more from an educational project into a test bed for technical innovation, where the use of innovative materials and concepts across a range of different fields has become commonplace. This is not limited to the technical solutions alone, it is also reflected in experienced organisations, networks and cooperations amongst teams, or amongst the different locations of a single team.

As teams and cars develop, FSG develops too. In spring 2012 for the first time asphalt mills and track pavers worked at the Hockenheimring on behalf of Formula Student Germany. The goal: enlargement of the track and a breakthrough onto the circuit. Thanks to this redesign we have gained valuable space for teams, guests and audience as well as exciting fights between the teams on track. We expect a pure goosebumps Motodrom-sensation. Additionally, this year's setup with a longer track is a test to see whether it is possible to let more teams participate in 2013.

This is the most visual innovation, but not the only one! Immerse yourself and experience – once more – FSG and let us experience the continuous development together.

Have fun and good luck to all.

Tim Hannig (FSG e.V.)
and the Formula Student Germany Team

Liebe Freundinnen und Freunde der Formula Student Germany,

auch die FSG 2012 bleibt der Tradition der Weiterentwicklung treu. Dies bezieht sich auf immer mehr Teams, die sich weltweit etablieren, genauso wie auf das technologische Level, mit dem sie sich vor Ort präsentieren.

Mit mehr und mehr Verwendung innovativer Materialien und Konzepten in den unterschiedlichsten Bereichen, entwickelt sich die FSG von einem reinen Ausbildungsmotor, zunehmend gleichzeitig zu einem Innovationslabor. Das sehen Sie nicht nur an den eigentlichen Technologien und Lösungen, sondern auch bei erlebten Organisationen, Vernetzungen und Formen der Zusammenarbeit unter den Teams bzw. von verschiedenen Standorten eines einzelnen Teams.

So wie sich die Teams und die Autos, entwickeln, so entwickelt sich auch die FSG weiter. Im Frühjahr 2012 arbeiteten im Auftrag der Formula Student Germany auf dem Hockenheimring erstmals Asphaltfräsen und Teermaschinen. Das Ziel: die Erweiterung der Streckenlegung und ein Durchbruch auf den eigentlichen Ring. Durch diese Neugestaltung schaffen wir mehr Platz für die Teilnehmer, unsere Gäste und Zuschauer sowie spannende Kämpfe der Teams auf dem Kurs. Wir erwarten Gänsehaut-Motodrom-Feeling pur. Und nebenbei ist dies die Probe dafür, ob durch die größere Strecke die Möglichkeit besteht in 2013 noch mehr Teams teilnehmen zu lassen.

Das ist die sichtbarste Neuerung, aber bei weiten nicht die Einzige! Tauchen Sie ein und erleben Sie - einmal mehr - die FSG und lassen Sie uns gemeinsam die Weiterentwicklung erfahren.

Viel Spaß und viel Erfolg,

Tim Hannig (FSG e.V.)
und das Formula Student Germany Team

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CONTENTS
INHALT

FORMULA STUDENT GERMANY - AN INTRODUCTION
FORMULA STUDENT GERMANY - EINE EINFÜHRUNG

Formula Student Germany consists of two competitions that run in parallel: Formula Student Combustion – with combustion engines – and Formula Student Electric – with electric motors. What both competitions have in common is that as a team effort, students build a single seated formula-style race-car with which they compete against teams from all over the world. The competition, however, is not simply won by the team with the fastest car, but rather by the team with the best overall package of design, race performance, cost management and sales planning. To succeed in this, interdisciplinary teamwork and an efficient team structure in particular are crucial.

Formula Student Germany complements the students' theoretical education with a challenging and intensive practical experience in designing and manufacturing as well as considering the economic aspects of automotive engineering. For the competition, the teams have to assume that they develop a race-car prototype which will be evaluated for series production. The target customer group is the non-professional weekend-racer, for whom the race-car must offer very good driving characteristics regarding to acceleration, braking and handling. Furthermore, it should be offered at a reasonable price and be reliable as well as dependable. Additionally, the car's market value increases due to other factors such as aesthetics, ergonomics and the use of available standard purchase components.

The competition

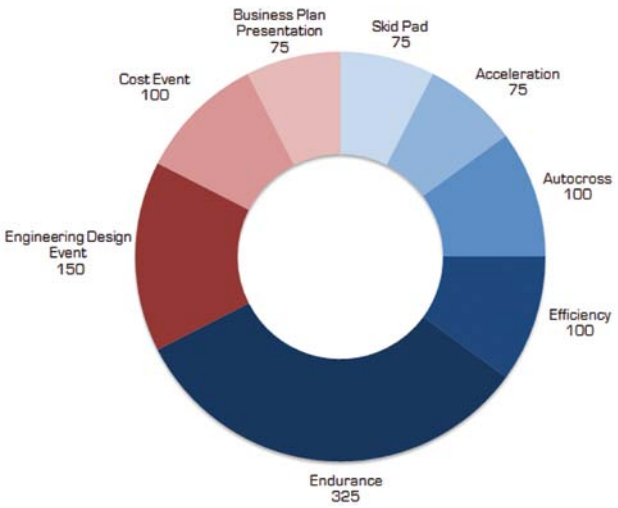
The challenge the teams face is to construct and build a prototype that best matches these given criteria. To determine the winner, a jury of experts from the motorsport, automotive and supplier industries judge every design, cost planning and business plan in comparison to the other competing teams. Furthermore, the performance on the racetrack is decisive; here the students' self-built single-seaters prove how well they hold up under real-life conditions in a number of so called dynamic disciplines.

Die Formula Student Germany besteht aus zwei parallel stattfindenden Wettbewerben: die Formula Student Combustion – mit Verbrennungsmotoren – und die Formula Student Electric – mit Elektromotoren. Bei beiden Wettbewerben bauen Studenten in Teamarbeit einen einsitzigen Formelrennwagen, mit dem sie gegen Teams aus der ganzen Welt antreten. Doch nicht unbedingt das schnellste Auto gewinnt, sondern das Team mit dem besten Gesamtpaket aus Konstruktion, Rennperformance, Finanzplanung und Verkaufsargumentation. Hierfür sind insbesondere interdisziplinäre Teamarbeit und eine effiziente Teamstruktur von großer Bedeutung.

Die Formula Student Germany ergänzt das Studium um herausfordernde und intensive praktische Erfahrungen mit Konstruktion und Fertigung sowie den wirtschaftlichen Aspekten des Automobilbaus. Die Studenten sollen in Vorbereitung auf den Wettbewerb annehmen, dass sie den Prototypen eines Rennwagens bauen, der ebenfalls daraufhin bewertet wird, ob er in Kleinserie produziert werden kann. Zielgruppe ist der nicht-professionelle Wochenendrennfahrer, für den der Rennwagen unter anderem sehr gute Fahreigenschaften hinsichtlich Beschleunigung, Bremskraft und Handling aufweisen muss. Außerdem sollte das Fahrzeug wenig kosten sowie zuverlässig und einfach zu unterhalten sein. Weiterhin wird sein Marktwert durch Faktoren wie Ästhetik, Ergonomie und den Einsatz üblicher Serienteile gesteigert.

Der Wettbewerb

Die Herausforderung für die Teams besteht darin, einen Prototypen zu konstruieren und zu bauen, der diesen Anforderungen am besten entspricht. Um den Sieger zu ermitteln, bewertet eine Jury aus Experten der Motorsport-, Automobil- und Zulieferindustrie alle Konstruktionen, Kostenpläne und Verkaufspräsentationen im Vergleich zu den konkurrierenden Teams. Zusätzlich beweisen die Studenten auf der Rennstrecke in unterschiedlichen sogenannten dynamischen Disziplinen, wie sich ihre selbstgebauten Einsitzer in der Praxis bewähren.



With different disciplines the competition reflects all aspects which have to be kept in mind when constructing and building a car.
Der Wettbewerb spiegelt mit seinen verschiedenen Disziplinen alle Aspekte wider, die bei Konstruktion und Bau eines Fahrzeugs bedacht werden müssen.

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THE DISCIPLINES AT A GLANCE
DIE DISZIPLINEN IM ÜBERBLICK

Altogether, in FSG there are eight disciplines. Of these, three are static in which the teams and their cars are judged based on reports, discussions and presentations. The other five disciplines are called dynamic disciplines involving a moving car and thus evaluating different performance aspects of the car.

The static disciplines

During the three static disciplines the students present their engineering design, cost planning and business plan. These are discussed with a jury of experts from motorsports, automotive and supplier industries.

Engineering Design: In the Design Report the students set their constructive solutions and the resulting advantages out in writing. Eight pages of text and technical drawings have to convince the judges of the construction of the car and its qualities for the sales market of the non-professional weekend autocross driver. At the competition the judges examine the constructive solutions and discuss them with the students. The scoring regards the written report, the answers in the discussion and the inspection of the car.

Cost Analysis: Costs are an important factor in building a race car. Hence, the students have to deal with cost estimations, different manufacturing techniques and processes in the Cost Event. The discipline consists of a written report (the cost report) and a discussion with the judges around the manufactured prototype. The cost report contains a list of all components of the car: from wheels to process labour costs for special tooling. The judging comprises the organisation of the cost report, the comprehension of manufacturing processes and the price as well as the performance of a real case task for reducing costs.

Business Plan Presentation: The teams present their business plans of the built prototype to an assumed manufacturer represented by the judges. The goal is to convince the judges that their car meets the demands of the target group of the non-professional weekend autocross driver best and that it can be produced and marketed profitably. Usually, one or two members of the team give a presentation for ten minutes and are questioned by the judges for an additional five minutes. Content, structure, organisation and performance of the talk are judged as well as the answers the students give.

Insgesamt gibt es bei der FSG acht Disziplinen. In drei von diesen werden die Teams und ihre Autos in Präsentationen und Diskussionen bewertet. Dies sind die statischen Disziplinen. Die anderen fünf sind dynamisch und bewerten verschiedene Aspekte des fahrenden Autos.

Statische Disziplinen

In den drei statischen Disziplinen präsentieren die Studenten ihre Konstruktionen, ihre Kostenplanung und ihr Geschäftsmodell. Diese werden mit einer Jury aus Experten der Motorsport-, Automobil- und Zuliefererindustrie diskutiert.

Engineering Design: Im Design Report dokumentieren die studentischen Konstrukteure ihre konstruktiven Lösungen und deren Vorteile. Acht Seiten Text und technische Zeichnungen sollen die Juroren von den Konstruktionen und ihren Vorzügen für die Zielgruppe des nicht-professionellen Wochenendrennfahrers überzeugen. Beim Wettbewerb werden die Konstruktionen von den Juroren am Fahrzeug begutachtet und mit den Studenten diskutiert. Die Bewertung erfolgt anhand des Design Reports, der Antworten in der Diskussion und der Begutachtung des Fahrzeugs.

Cost Analysis: Die Kosten sind für den Bau eines Rennwagens ein entscheidender Faktor. Beim Cost Event beschäftigen sich die Studenten mit Kalkulation, Fertigungstechniken und -prozessen. Die Disziplin besteht aus einem schriftlichen Bericht (dem Cost Report) und einer Diskussion mit den Juroren am gebauten Prototypen. Der Cost Report enthält eine Auflistung aller Teile: vom Reifen bis zu den Herstellungskosten für Spezialwerkzeuge. Bewertet wird die Aufbereitung des Cost Reports, das Verstehen von Fertigungsverfahren zur Kostenoptimierung, der Preis sowie die Lösung einer Real Case Aufgabe zur Kostenreduktion.

Business Plan Presentation: Bei der Business Plan Presentation stellen die Teams einer fiktiven Herstellerfirma, vertreten durch die Juroren, ihren Geschäftsplan für den gebauten Prototypen vor. Mit diesem wollen sie die Juroren davon überzeugen, dass ihr Fahrzeug am besten die Anforderungen der Zielgruppe, des nicht-professionellen Wochenendrennfahrers, erfüllt und gewinnbringend produziert sowie vermarktet werden kann. Die Präsentation der Teams dauert zehn Minuten, gefolgt von einer fünfminütigen Frage- und Diskussionsrunde mit den Juroren. Bewertet werden Inhalt, Aufbau, Aufbereitung und Darbietung des Vortrags sowie die Antworten des Teams auf Fragen.

At the competition Design and Cost Judges take a closer look at the prototype and discuss the solutions with the students. Both events are based on written reports. However, the Business Plan is presented and closes with questions from the judges.
Beim Wettbewerb betrachten die Design und die Cost Juroren die Prototypen genau und diskutieren die Lösungen mit den Studenten. Beide Events basieren auf schriftlichen Berichten. Dagegen wird bei der Businessplan Prensentation der Geschäftsplan präsentiert und endet mit Fragen der Juroren.



Flags
Flaggen

Your session has started, enter the course!
Deine Fahrt beginnt. Fahr auf die Strecke!

Your session has been completed. Exit the course!
Deine Fahrt ist beendet. Verlass die Strecke!

Dynamic disciplines

During the dynamic disciplines the cars have to prove the performance capabilities of the students' design on the race track. The disciplines demand different qualities of the car. In each discipline two drivers have two runs (except in the Endurance Event). The best run of the four will be counted as the optimum the car can achieve.

Acceleration: The race cars prove their accelerating abilities over a distance of 75 meters from a standing start. The fastest cars cover the distance in less than 4 seconds and achieve a maximum velocity of more than 100km/h.

Skid Pad: The student-built cars drive on a course in the shape of an eight. Two consecutive laps on each circle are driven, with the second lap being timed. The cars demonstrate the steady-state lateral acceleration they can generate. In 2012 the Skid Pad will be again carried out on a continuously watered surface ("Wet Pad") to make sure the conditions are constant for all teams.

Autocross: The cars drive on a course of perhaps one kilometre through straights and turns, chicanes and slaloms. The lap time serves as an indicator for driving dynamics and handling qualities. The results of the Autocross discipline also determine the starting order in the Endurance.

Endurance: Providing the highest number of points, the Endurance is the main discipline. Over the course of 22 kilometres the cars have to prove their durability under long-term conditions. Acceleration, speed, handling, dynamics, fuel efficiency and most importantly the reliability of the cars are put to their limits. The Endurance also demands handling skills of the driver as the course can only be walked in preparation. Up to four cars are allowed on the track at the same time. Each team has only one attempt, the drivers change after 11 kilometres. Teams more than one third slower than the fastest team will just receive the minimum number of points.

Fuel / Energy Efficiency: During the Endurance the fuel consumption (FSC vehicles) / energy consumption (FSE vehicles) is measured. The points' calculation does not only evaluate fuel / energy consumption, but puts it in relation to speed.

Dynamische Disziplinen

In den dynamischen Disziplinen müssen die studentischen Konstruktionen ihre Praxistauglichkeit auf der Rennstrecke unter Beweis stellen. Mit jeder Disziplin werden unterschiedliche Eigenschaften des Autos getestet. Grundsätzlich starten zwei Fahrer mit je zwei Versuchen (außer im Endurance-Rennen). Gewertet wird der jeweils beste Versuch als das Optimum, welches das Fahrzeug erzielen kann.

Acceleration: Auf einer 75 Meter langen Geraden müssen die Rennwagen beweisen, wie schnell sie aus dem Stand beschleunigen können. Die Besten bewältigen die Strecke in einer Zeit von unter vier Sekunden und erreichen dabei eine maximale Geschwindigkeit von mehr als 100km/h.

Skid Pad: Die selbstgebauten Rennwagen durchfahren einen Parcours in Form einer Acht. Jeder Kreisring wird zweimal nacheinander umrundet. Gemessen wird jeweils die zweite Runde. Die Rundenzeit zeigt, welche statische Querbeschleunigung das Fahrzeug erreichen kann. In diesem Jahr wird bei der FSG das Skid Pad zum zweiten Mal auf einer kontinuierlich bewässerten Oberfläche gefahren („Wet Pad"), um sicherzustellen, dass die Bedingungen für alle Teams gleich sind.

Autocross: Über eine etwa 1 Kilometer lange Runde fahren die Rennwagen durch Geraden, Kurven und Schikanen. Eine schnelle Rundenzeit ist sowohl ein Indikator für eine gute Fahrdynamik als auch für gute Handling- und Beschleunigungseigenschaften. Die Platzierung im Autocross entscheidet zudem über die Startreihenfolge in der Endurance-Disziplin.

Endurance: Das Endurance-Rennen stellt mit der höchsten erreichbaren Punktzahl die Hauptdisziplin dar. Über eine Renndistanz von 22 Kilometern muss sich die Gesamtkonstruktion unter Dauerbelastung beweisen. Hier sind alle Eigenschaften von der Beschleunigung bis hin zu Handling und Fahrdynamik gefragt. Das Endurance-Rennen erfordert ebenfalls besonderes Renngeschick des Fahrers, da die Strecke als Vorbereitung nur abgeschritten werden darf. Während des Rennens sind bis zu vier Fahrzeuge gleichzeitig auf der Strecke. Jedes Team hat einen einzigen Versuch, die Fahrer wechseln nach 11 Kilometern. Die Teams erhalten nur dann Punkte, wenn sie höchstens ein Drittel langsamer waren als das schnellste Team.

Fuel / Energy Efficiency: Während des Endurance-Rennens wird der Kraftstoffverbrauch (FSC Fahrzeuge) / Energieverbrauch (FSE Fahrzeuge) gemessen. Bei der Berechnung der erreichten Punkte, zählt nicht einfach der Verbrauch, sondern vielmehr der Verbrauch in Relation zur Geschwindigkeit.

Pull into the passing zone to be passed by a faster competitor!
Fahr in der Überholzone, damit ein schnelleres Fahrzeug überholen kann!

Pull into the penalty box for a mechanical inspection of your car!
Fahr in die Kontrollzone für eine Untersuchung des Fahrzeugs!

Pull into the penalty box for discussion concerning an incident that may cause a time penalty!
Fahr in die Kontrollzone zur Diskussion eines Vorfalls! Ggf. Zeitstrafe!

Come to an immediate safe controlled stop on the course! Pull to the side of the course.
Komm sofort kontrolliert zum Stehen. Halte die Strecke frei.

Something is on the track that should not be there. Be prepared for evasive maneuvers to avoid debris or liquids!
Es ist etwas Unerwartetes auf der Strecke. Sei bereit Flüssigkeiten oder Bruchstücken auszuweichen!

Something has happened beyond the flag station. No passing unless directed by the track marshals. Stationary: Danger! Slow down, be prepared to take evasive action. Waved: Great Danger! Slow down, evasive action is most likely required, be prepared to stop.
Etwas ist jenseits der Flagge passiert.Fahr nicht vorbei ohne Anweisung der Streckenposten. Feststehend: Gefahr! Fahr langsam, sei bereit zum Ausweichen. Geschwenkt: Große Gefahr! Fahr langsam, Ausweichen wird erforderlich sein. Sei bereit anzuhalten.

There is a slow moving vehicle on the course. Be prepared to approach it at a cautious rate.
Es ist ein langsames Fahrzeug auf der Strecke. Nähere dich vorsichtig an.

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Best Lightweight Concept Award powered by AUDI AG	II
Best Prepared Car for Scrutineering powered by DEKRA Automobile GmbH	I
Best Use of Fiber Reinforced Plastics powered by BASF SE	I
FSG Sportsmanship Award presented by FSG Executive Committee	II
FSG Media Award powered by FSG Communication Team	W

Formula Student Combustion

Formula Student Combustion Champion	II
Formula Student Combustion – 2nd	II
Formula Student Combustion – 3rd	II
FSC Engineering Design Award – 1st	II
FSC Engineering Design Award – 2nd	II
FSC Engineering Design Award – 3rd	II
FSC Cost Analysis Award – 1st	II
FSC Cost Analysis Award – 2nd	II
FSC Cost Analysis Award – 3rd	II
FSC Business Plan Presentation Award – 1st	I
FSC Business Plan Presentation Award – 2nd	I
FSC Business Plan Presentation Award – 3rd	I
FSC Endurance Winner	II
FSC Acceleration Winner	II
FSC Skid Pad Winner	I
FSC Autocross Winner	II
Most Fuel Efficient Car powered by Kautex	II
Most Effective Use of Electronics Award powered by Bosch Engineering GmbH	I
Most Innovative Powertrain Award powered by Tognum AG	II

The letter behind the award states at which time the award will be presented.
I - Award Ceremony - Part I (Friday)
II - Award Ceremony - Part II (Sunday)
W - FSG Workshop

Formula Student Electric

Formula Student Electric Champion	II
Formula Student Electric – 2nd	II
Formula Student Electric – 3rd	II
FSE Engineering Design Award – 1st	II
FSE Engineering Design Award – 2nd	II
FSE Engineering Design Award – 3rd	II
FSE Cost Analysis Award – 1st	I
FSE Cost Analysis Award – 2nd	I
FSE Cost Analysis Award – 3rd	I
FSE Business Plan Presentation Award – 1st	I
FSE Business Plan Presentation Award – 2nd	I
FSE Business Plan Presentation Award – 3rd	I
FSE Endurance Winner	II
FSE Acceleration Winner	II
FSE Skid Pad Winner	I
FSE Autocross Winner	II
Most Energy Efficient Car powered by HARTING	II
Best E-Drive Packaging Award powered by Daimler AG	I
Best Power System Award powered by Bosch Engineering GmbH	I

Der Buchstabe hinter dem Preis gibt an, zu welchem Zeitpunkt der Preis verliehen wird.
I - Award Ceremony - Teil I (Freitag)
II - Award Ceremony - Teil II (Sonntag)
W - FSG Workshop

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SCHEDULE 2012
ZEITPLAN 2012

TUESDAY, 31ST OF JULY 2012

14:00	Scrutineering, Registration & Entrance Order Available	1 Ticket Centre
16:00 – 18:00	FSC & FSE Team Registration	1 Ticket Centre
18:00 – Sun 20:00	FSC & FSE Pits Available	4 19 Pits
18:00 – 20:00	Event Control, Driver & Safety Responsible Registration	2 Event Control
18:00 – 22:00	Entrance for Team Vehicles	
21:00 – 22:00	Team Welcome	5 Marquee above Pits

WEDNESDAY, 1ST OF AUGUST 2012

07:30 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
09:00 – 19:00	Scrutineering / Tech Inspection / Tilt, Brake, Noise, Rain / Fuel	9 10 11 12
13:00 – 14:00	Lunch Break & Staging for Panoramic Photograph	17 Large Dynamic Area
14:00 – 19:00	Engine Test	17 Large Dynamic Area

THURSDAY, 2ND OF AUGUST 2012

07:30 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
08:00 – 08:30	Team Briefing	5 Marquee above Pits
08:30 – 19:00	Scrutineering / Tech Inspection / Tilt, Brake, Noise, Rain / Fuel	9 10 11 12
09:00 – 19:00	Engine Test / Testing	17 Large Dynamic Area
11:00 – 12:30	Judge Briefing: Business Plan, Cost & Design	7 BW Tower
12:00 – 13:00	Scrutineering Lunch Break	
13:30 – 18:10	FSE Engineering Design & FSE Cost Analysis	5 Marquee above Pits
	FSE Business Plan Presentation	7 BW Tower, Mobil-Tower
18:30 – 20:30	Judge Briefing: Cost & Design	7 BW Tower
19:00 – 20:30	FSE Business Plan Presentation Finals	5 Marquee above Pits
20:30 – 21:30	Get-together for all Judges & Redshirts	7 BW Tower

FRIDAY, 3RD OF AUGUST 2012

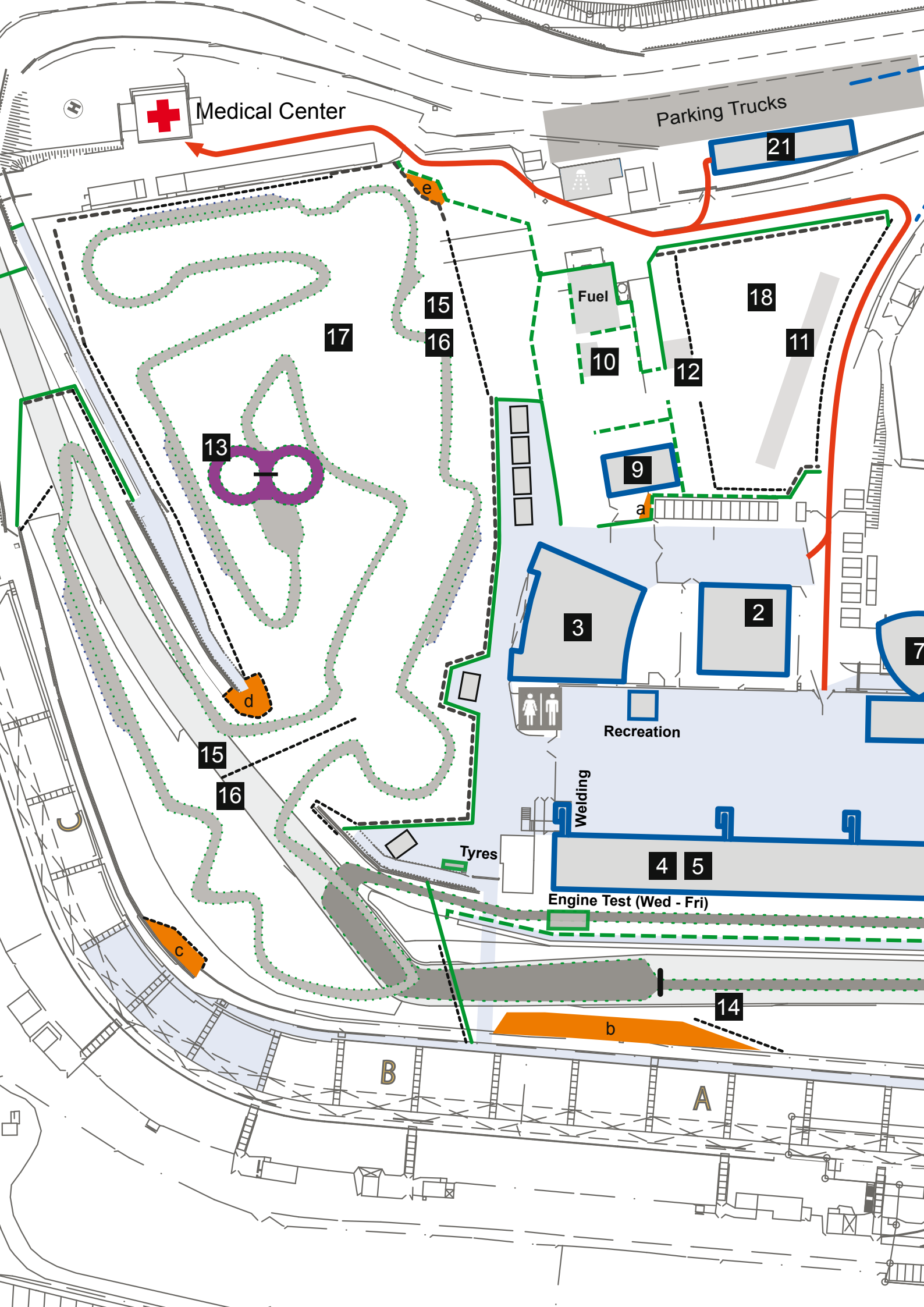
07:00 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
07:30 – 08:00	Team Briefing	5 Marquee above Pits
08:00 – 08:45	Judge Briefing: Business Plan Presentation	7 BW Tower
08:30 – 18:40	FSC Engineering Design, FSC Cost Analysis	5 Marquee above Pits
08:30 – 19:00	Scrutineering / Tech Inspection / Tilt, Brake, Noise, Rain / Fuel	9 10 11 12
09:00 – 18:40	FSC Business Plan Presentation	7 BW Tower, Mobil-Tower
09:00 – 18:30	Engine Test/Testing	17 Large Dynamic Area
11:00 – 18:30	Skid Pad	13 Dynamic Area
12:00 – 13:00	Scrutineering Lunch Break	
19:00 – 20:30	FSE Engineering Design Finals	3 FSG Forum, not public
20:00 – 21:00	FSC Business Plan Presentation Finals	5 Marquee above Pits
21:00 – 22:00	Award Ceremony - Part I	5 Marquee above Pits

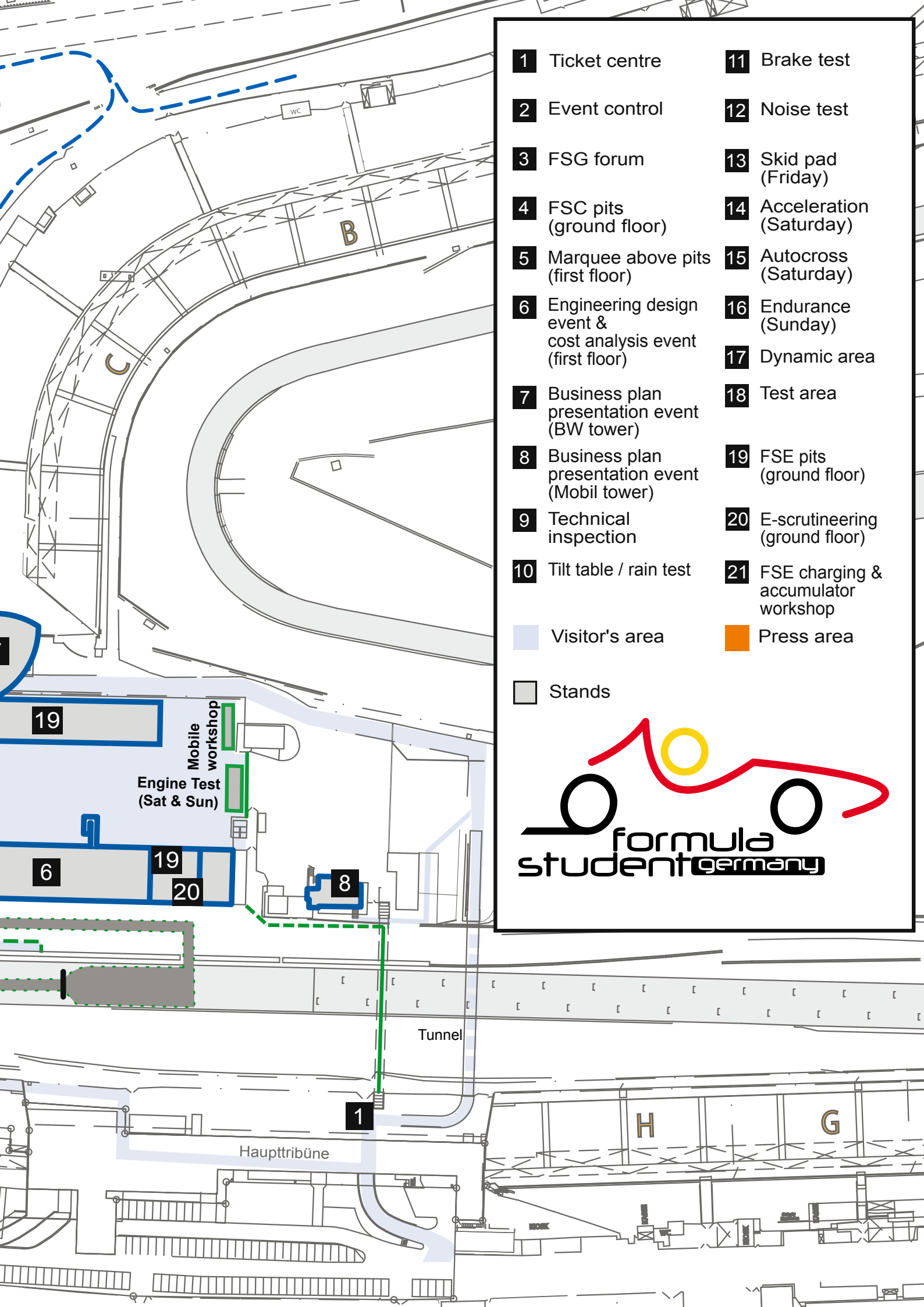
SATURDAY, 4TH OF AUGUST 2012

07:00 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
07:30 – 08:00	Team Briefing	5 Marquee above Pits
08:30 – 18:30	Fuel / Engine Test / Testing	18 Small Dynamic Area
08:30 – 18:30	on request: Scrutineering / Tech Inspection / Tilt, Brake, Noise, Rain	
08:30 – 13:00	FSC & FSE Acceleration	14 Start / Finish Line
13:00 – 14:00	Press & VIP Reception	8 BW Tower
13:05 – 13:25	Coursewalk Autocross	15 Dynamic Area
13:30 – 18:30	FSC & FSE Autocross	15 Dynamic Area
19:00 – 21:30	FSC Engineering Design Finals	3 FSG Forum, not public

SUNDAY, 5TH OF AUGUST 2012

07:00 – 19:00	Ticket Centre & Event Control	1 2 Ticket Centre / Event Control
07:30 – 08:00	Team Briefing	5 Marquee above Pits
08:00 – 08:20	Coursewalk Endurance	16 Dynamic Area
08:30 – 18:30	Fuel / Engine Test / Testing	18 Small Dynamic Area
08:30 – 12:00	FSC Endurance Morning Session & Parc Fermé	16 Dynamic Area
12:00 – 14:30	FSE Endurance & Parc Fermé	16 Dynamic Area
14:30 – 18:00	FSC Endurance Afternoon Session & Parc Fermé	16 Dynamic Area
19:30 – 20:30	Design Review	3 FSG Forum
21:00 – 22:00	Award Ceremony - Part II	5 Marquee above Pits
22:00 – 01:00	MAHLE-Party	5 Marquee above Pits


Medical Center
Parking Trucks
21
e
Fuel
18
15
17
16
10
12
11
13
9
a
3
2
7
d
Recreation
15
16
Welding
Tyres
4
5
Engine Test (Wed - Fri)
c
14
b
B
A


1 Ticket centre
2 Event control
3 FSG forum
4 FSC pits (ground floor)
5 Marquee above pits (first floor)
6 Engineering design event & cost analysis event (first floor)
7 Business plan presentation event (BW tower)
8 Business plan presentation event (Mobil tower)
9 Technical inspection
10 Tilt table / rain test
11 Brake test
12 Noise test
13 Skid pad (Friday)
14 Acceleration (Saturday)
15 Autocross (Saturday)
16 Endurance (Sunday)
17 Dynamic area
18 Test area
19 FSE pits (ground floor)
20 E-scrutineering (ground floor)
21 FSE charging & accumulator workshop
Visitor's area
Press area
Stands
formula student germany
B
C
H
G
WC
19
Mobile workshop
Engine Test (Sat & Sun)
6
19
20
8
Tunnel
1
Haupttribüne

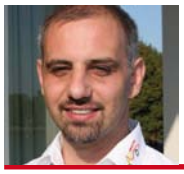
FORMULA STUDENT GERMANY TEAM

Tim Hannig
Board (Chairman)
Linde (China)

Rainer Kötke
Board (Finance & Dynamics)
Volkswagen AG

Dr. Ludwig Vollrath
Board (Academy)

Dr. Julien van Campen
EC (Public Relations)
Daimler AG

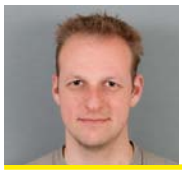


Lukas Folie
EC (FS Electric)
Audi AG

Tobias Michaels
EC (FS Electric)
Technische Universität Braunschweig

Ulf Steinfurth
EC (Technical Inspection)
University of Applied Sciences Stralsund

Daniel Ahrens
Event Control
Aegis Media GmbH & Co. KG



Cas Droogendijk
Design Event
DAF Trucks N.V.

Leona Ehrenreich
Registration, Visa
Secondary Modern School

Peter Jakowski
Scoring
Bosch Engineering GmbH

Emil Kleijn
Energy Meter
Eindhoven University of Technology

Jost Philip Pöttner
Design Event
Volkswagen AG

Wolf-Bastian Pöttner
Timekeeping
Technische Universität Braunschweig

Tim Schmidt
Event Control (Back Office)
Stegmann Aircraft Maintenance GmbH

Sebastian Seewaldt
Pit Marshal
University of Stuttgart

Karl Weinreich
Technical Inspection
Shell

Stefan Windt
Timekeeping
Volkswagen AG

The team behind Formula Student Germany is divided into three groups.
The board is responsible for Formula Student Germany, its operations, finances, sponsoring and overall strategy.

Das Team der Formula Student Germany ist in drei Gruppen unterteilt.
Das Board trägt die Verantwortung für die Formula Student Germany und ihre Kooperationen sowie für Sponsoring, Finanzen und Strategie.

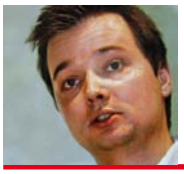
Daniel Mazur
Board (Event Manager)
mazur | events + media

Frank Röske
Board (Rules)
Porsche Leipzig GmbH

Matthäus Decker
EC (Personnel & Event Support)
Siemens Transportation Systems GmbH & Co.KG

Barbara Decker-Schlögl
EC (Statics)
MAGNA STEYR AG & Co. KG

Henning Nissen
EC (Scoring)
SAT Anlagentechnik GmbH



Konrad Paule
EC (FS-Academy & Pit Marshal)
Volkswagen Motorsport GmbH

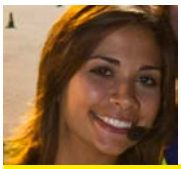
Ann-Christin Bartölke
Guided Tours
Technische Universität Braunschweig

Matthias Brutschin
Event Support
MBtech Group GmbH Co. KG

Jürgen Falb
E-scrutineering
G-velop GmbH i.Gr.

Robert Fromholz
Cost Event
H&D International Group

Johannes Kratzel
Event Support
FAU Erlangen – Nürnberg



Alia Pierce
FSG TV, Event Speaker

Johanna Scheider
Editorial Office
BOROS GmbH

Jochen Schmidt
Dynamics
German Aerospace Center (DLR)

Dr. Karsten Stammen
Dynamics
KLK Motorsport GmbH

Lena Töppich
Press Office
ABB AG

The executive committee (EC) is responsible for the design and development of the competition. Each member of the EC is responsible for one of the fields of the competition and its organisation.

The operative team (OT) supports the board and EC in the preparation and realisation of the event throughout the year.

Das Executive Committee (EC) veranwortet Ausgestaltung des Wettbewerbs. Jedes Mitglied ist für Vorbereitung und Durchführung eines Bereiches verantwortlich.

Das Operative Team (OT) unterstützt das Board und das EC in der Vorbereitung übers Jahr und in der Durchführung des Wettbewerbs.

Businessplan Presentation


Business Plan Presentation Judges 2011

Albert, Tim
Badmann, Andre
Berg, Alexander
Binnwerk, Wolfgang
Bjekovic, Robert
Boehm, Dirk-Rene
Brand, Johann-Diedrich
Bruenn, Katja
Eckhardt, Markus
Esser, Klaus
Fernandez, Alberto
Fichtl, Katrin
Hannig, Peer
Hayn, Bernhard
Heidemeyer, Peter
Heinrich, Olaf
Herrmann, Jesko
Hieber, Frank
Hofmann, Markus
Käfer, Timo Michael
Karsch, Ulrich
Kinski, Andreas
Klug, Jens
Kraus, Antje
Lange, Stephan
Lattemann, Frank
Mueller, Andreas
Niemeyer, Reinhard
Nottbrock, Claus
Recha, Martina
Richter, Ralf
Schlenker, Erhard
Schmidt, Axel
Schneider, Isabel
Schreck, Torsten
Scigalla, Philipp
Sommer, Jochen
Strohmeier, Gregory
Tabatabai, Stefan
Tesch, Anke Martina
Tillack, Karola
Vollrath, Hans

Cost Analysis


Cost Analysis Judges 2011

Aichberger, Marcus
Ankert, Detlef
Azahaf, Hicham
Bertram, Michael
Grundner, Harald
Guckert, Jürgen
Hagl , Markus
Hahn, Thomas
Hartmann, Klaus
Herth, Martin
Klasen, Jennifer
Metz, Simon
Morel, Romain
Pälmer, Reinhard
Patrick, Grauel
Piltzing, Roger
Rosenau, Bernhard
Sattler, Steve
Schnabel, Matthias
Thomas, Weber
Timm, Martin
Wörz, Wolf
Moell, Wilfried
Christoph, Benz
Winkler, Tino
Deifuss, Joern
Tschamon, Telse

Engineering Design


Engineering Design Judges 2011

Ahola, Mikko
Albrecht, Sven
Bartholomeyzik, Willi
Bayer, Bernward
Beck, Markus
Becker, Andreas
Beringer, Hans-Peter
Betsch, Jochen
Bremkamp, Joerg
Carless, Owen
Clarke, Pat
Daniel, Frank
Deckers, Jean-Noel
Diebold, Rainer
Dittrich, Rudolf
Dölle, Norbert
Drescher, Benjamin
Enning, Norbert
Erb, Thiemo
Euler, Magnus
Ewert, Sebastian
Ferrari, Alessandro
Fox, Steven
Fries, Benedikt
Fritz, Wolfgang
Frommer, Armin
Galganski, Collin
Gerth, Hendrik
Gesele, Frank
Goddard, Geoffrey
Gore, Doug
Gould, David
Graf, Michael
Gross, Alexander
Gupta, Manabendra Narayan
Hanigk, Martin
Hollmann, Falco
Hölzgen, André
Höppel, Ulrich
Huhn, Werner
Jennewein, Tobias
Kamath, Vinayak
Kerber, Michael
Klaus, Hartmut
Knecht, Stefan
Knipp, Christian
Koenig, Ilja
Kolb, Hartmut
Krappel, Michael
Kreuzinger, Tobias
Kuepper, Michael
Laue, Tino
Lenz, Michael
Loehr, Wikhart
Löser, Stefan
Lück, Peter
Maas, Gerhard
Maldener, Nico
Martin, Felipe
Milke, Burkhard
Missler, Christian
Moritz, Rainer
Müller, Karsten
Neerpasch, Uwe
Neidlein, Daniel
Nowicki, Daniel
Pälmer, Oliver
Peti, Philipp
Petz, Andreas
Rau, Walter
Reinhold, Nadine
Rieke, Johannes
Riley, William
Rouelle, Claude
Ruholl, Herbert
Sachse, Mick
Sander, Udo
Sayovitz, Steve
Schäffler, Klaus
Schiele, Peter
Schiffer, Wilhelm
Schmidt, Ralf
Schmitz, Andreas
Schneider, Thomas
Schoen, Wolfgang
Schöniger, Sebastian
Schulz, Achim
Spoida, Thomas
Stange, Michael
Stolz, Franz
Sturm, Michael
Tang, Hoi Ki
Thevenet, Mael
van der Meer, Bernard
Völkl, Timo
Wagner, Thomas
Weiss, Johannes
Windisch, Gordon
Wunschheim, Lukas

Scrutineering


Scrutineers 2011

Braus, Friedemann
Drop, Frank
Falb, Jürgen
Geipel, Sven
Goyal, Vandith
Hennings, Thomas
Kirchhoff, Sarah
Kleijn, Emil
Lidzba, Thomas
Maul, Ralf
Möller, Benjamin
Müller, Winfried
Opdam, Rob
Pass, Julian
Pfefferle, Sebastian
Pohl, Wolfgang
Sagawe, Tassilo
Saitner, Martin
Schmidt, Ronny
Schön, Wolfgang
Shetty, Keertan
Steinfurth, Ulf
Thomasson, Kevin

Status at the time of going to press.
Status bei Redaktionsschluss

Audi

Michael Groß
Head of HR Marketing, AUDI AG

FSG – five days of tinkering, technology and teamwork! We at Audi are awaiting the event just as eagerly as the participating teams. After all, the pit lanes and race track are the perfect places to meet dedicated students and get to know them where our heart beats – working on cars. What we share is a love of technology – of "Vorsprung durch Technik". At the same time, all the participants have exactly what we are looking for in future employees: specialist knowledge, innovative and creative solutions coupled with good teamwork and communication skills. And those who are able to put our brand values of sportiness, progressiveness and sophistication onto the race track are a good match for Audi as well. We offer tomorrow's engineers the chance to tackle exciting tasks in innovative areas. We look forward to an exciting event and wish all the teams every success!

FSG – fünf Tage Tüfteln, Technik und Teamwork. Wir bei Audi fiebern dem Event mindestens genauso aufgeregt entgegen, wie die teilnehmenden Teams. In der Boxengasse und auf der Rennstrecke treffen wir engagierte Studenten und lernen sie dort kennen, wo auch unser Herz schlägt: Beim Tüfteln am Automobil. Die Begeisterung für Technik – für „Vorsprung durch Technik" – ist das, was uns dabei verbindet. Gleichzeitig bringen die Teams all das mit, was wir uns von unseren zukünftigen Mitarbeitern wünschen: Fachliches Wissen, innovative und kreative Lösungen, aber auch Team- und Kommunikationsfähigkeit. Und wer es schafft, unsere Markenwerte Sportlichkeit, Progressivität und Hochwertigkeit auf die Rennstrecke zu bringen, der passt auch gut zu Audi. Bei uns warten auf die Ingenieure von morgen spannende Aufgaben an innovativen Themen. Wir freuen uns auf das Event und wünschen den Teams viel Erfolg!

Autodesk®

Don Carlson
Director Post Secondary Education - Autodesk

Autodesk Education Initiatives
Autodesk wants students of all ages to imagine, design and create a better world. By partnering with academic leaders and institutions, Autodesk is helping educators to build skills and engagement, both in and out of the classroom, in order to prepare for successful careers in architecture, engineering, and digital arts. Autodesk offers the technology and learning resources that inspire the next generation of professionals, while providing institutions with educational pricing, training, curricula and community resources.
For more information about Autodesk education programs and solutions, visit http://autodesk.com/education.

Über Autodesk Education
Autodesk hilft Studenten jeden Alters dabei, sich eine bessere Welt vorzustellen, diese zu gestalten und zu schaffen. Außerdem unterstützt Autodesk durch die Kooperation mit akademischen Leitern und Institutionen Pädagogen dabei, die Fähigkeiten der Studenten weiterzuentwickeln und ihr Engagement zu stärken – sowohl im Hörsaal als auch außerhalb – und diese auf erfolgreiche Karrieren als Architekten, Ingenieure oder Digital Artists vorzubereiten. Autodesk bietet die Technologie und die Lehrmittel an, die die zukünftige Expertengeneration inspirieren soll. Institutionen profitieren von Sonderkonditionen, Trainings, Lehrplänen und Communities.
Weitere Informationen zu Autodesk Education unter http://autodesk.com/education

Hans-Peter Beringer
Vice President, Head of Business Management Automotive, BASF SE

For BASF it´s a pleasure to support "Formula Student Germany", because we want to share our passion for automotive technology! Our engineering plastics are widely used in the automotive industry for example in vehicles range from bodywork and chassis to interior trim and engine components. Using plastics instead of other materials reduces vehicle weight and so helps to conserve energy and reduce emissions.
As a global chemical company BASF particularly focuses on science education, realizing that today's students will be the thinkers, innovators, discoverers and leaders of the future. We consider "Formula Student Germany" to be a great opportunity to get in contact with ambitious and well-educated young people.
Good luck to all teams for this extraordinary competition!

Wir freuen uns „Formula Student Germany" zu unterstützen - und so unsere Begeisterung für Technologie rund um das Automobil zu teilen! Die BASF bietet eine Vielzahl von Kunststofflösungen für die Automobilindustrie an, angefangen beim Karosseriebau, über das Fahrwerk bis hin zu Innenausstattung und Motoranbauteilen. Der Einsatz von Kunststoffen reduziert das Fahrzeuggewicht und trägt auf diese Weise zur Ressourcenschonung bei.
Als ein globales Unternehmen der Chemieindustrie schätzen wir die universitäre Forschung, insbesondere die Ingenieurswissenschaften. Hier sehen wir die Denker, Erfinder und Führungspersönlichkeiten der Zukunft. „Formula Student Germany" bietet uns die Möglichkeit, mit ambitionierten und gut ausgebildeten Nachwuchskräften in Kontakt zu kommen. Wir wünschen allen Teilnehmern viel Glück in diesem außergewöhnlichen Wettbewerb!

Michael Albrecht
Head of HR Marketing International and Recruiting, BMW Group

It is with great pleasure that the BMW Group supports initiatives such as Formula Student which combine acquired theory with practical experience in an exemplary manner. The acquisition of skills and key expertise such as interdisciplinary thinking, problem-solving and business knowledge is realized in an exemplary fashion in this competition.
We are only too familiar with these requirements of teams from our own company. We therefore welcome applications from qualified Formula Student participants both from Germany and abroad for practical internships as well as job vacancies. We are looking for enthusiastic young engineers in various departments such as research and development who, like our own staff, enjoy being involved in innovative projects at the very highest level.

Mit großer Freude unterstützt die BMW Group die Formula Student Initiative, da sie Studenten auf einzigartige Weise die Möglichkeit gibt, theoretisches Wissen mit gelebter Praxis zu verbinden. Hier, in der praktischen Anwendung, werden mit Begeisterung Fähigkeiten und Schlüsselkompetenzen wie z.B. fächerübergreifendes Denken, Problemlösefähigkeit oder wirtschaftliche Kenntnisse erlernt und erweitert.
Diese Anforderungen an Teams kennen wir in der BMW Group nur zu gut. Daher freuen wir uns, wenn sich qualifizierte Teilnehmer aus dem In- und Ausland bei uns für Praxiseinsätze oder auf offene Stellen bewerben. Verschiedene Bereiche wie z. B. Die Forschung und Entwicklung suchen begeisterte Nachwuchsingenieure, die genauso wie unsere Mitarbeiter Spaß daran haben, auf höchstem Niveau an innovativen Themen mitzuwirken.

BOSCH
Invented for life

Bernhard Bihr
President Bosch Engineering GmbH

Diversity is one of our values, as well as a component part of our strategy: at Bosch, there is a mix of individual abilities, experience, and work styles. It is this that gives us our innovative strength and secures our global success.

Diversity is also what we're looking for at Formula Student: it's not the fastest car that wins, but the team with the best overall combination of design, race performance, financial planning, and selling points. That's why we're glad to support talented young people who are innovative and committed, and who work together in a team to master interdisciplinary challenges.

We are looking forward to stimulating discussions with the students attending, and wish all the teams every success.

Vielfalt gehört zu unseren Werten und zu unserer strategischen Ausrichtung: Bei Bosch wirken individuelle Kompetenzen, Erfahrungen und Arbeitsstile zusammen. Das macht uns innovativ und sichert unseren weltweiten Erfolg.

Um Vielfalt geht es auch bei der Formula Student: Nicht das schnellste Auto gewinnt, sondern das Team mit dem besten Gesamtpaket aus Konstruktion und Rennperformance, Finanzplanung und Verkaufsargumenten. Daher freuen wir uns, innovative und engagierte Nachwuchskräfte zu unterstützen, die in Teamarbeit die interdisziplinären Herausforderungen gemeinsam meistern.

Wir freuen uns auf anregende Gespräche mit den Studierenden und wünschen allen Teams viel Erfolg!

Brunel
access to excellence

Dr. Ralf Napiwotzki
General Manager, Brunel GmbH

Brunel has been sponsoring Formula Student Germany (FSG) since 2006. Again and again, we are thrilled to see the creativity, passion and team spirit demonstrated by the students who take part. Technical skills and strength of will are essential assets without which the challenges posed by this design competition could never be mastered; and the attributes we see in the FSG participants are the ones we also prize in our own people. We are looking for engineers who share our love of a challenge and who can handle technologically demanding projects. Brunel offers qualified engineers and developers an exciting array of assignments, solid prospects for the future and plenty space for personal and career development. That is why it is very important to us to position Brunel as an attractive employer in the context of FSG and to engage in dialog with the individual participants.

Seit 2006 begleitet Brunel die Formula Student Germany als Sponsor. Von der Kreativität, Leidenschaft und dem Teamgeist der teilnehmenden Studenten sind wir immer wieder aufs Neue begeistert. Fachkompetenz und Willensstärke sind die Grundlagen, die gestellten Herausforderungen bei diesem Konstruktionswettbewerb überhaupt zu meistern. Alles Eigenschaften, die wir an unseren eigenen Mitarbeitern und den FSG-Teilnehmern sehr schätzen. Für unsere technologisch anspruchsvollen Projekte suchen wir Ingenieure, die unsere Leidenschaft für Herausforderungen teilen. Brunel bietet qualifizierten Ingenieuren und Entwicklern ein spannendes Aufgabenfeld mit sicheren Perspektiven und breitem Raum für die eigene berufliche und persönliche Entwicklung. Deshalb ist es für uns sehr wichtig, Brunel als attraktiven Arbeitgeber bei der FSG vorzustellen und mit den einzelnen Teilnehmern ins Gespräch zu kommen.

Continental

Sehnaz Özden
Corporate Head of Employer Branding & Strategic Recruiting, Continental AG

For over 140 years, Continental has been working on motorized individual mobility of the future. In order to continue this success story, we are constantly looking for qualified technical and management personnel.

Top talent of the kind we are seeking can be found at the Formula Student competition. There, working in teams, the students experience the values that are also indispensible for a successful career at Continental: teamwork, for one another, freedom to act and passion to win. In addition to this, a large international project like Formula Student hones the social skills that we look for in all our employees.

With this is mind, we support the teams by providing material and expertise, now and in the future, and wish everyone success at the Formula Student Germany at the Hockenheimring.

Seit über 140 Jahren arbeitet Continental erfolgreich an der individuellen Mobilität der Zukunft. Um diese Erfolgsstory weiterzuschreiben sind wir ständig auf der Suche nach qualifizierten Fach- und Führungskräften.

Diese Toptalente finden wir beim internationalen Konstruktionswettbewerb Formula Student. Durch die Arbeit in den Teams erleben die Studierenden die Werte, die auch für eine erfolgreiche Karriere bei Continental unerlässlich sind: Teamwork, Verbundenheit, große gestalterische Freiräume und die Leidenschaft, Projekte zum Erfolg zu führen. Zudem schärft ein derartiges internationales Großprojekt wie Formula Student die Sozialkompetenzen, die wir bei allen unseren Einsteigern suchen.

Daher unterstützen wir jetzt und in Zukunft die Teams mit Material und Know-How und wünschen allen viel Erfolg bei der der Formula Student Germany auf dem Hockenheimring.

DAIMLER

Susann Rau
Corporate HR Marketing, Daimler AG

Enthusiasm and passion for innovation and technology are the driving force of the Automotive Industry.
This eagerness is felt among the participants that show enormous engagement and endurance when working on their racing cars. Excellent knowledge of their field of activity, the comprehension of complex dependences and team work are decisive qualities shown in this competition. This exactly matches our requirements of gaining qualified staff.
With our engagement we wish to make a contribution to bring forward the innovation force and enhance the passion of these talents for the Automotive Industry. At the Formula Student event we are looking forward to interesting discussions with the participants in order to show them the possibilities of starting their career with Daimler.
We wish all participants a huge amount of energy and a successful event!

Begeisterung und Leidenschaft für Innovationen und Technik sind der Motor der Automobilindustrie.
Diesen Enthusiasmus spüren wir bei den Teilnehmern, die mit viel Engagement und Ausdauer an ihren Rennwagen arbeiten. Exzellentes Fachwissen, das Erfassen komplexer Zusammenhänge und Teamwork sind entscheidende Qualitäten, die bei diesem Wettbewerb unter Beweis gestellt werden. Diese entsprechen genau unseren Anforderungen an qualifizierte Nachwuchskräfte.
Wir möchten mit unserem Engagement einen Beitrag dazu leisten, die Innovationskraft dieser Talente und ihre Begeisterung für die Automobilindustrie zu fördern. Wir freuen uns auf interessante Gespräche während des Formula Student Events mit den Teilnehmern, rund um die Themen Einstieg und Karriere.
Wir wünschen den Teilnehmern eine ganze Ladung Energie und ein erfolgreiches Event!

DEKRA
On the safe side.

Clemens Klinke
Chairman of the board of managing directors, DEKRA Automobil GmbH; Member of the board, DEKRA SE

DEKRA supports Formula Student Germany from the outset as technical partner. Our engineers have well grounded know how and expertise in professional motor racing, for example as technical supervisors in the German Touring Car Masters (DTM) championship. In 2012 again the structure of all vehicles has been proven at the DEKRA Technology Centre regarding safety in rollover, side and frontal impacts. Approx. two dozen teams brought the frontal crash attenuators of their bolides for testing directly to the DEKRA Technology Center. This way Formula Student provides the students the opportunity to make their first personal contacts with DEKRA.

As Europe's largest organisation of technical experts, DEKRA is constantly on the lookout for highly motivated employees who have a high level of knowledge, teamwork skills and initiative - and, as we say in Germany, "who have petrol in the veins".

DEKRA unterstützt die Formula Student Germany seit ihrem Beginn als technischer Partner. Unsere Ingenieure verfügen über umfangreiches Know-how und Erfahrungen im professionellen Rennsport, unter anderem als Technische Kommissare der Deutschen Tourenwagen Masters (DTM). Das DEKRA Technology Center hat auch im Jahr 2012 alle Fahrzeugstrukturen im Hinblick auf die Sicherheit beim Fahrzeugüberschlag, beim Seitenanprall und beim Frontalanprall überprüft. Rund zwei Dutzend Teams ließen die energieabsorbierenden Frontalaufprallstrukturen ihrer Boliden direkt im DEKRA Technology Center testen. So bietet die FSG den Studierenden die Möglichkeit, erste persönliche Kontakte zu DEKRA zu knüpfen.

Als Europas größte Sachverständigen-Organisation ist DEKRA ständig auf der Suche nach motivierten Mitarbeitern mit hohem Wissensstand, Teamfähigkeit und Eigeninitiative, die "Benzin im Blut" haben.

ETAS
DRIVING | EMBEDDED EXCELLENCE

Friedhelm Pickhard
President ETAS GmbH

ETAS offers a comprehensive product portfolio of integrated tools, solutions, and services designed for the development and maintenance of embedded systems.

As a company with an automotive passion, we are happy to support talented and enthusiastic formula student teams in reaching their ambitious goals.

We are looking forward to an exciting season. Good luck to all teams!

ETAS bietet eine umfassende Produktpalette mit integrierten Tools, Werkzeuglösungen und Services für die Entwicklung und Wartung von Embedded Systemen.

Als ein Unternehmen mit einer großen Leidenschaft für das Automobil unterstützen wir talentierte und begeisterte Formula Student Teams bei der Erreichung ihrer hoch gesteckten Ziele.

Wir freuen uns auf eine spannende Saison und drücken allen Teams die Daumen.

Tina Nolting
Consultant Public Relations, HARTING Electronics GmbH & Co. KG

HARTING technology group develops innovative solutions and technologies for connectivity and networks. Highly motivated young professionals are necessary to create innovations for our customers. Formula Student is considered by HARTING as an outstanding opportunity to encourage the young generation of engineers we regularly seek as an employer. In Formula Student, the participants can prove in practice their professional knowledge and management by developing new solutions through team work.

When technical aspects of a solution are addressed, energy efficiency and conservation of resources should play a central role. Therefore, HARTING will award the team that will realise a solution with the best energy efficient values.

Die HARTING Technologiegruppe entwickelt innovative Lösungen und Technologien in der Verbindungstechnik. Damit wir auch zukünftig unsere Kunden mit Innovationen versorgen können, braucht es junge, motivierte Menschen. Die Formula Student ist eine hervorragende Möglichkeit, um den technischen Nachwuchs zu fördern, den wir als Unternehmen suchen. Hier können die Studenten in der Praxis demonstrieren, wie sie in Teamarbeit neue Lösungen entwickeln – und dabei ihr technisches Fachwissen und betriebswirtschaftliches Know-how unter Beweis stellen.

Wenn es um neue technische Lösungsansätze geht, sollten auch immer Energieeffizienz und Ressourcenschonung eine zentrale Rolle spielen. HARTING wird deshalb einen Preis an das Team verleihen, das bei der Formula Student Electric den geringsten Energieverbrauch realisiert.

automotive engineering iav

Christian Willenberg
Human Resources, IAV GmbH

With over 4,500 members of staff, IAV is one of the world's leading providers of engineering services to the automotive industry. The company can look back on 25 years of experience in developing innovative concepts and technologies for future vehicle generations. Core competencies include perfected, production-ready solutions in all fields of powertrain, electronics and vehicle development.

IAV supports Formula Student Germany and individual teams to produce interest to take part in the engineering departments of the company. To name one example from the motorsport segment: IAV was involved in developing a 2-liter four-cylinder high-speed engine for mass production. Powered by this engine, the BMW 320si went into mass production as the base vehicle for touring-car racing. For further information about IAV, go to www.iav.com.

IAV ist mit über 4.500 Mitarbeitern weltweit einer der führenden Engineering- Partner der Automobilindustrie. Das Unternehmen entwickelt seit über 25 Jahren innovative Konzepte und Technologien für zukünftige Fahrzeuggenerationen. Zu den Kernkompetenzen gehören perfekte, serientaugliche Lösungen in allen Bereichen der Antriebsstrang-, Elektronik-, und Fahrzeugentwicklung.

IAV unterstützt Formula Student und einzelne Teams – auch um das Interesse an einer Mitwirkung in den Fachabteilungen zu erwecken. Um ein Beispiel aus dem Bereich Motorsport zu nennen: IAV war bei der Serienentwicklung eines 2-Liter-Vierzylinder-Hochdrehzahlmotors beteiligt. Als Grundlage für den Tourenwagensport ging der BMW 320si mit diesem Motor in Serie. Weitere Infos zu IAV erhalten Sie über unser Karriereportal www.iav.com/karriere.

Joachim Reichle
Director Corporate Personnel Development, MAHLE International GmbH

The MAHLE Group is one of the top 30 automotive suppliers and the globally leading manufacturer of components and systems for the internal combustion engine and its peripherals.

MAHLE has enjoyed close ties to motor sport activities since the early days. Thus we know: if you want to do something decisive, you need a vision, topped with courage, perseverance, and drive. When the environment fits and the team is right, ambitious projects and convincing solutions emerge from innovative ideas. As a company with a passion for the automobile, we are proud to be part of the Formula Student Germany. We support formula student teams who are fascinated by the automotive world and who want to achieve more by working together – the same way we are. We are happy to support talented and enthusiastic engineers in reaching their ambitious goals and we wish all participants an successful Event!

Der MAHLE Konzern zählt zu den 30 größten Automobilzulieferern und ist der weltweit führende Hersteller von Komponenten und Systemen für den Verbrennungsmotor und dessen Peripherie.

Als ein von Anfang an dem Motorsport verbundenes Unternehmen wissen wir: Wer Entscheidendes bewegen will, braucht eine Vision. Und dazu Mut, Ausdauer und Biss. Wenn dann noch das Umfeld stimmt und das Team das richtige ist, werden aus innovativen Ideen ehrgeizige Projekte und überzeugende Lösungen. Als ein Unternehmen mit einer Leidenschaft für das Automobil, sind wir stolz, ein Teil der Formula Student zu sein. Wir unterstützten Teams, die – genauso wie MAHLE – fasziniert sind vom Automobil und gemeinsam mehr bewegen wollen. Wir freuen uns, talentierte und enthusiastische angehende Ingenieure bei der Erreichung ihrer ehrgeizigen Ziele zu unterstützen und wünschen allen Teilnehmern ein erfolgreiches Event.

Dr. Bernhard Frey
Head of Human Resources Marketing & Recruiting, MAN Truck & Bus AG

MAN Truck & Bus is a leading international supplier of commercial vehicles and transport solutions. The consistently efficient trucks, buses and engines from MAN put the engineering skills of our outstanding employees on to the road. Combined with reliable and innovative technologies and the highest level of customer orientation, these have provided the basis for our success for over 250 years.

MAN Truck & Bus has many years' experience in the field of motor sports. Every year, MAN successfully leads the way at the Truck Race European Championships. That is why MAN sponsors talented young people at Formula Student who develop sophisticated vehicle concepts with passion and technical expertise. We are looking forward to four exciting race days at the Hockenheimring and wish all the teams every success!

Die MAN Truck & Bus AG ist einer der führenden internationalen Anbieter von Nutzfahrzeugen und Transportlösungen. Die konsequent effizienten Lkw, Busse und Motoren von MAN bringen die Ingenieurskunst unserer hervorragenden Mitarbeiter auf die Straße. In Kombination mit zuverlässigen und innovativen Technologien sowie höchster Kundenorientierung bilden diese seit mehr als 250 Jahren die Basis unseres Erfolgs.

MAN Truck & Bus verfügt über langjährige Erfahrungen im Motorsportbereich. Jedes Jahr fährt MAN bei den Truck Race Europameisterschaften erfolgreich voraus. Aus diesem Grund sponsert MAN junge Talente bei Formula Student, die mit Leidenschaft und technischem Sachverstand ausgeklügelte Fahrzeugkonzepte entwickeln. Wir freuen uns auf vier spannende Renntage auf dem Hockenheimring und wünschen allen Teams viel Erfolg!

Lauren Tabolinsky
Student Competition Program Specialist, MathWorks

MathWorks is the leading developer of software for technical computing and Model-Based Design and our tools are used by engineers, scientists, mathematicians, faculty, students, and researchers around the globe. MATLAB®, the language of technical computing, is a programming environment for algorithm development, data analysis, visualization, and numeric computation. Simulink® is a graphical environment for simulation and Model-Based Design of multidomain dynamic and embedded systems. The products range from measurement, controls, signal processing, communication to code generation and code verification.
MathWorks provides software, training, and access to MathWorks engineering mentors and technical support to Formula Student Germany teams. For more information please visit http://www.mathworks.com/academia/

MathWorks ist der weltweit führende Anbieter von Technical Computing und Model-Based Design Software für Ingenieure und Wissenschaftler in der Industrie, Forschung und Lehre. Mit einer breit aufgestellten Produktfamilie, die auf den Kernprodukten MATLAB® und Simulink® basiert, bietet MathWorks Entwicklungswerkzeuge und Dienstleistungen zur Lösung anspruchsvoller technischer Problemstellungen und zur schnelleren Umsetzung von Innovationen für die unterschiedlichsten Bereiche. Die Bandbreite reicht von Messung, Steuerung, Regelung, Signalverarbeitung, Kommunikation bis Codegenerierung und Codeabsicherung.
MathWorks stellt Software, Training und Zugang zu MathWorks Mentoren für die Teams der Formula Student Germany zur Verfügung. Mehr Information finden Sie auf http://www.mathworks.de/academia/

Dr. Martin Meyer
General Manager Human Resource Marketing, Dr. Ing. h.c. F. Porsche AG

Porsche stands for pure motor sports - with many victories and all the fascination. Like every Porsche, our racing cars are developed according to the principle of "Intelligent Performance": More power on less fuel, greater efficiency and lower CO2 emissions. Following that idea our employees work with all their passion on the future of sports cars. Just like the Formula Student Teams.

People with the same passion should connect. Therefore we are glad to support the Formula Student. And we are happy to welcome engaged Formula Student participants at Porsche - as an intern, for the final thesis or for the career start.

Write on the next chapter of sports cars' future with us: At the Formula Student Germany Event and at Porsche.

We wish all teams success and looking forward for an exciting competition!

Porsche steht für wahren Motorsport. Mit vielen Siegen und der ganzen Faszination, die den Motorsport ausmacht. Unsere Rennfahrzeuge werden getreu unserem Markenkern „Intelligent Performance" entwickelt: Mehr Leistung bei geringerem Verbrauch, mehr Effizienz und weniger CO2-Emissionen. Nach dieser Maxime arbeiten unsere Mitarbeiter mit viel Leidenschaft an der Zukunft des Sportwagens. So, wie auch die Teams der Formula Student.

Menschen, die die gleiche Leidenschaft teilen, sollten zusammenfinden. Daher unterstützen wir die Formula Student gerne. Und wir freuen uns, immer wieder engagierte Formula Student Teilnehmer bei Porsche begrüßen zu dürfen – für Praktika, Abschlussarbeiten oder auch zum Berufseinstieg.

Schreiben Sie am nächsten Kapitel der Zukunft des Sportwagens mit: Im Formula Student Wettbewerb und bei Porsche.

Wir wünschen allen Teams viel Glück und Erfolg!

Klaus Hofmann
Product Manager ECO Competition Cars Sponsoring ECO Competition Cars/ ACS-P, SKF GmbH

To all participants of the 2012 Formula Student

All experts agree that an epoch-making change is imminent in automotive development. For quite a while now we have been in the middle of a marathon demanding a high degree of creativity, teamwork and farsightedness from us. With your commitment, you, students from all continents, accept this challenge, fulfilling all these attributes already today. This deserves our respect and recognition – and our support!
As a team you are organised like a modern highly-efficient company. With your experience in the fields of development, procurement, HR, PR and project management, you recommend yourselves for responsible tasks in your professional future.
At SKF, we care. We care about our business partners and our employees. We care about the community, and, not least, we care about the environment. This sustainable approach goes way back, to our roots. It is one of the focal points of our Group policy.
On behalf of the SKF we wish all participants success and all the best in the 2012 season!

The SKF Team

An alle Teams der Formula Student 2012

Die automobile Entwicklung steht vor einer epochalen Veränderung. Wir befinden uns in einem Marathon, in dem von uns Kreativität, Teamarbeit und Weitsichtigkeit abverlangt werden. Sie, die Studenten aus allen Erdteilen, stellen sich mit Ihrem Einsatz diesen Herausforderungen und erfüllen schon heute diese Attribute. Das verdient unseren höchsten Respekt und Anerkennung und - unsere Unterstützung!
Als Team sind Sie organisiert wie ein modernes Unternehmen. Mit den Erfahrungen aus Entwicklung, Logistik, HR, PR und Projekt - Management empfehlen Sie sich für verantwortungsvolle Aufgaben auf Ihrem beruflichen Weg.
Als SKF sind wir verpflichtet gegenüber unseren Geschäftspartnern und unseren Mitarbeitern. Wir sind verpflichtet gegenüber der Gemeinschaft und, nicht zuletzt, verantwortlich für die Umwelt. Unser Bekenntnis ist unumstößlich in unseren Leitlinien verankert und reicht zurück bis zu unseren Wurzeln.
SKF wünscht allen Teams viel Erfolg und viel Freude für die Saison 2012!

Ihr SKF Team

Regine Siemann
Head of Global Employer Branding, Tognum AG

Passion, eagerness to experiment, innovative strength: The FSG 2012 demonstrates engineering spirit at its best. 110 teams from 24 countries compete with their vehicles for the fastest and most economical construction. MTU founding father and engineering legend Karl Maybach would have been thrilled.
So are we. Therefore, Tognum is one of the main sponsors of the FSG Hockenheimring event for the fifth time in a row. We also provide individual support to the teams from Stuttgart, Munich, Karlsruhe, Graz, Nuremberg-Erlangen, Braunschweig and Ravensburg, and – on top of that – once again award a special prize for the „Most Innovative Powertrain".
Because just as the participating teams, we at Tognum are driven above all by one thing: a passion for technological excellence and the continuous optimization of established routines. Welcome to Tognum – join in as we move the world!

Leidenschaft, Experimentierfreude, Innovationskraft: Bei der FSG lässt sich hautnah erleben, was Vordenker antreibt und Ingenieurgeist ausmacht. 110 Teams aus 24 Nationen treten mit ihren Fahrzeugkonstruktionen gegeneinander an – Karl Maybach, MTU-Gründervater und Konstrukteurlegende, wäre begeistert.
Wir sind es auch. Deshalb unterstützt Tognum das Event am Hockenheimring zum fünften Mal als Sponsor – und fördert mit Stuttgart, München, Karlsruhe, Graz, Nürnberg-Erlangen, Braunschweig sowie den beiden Ravensburger Teams acht Teilnehmer auch ganz individuell. Mit dem „Most Innovative Powertrain Award" vergeben wir zudem erneut einen Preis für die beste Lösung im Bereich Antriebsstrang.
Denn wie die FSG-Teams treibt auch uns vor allem eins an: die Freude an Technikexzellenz und der stetigen Optimierung des Status quo. Willkommen bei Tognum – bewegen wir gemeinsam die Welt!

Thomas Albrecht
VDI-Society Automotive and Traffic Systems Technologies, VDI e.V.

If Formula Student didn't exist it ought to be invented on the spot. It epitomizes everything that makes the engineering profession so exhilarating: the cool, scientific pursuit of the optimum result, as measured against the irrefutable, objective scale of physical measurement, combined with the highly emotional values of imagination and inventiveness and the focused and frantic co-operation within a team of like-minded companions, who together will face the heat of the competition, and share the elation of success, or the burden of failure, in solidarity.
VDI with its Society for Vehicle and Transport Technology have established Formula Student Germany in its beginning, and continue as its spiritual sponsors, because it provides engineering students with an opportunity to live their passion, and to strive for excellence in a very early stage of their careers.

Wenn es die Formula Student nicht gäbe, man müsste sie auf der Stelle erfinden. Sie bringt auf den Punkt, was den Ingenieurberuf so begeisternd macht: das kühle, wissenschaftliche Streben nach optimalen Ergebnissen, gemessen am unwiderleglichen, objektiven Maßstab physikalischer Größen, gepaart mit den hochemotionalen Werten der Phantasie, des Einfallsreichtums und der konzentrierten Zusammenarbeit in einem Team aus Gleichgesinnten, in dem auch hoher Druck gemeinsam ausgehalten und Erfolg wie Misserfolg zusammen errungen und ertragen werden.
Der VDI mit seiner Fachgesellschaft für Fahrzeug- und Verkehrstechnik hat die Formula Student Germany etabliert und ist ihr ideeller Träger, weil sie dem Nachwuchs im Ingenieurberuf eine Chance gibt, diese Begeisterung zu leben und schon früh in der eigenen Laufbahn nach Exzellenz zu streben.

Thomas Lieber
Head of Electro-Traction, Volkswagen AG

Volkswagen is once again at the Formula Student Event at the Hockenheimring to support and to look for an open dialogue with young talents.
Alongside their expert knowledge, these aspiring engineers have innovative power and creativity as well as team and communication skills, which is exactly what is needed for a career and for working successfully in our company.
We are therefore happy to support highly-motivated young engineers with our expert knowledge, to inform them about the varied and individual opportunities to start a career in our company and to encourage their enthusiasm for Volkswagen as an attractive employer.
And we always have the same common denominator: The enthusiasm for „Das Auto".

We wish all teams a successful and exciting competition!

Volkswagen ist wieder mit auf dem Formula Student Event am Hockenheimring dabei, um direkt vor Ort junge Talente zu fördern und mit ihnen in den Dialog zu treten.
Neben fachlichem Wissen bringen diese angehenden Ingenieurinnen und Ingenieure auch Innovationskraft und Kreativität sowie Team- und Kommunikationsfähigkeit mit – genau das, was für die erfolgreiche Arbeit und eine Karriere in unserem Unternehmen wichtig ist.
Daher freuen wir uns, hochmotivierte Nachwuchsingenieure durch unser Expertenwissen zu unterstützen, sie über unsere vielfältigen und individuellen Einstiegsmöglichkeiten zu informieren und für den attraktiven Arbeitgeber Volkswagen zu begeistern. Einen gemeinsamen Nenner finden wir nämlich immer: Die Begeisterung für Das Auto.

Wir wünschen allen Teams einen erfolgreichen und spannenden Wettbewerb!

Dr. Michael Ruf
Head of International HR Marketing and Media, ZF Friedrichshafen AG

As a leading worldwide automotive supplier for Driveline and Chassis Technology, ZF is permanently looking for highly qualified, creative and motivated junior staff. Team players with organizational skills as well as well-founded knowledge in project management and cost optimization are just what we need.
As a result of the fact that we find exactly such key qualifications with the Formula students, we have been committed to such undertakings for years. Moreover, we perceive this commitment as an important contribution to raising the education quality as well as practice-orientation at the universities.
FSG makes it possible to link the engineer training and qualification with motorsports - a highly emotional and fascinating topic. I am personally convinced that the entire business site is profiting from such projects, but, primarily us, the ZF Group, as a technology-oriented company.

ZF als ein weltweit führender Automobilzulieferkonzern in der Antriebs- und Fahrwerktechnik ist permanent auf der Suche nach qualifizierten, kreativen und motivierten Nachwuchskräften. Gefragt sind Schlüsselkompetenzen wie Teamfähigkeit, Organisationstalent und solide Kenntnisse in Projektmanagement und Kostenoptimierung.
Da wir genau diese Schlüsselqualifikationen bei den Formula Studenten finden, engagieren wir uns seit vielen Jahren. Wir sehen darin einen wichtigen Beitrag, die Ausbildungsqualität und Praxisnähe an den Hochschulen zu erhöhen.
Das Projekt Formula Student ermöglicht es, die Ingenieursausbildung mit dem Rennsport zu verknüpfen, einem emotional besetzten und faszinierenden Thema. Ich bin davon überzeugt, dass hiervon der ganze Wirtschaftsstandort profitiert, aber natürlich auch wir als Technologiekonzern.

LIVE TIMING AT FSG
DAS FSG LIVE TIMING

During the dynamic events a website for the FSG live timing will be available online.

On http://tk.formulastudent.de you will continuously find the latest lap times, of the teams on track at that specific moment in time. The personal best of the teams will be shown in green. An overall best time in the respective class (FSC or FSE) will be displayed in pink.

To stay informed, the overall best lap times will always be shown, regardless of the level of lap times achieved at the time.

Während der dynamischen Events wird im Internet eine Webseite fürs Live Timing verfügbar sein.

Unter http://tk.formulastudent.de erfährt man immer die neuesten Rundenzeiten, die von den Teams zum jeweiligen Zeitpunkt gefahren werden. Dabei wird die persönliche Bestzeit eines Teams in grüner Farbe markiert. Eine neu gefahrene absolute Bestzeit in der jeweiligen Fahrzeugklasse (FSC oder FSE) wird in Pink dargestellt.

Um den Überblick behalten zu können, werden die absoluten Bestzeiten immer dargestellt, unabhängig von den aktuell gefahrenen Zeiten.

In 2012, several displays are again available on the dynamics area.
Auch in 2012 wird es wieder mehrere Displays bei den dynamischen Disziplinen geben.

Car	University	Best	Time	Lap
94	Rennstall Esslingen		START	1
20	LUMotorsport		54.69	PIT
2	University Of Hertfordshire		53.72	8
69	University of Wisconsin-Madison		52.69	PIT
76	Racetech Racing Team TU Bergaka		51.53	FIN
110	DMS Racing Team		61.12	28
35	CTU CarTech		58.86	FIN
39	E-Team Squadra Corse		54.59	7
74	High-Octane Motorsports e.V.		67.56	PIT
36	High Speed Karlsruhe		71.70	PIT
43	Brunel Racing		56.12	19
15	University of Strathclyde Motor		58.21	FIN
19	Sapienza Corse		61.81	FIN
55	Riteh Racing Team		60.95	FIN

Endurance | overview | Best: - FSG Live Timing *beta*

In addition, the latest lap times will be available online on http://tk.formulastudent.de.
Zusätzlich sind die aktuellen Rundenzeiten unter http://tk.formulastudent.de verfügbar.

FSG AROUND THE WORLD
EINMAL CHINA UND ZURÜCK

In October 2011, the Formula Student team, "TUfast", from the Technische Universtität München, visited the Chinese Formula Student competition in China. They took part in the country's second ever Formula Student competition, as the first ever international team, and succeeded in achieving second place overall. The Beijing Institute of Technology won.

The Munich team were hosted in China by their partner university, Shanghai Tongji University. On arrival, both teams worked together on making the final adjustments to their race cars and completing their last test kilometres. Through this, both teams were able to gain and exchange experience in technical as well as cultural aspects. "The collaboration of the two teams and the participation of the German team in the Chinese competition furthermore supports the wish / idea of Formula Student (FS) World Council to globally unify the Formula Student rules", announced Tim Hannig, FSG Chairman, enthusiastically about the exchange.

This year, Chinese teams have been given the chance to take part in a European competition. The winning team from FS China, the University of Beijing IT and Munich's partner university, Shanghai Tongji, will take part in this year's FS Germany. The participation will be a new experience and a big challenge for both the teams. At the Chinese event at the Shanghai International Circuit only 36 teams were allowed to participate, all of which were from the same country (except the team from Munich). The two Chinese teams will now have to compete against 76 top teams from all over the world. The attendance at the competition will show the similarities and differences between the technical standards of the international teams and competitions.

Through the Chinese teams' visit, Formula Student Germany is approaching its aim of further networking and internationalization of all FS competitions, step by step. For this purpose, the Formula Student World Council will once again meet during the event. The FS World Council consists of representatives of the different Formula Student competitions from around the world. They aim to unify the rules of all events step by step.

Additionally to the Chinese teams, a Chinese delegation will visit the event at the Hockenheimring. They will observe the German competition and take part in the discussions of the World Council. Furthermore, in particular, the delegation will observe Formula Student Electric. Up to now, such an event does not exist in China. Its focus will lie in particular on logistics, organisation and implementation of the competition. The state of the art technology delivered by the teams and their performances are also of great interest for the Chinese delegation. The goal one day is to have FS China Electric. The organisers of Formula Student Germany are looking forward to this day.

Source / Quelle: TUfast

The team "TUfast" from the Technische Universität München together with Tim Hannig (FSG Chairman) and Ludwig Vollrath (FSG Academy) at the Chinese event in October 2011.
Das "TUfast" Team der Technischen Universität München gemeinsam mit Tim Hannig (FSG Chairman) und Ludwig Vollrath (FSG Academy) beim chinesischen Event im Oktober 2011.

Auf Einladung der chinesischen Formula Student fuhr das Formula Student Team „TUfast" der Technischen Universität München im Oktober 2011 nach China. Dort nahmen sie am zweiten chinesischen Formula Student Wettbewerb teil. Das Besondere daran war, dass sie als erstes internationales Team gegen die ausschließlich chinesische Konkurrenz antraten. „TUfast" belegte hinter dem Beijing Institute of Technology den zweiten Platz.

Die Münchner planten die Reise mit ihrer Partneruniversität, der Shanghai Tongji University. Vor Ort arbeiteten beide Teams gemeinsam an ihren Rennboliden. Auf diese Weise konnten beide Seiten sowohl in technischer als auch kultureller Hinsicht neue Erfahrungen sammeln und austauschen. „Die Zusammenarbeit der Teams und die Teilnahme des deutschen Teams am chinesischen Wettbewerb unterstützen zusätzlich den Wunsch / die Idee des Formula Student (FS) World Councils, die Formula Student-Regeln global zu vereinheitlichen", zeigt sich Tim Hannig, Chairman der FSG, über den Austausch begeistert.

Um chinesischen Teams ebenfalls die Chance zu geben einen europäischen Wettbewerb kennenzulernen, kommen in diesem Jahr die Gewinneruniversität Beijing IT und die Münchner Partneruniversität Shanghai Tongji zum deutschen Wettbewerb. Auch für diese beiden Teams wird der Event eine neue Erfahrung und große Herausforderung werden. Während am chinesischen Wettbewerb auf dem Shanghai International Circuit nur 36 Teams teilnehmen durften und diese bis auf das Münchner Team aus dem gleichen Land kamen, müssen sich die beiden Teams nun mit 76 Top Teams aus der ganzen Welt messen. Die Teilnahme am Event wird zeigen, in wieweit sich die technischen Standards der internationalen Teams und die Wettbewerbe auf der ganzen Welt ähneln und wo es nach wie vor gravierende Unterschiede gibt.

Mit dem Besuch der chinesischen Teams kommt die Formula Student Germany ihrem Ziel der weiteren Vernetzung und Internationalisierung aller FS Wettbewerbe einen Schritt näher. Zu diesem Zweck wird sich während des Events ebenfalls wieder das Formula Student World Council treffen. Es handelt sich dabei um Vertreter der unterschiedlichen Formula Student Wettbewerbe der ganzen Welt, die das Ziel verfolgen die Regeln der einzelnen Events Schritt für Schritt zu vereinheitlichen.

Zusätzlich zu den chinesischen Teams kommt eine chinesische Delegation zum Hockenheimring. Diese wird sich den deutschen Wettbewerb anschauen sowie an den Gesprächen des World Councils teilnehmen. Außerdem wird sie sich insbesondere die Formula Student Electric anschauen. Einen solchen Event gibt es in China bisher noch nicht. Ihr Augenmerk wird hier vor allem auf Logistik, Aufbau und Umsetzung des Wettbewerbs liegen. Auch der technische Stand der Teams und ihre Performance sind für die chinesische Delegation von großem Interesse. Und vielleicht findet in China demnächst ebenfalls ein FS Electric Event statt. Die Organisatoren der Formula Student Germany würden sich sehr freuen und bleiben gespannt.

THE INTERNATIONALISATION OF THE RULES
DIE INTERNATIONALISIERUNG DES REGELWERKS

A look back at the year 1979 the rules of the first Formula SAE competition consisted of 11 pages and could easily put in one's trouser pocket when folded. Nearly 30 years later, the rules for Formula Student Germany amount to 130 pages. Luckily, today, many students have the rules on their smartphones or tablet PC's; an advantage for the luggage capacity of the many international teams. The great extension of the rules in particular, reflects the competitions development in different aspects, such as, engineering, safety, competition growth and new car classes (as FS Electric).

There are currently Formula Student competitions all over the world. Though all of them are based on the original FSAE, every event has its own characteristics and therefore its own rules. This creates difficulties for teams who want to participate in more than one Formula Student event as it means they have to adjust their cars to fit the rules of the particular competitions instead of, like in Formula 1, being able to spend their time and energy on optimizing their cars to give them the best chances at the different competitions.

To find the reasons behind the different sets of rules and to learn about what the Formula Student organizers are doing to counteract against this development, we decided to talk to some members of the Rules Committee.

An interview with Tobias Michaels (EC, FS Electric), Lukas Folie (EC, FS Electric) and Frank Röske (Board, Rules)

Do you have the rules already on your tablet PC or smartphone or do you still walk around with a printed version in your trouser pocket (If it fits in there)?

Michaels: I have it in digital form.
Folie: Me too.
Röske: Until last year I always had a printed version in my pocket during the whole event. But this year I exchanged it against a version on my tablet PC.

The Formula Student and Formula SAE series grew very fast in the last years. By now there are competitions in Europe, North and South America, Asia and Australia. Which challenges arise from this development for the composition of rules?

Röske: First of all, we are very happy that so many students are engaged in teams and have the possibility to take part in competitions all over the world. But with the growing number of competitions we as Rules Committee are confronted with new challenges.

What challenges? Can you give us some examples?

Röske: As a consequence of more and more new events popping up, also more and more new rules were developed. Every competition organization has independently worked on the rules, over the last few years. The problem for the teams

Ein Blick zurück in das Jahr 1979 zeigt das Reglement des ersten Formula SAE Wettbewerbs: es bestand aus 11 Seiten und konnte gefaltet bequem in der Hosentasche getragen werden. Knapp 30 Jahre später ist das Regelwerk für die Teilnahme an der Formula Student Germany über 130 Seiten stark. Glücklicherweise haben viele Studenten das Reglement inzwischen auf Ihrem Tablet oder Smartphone. Dies ist insbesondere für die vielen internationalen Teams ein nicht zu unterschätzender Vorteil für Ihre Anreise. Die starke Erweiterung des Regelwerks zeigt vor allem, dass sich die Wettbewerbe weiterentwickelt haben. Diese Entwicklung hat in vielen verschiedenen Bereichen stattgefunden: Technik, Sicherheit, Wettbewerbsausbau, neue Fahrzeugklassen (wie die FS Electric).

Mittlerweile gibt es auf der ganzen Welt Formula Student Wettbewerbe. Zwar basieren alle auf der ursprünglichen FSAE, dennoch hat jeder Event seine eigenen Besonderheiten. Aus diesem Grund gibt es für jeden Wettbewerb ein eigenes Reglement. Dies birgt für die Teams Schwierigkeiten, die an mehreren Formula Student Events teilnehmen wollen. Für jeden Wettbewerb müssen sie sich auf ein anderes Reglement einstellen. Im Gegensatz zur Formel 1 ist jedoch meist keine technische Weiterentwicklung notwendig.

Um herauszufinden warum es bei den verschiedenen Wettbewerben unterschiedliche Regelwerke gibt und was die Formula Student Organisatoren sich vorgenommen haben, um dieser Entwicklung entgegenzuwirken, haben wir die Möglichkeit genutzt mit Mitgliedern des Rules Committee zu sprechen.

Ein Interview mit Tobias Michaels (EC, FS Electric), Lukas Folie (EC, FS Electric) und Frank Röske (Board, Rules)

Haben Sie das Reglement schon auf Ihrem Tablet oder Smartphone oder noch ausgedruckt und in der Hosentasche? (Wenn es da überhaupt rein passt).

Michaels: Ich habe es digital dabei.
Folie: Bei mir ist es auch so.
Röske: Bis letztes Jahr habe ich immer eine gedruckte Version den ganzen Wettbewerb in der Tasche gehabt, aber in diesem Jahr habe ich es gegen eine Version auf meinem Tablet getauscht.

Die Formula Student und Formula SAE Serie ist in den letzten Jahren schnell gewachsen. Inzwischen gibt es Wettbewerbe in Europa, Nord- und Südamerika, Asien und Australien. Welche Herausforderungen ergeben sich daraus für die Gestaltung des Reglements?

Röske: Zu erst einmal sind wir natürlich sehr erfreut darüber, dass sich so viele Studenten in Teams engagieren und die Möglichkeit haben überall auf der Welt an Wettbewerben teilzunehmen. Mit der wachsenden Anzahl der Wettbewerbe stehen wir als Rules Committee jedoch auch vor neuen He-

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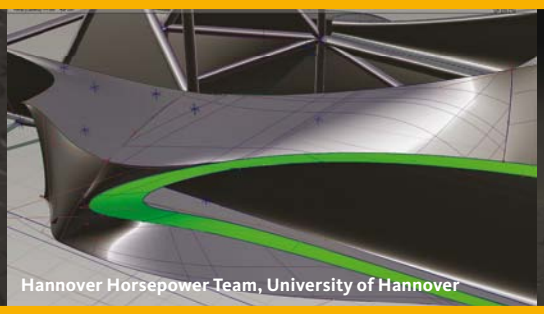

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is that these rules are not valid at all competitions.

Why did so many new rules accrue and what is the purpose of this?

Röske: We want to give the students as much freedom as possible for the design of their cars, but we have to ensure the safety of the students, audience and volunteers. This is only possible when the cars are designed and built in a safe way. For this purpose, we create terms of references in form of rules. These are influenced by local circumstances, instructions and infrastructure. Therefore it comes to differences that appear in the rules.

2010 traf sich im Rahmen der Formula Student Germany das World Council zum ersten Mal.
2010 the World Council met during Formula Student Germany for the first time.

Michaels: It is not the competitions aim to permanently create new rules. We are balancing here between guarantee of safety and encouraging the ideas and creativity of the students. That's the reason why many rules do not enforce technical solutions but constraints.

What are the consequences of the development of the different rule systems?

Röske: They make the lives of the teams more difficult as many of them participate in more than one competition. When these competitions have varying rules the teams sometimes have to rebuild their cars or regenerate documents, for example the Cost Report. This costs them money and time that the students could be spending on their studies.
Michaels: Additionally, the organizers have more work. For example, we have to prove the safety confirmation of the cars for every event separately, despite the fact that the rules are 95% identical.

And this development you want to counteract. In 2010 during Formula Student Germany the World Council met for the first time. The World Council is a group that consists of representatives of each FS competition. What is the impact of this on the development of the rules?

Röske: The World Council was the beginning of a closer partnership between the different competitions. Here the focus is not only on the rules, but on all fields of event organization. The Rules Committee was announced by the World Council to unify the different rule systems by 2013. In 2013 there will be just one book of rules for every competition. The teams will now have the chance to participate in every event without any difficulties.
Folie: This also accounts for the competitions with electrical cars, not only for the competitions with combustions cars: so there will only be one rules system for every competition.

This is a very positive development. But how did you manage to develop and agree on new rules with so many people participating?

rausforderungen.

Wie sehen diese Herausforderungen aus? Können Sie uns Beispiele nennen?

Röske: Durch das schnelle Wachstum der Anzahl der Wettbewerbe, sind auch viele neue Regeln hinzugekommen. Jede Wettbewerbsorganisation hat in den letzten Jahren selbst am Reglement gearbeitet. Das Problem für die Teams hierbei ist, dass diese jedoch nicht immer bei allen Wettbewerben gleichzeitig gültig sind.

Wieso sind denn so viele neue Regeln hinzugekommen und was wird damit bezweckt?

Röske: Wir möchten den Studenten bei der Konstruktion des Fahrzeugs möglichst viel Spielraum geben. Jedoch müssen wir auch die Sicherheit der Studenten, Zuschauer und Helfer gewährleisten. Dies geht nur wenn die Fahrzeuge sicher konstruiert und gebaut sind. Hierfür stellen wir bestimmte Richtlinien in Form von Regeln auf. Diese werden jedoch auch durch lokale Gegebenheiten, Vorschriften und Infrastrukturen beeinflusst. Hierdurch kommt es natürlich zu Unterschieden, die sich in den Regelwerken niederschlagen.
Michaels: Es ist nicht Ziel der Wettbewerbe, permanent neue Regeln zu erfinden. Wir bewegen uns hier auf einem schmalen Grad, zwischen Gewährleistung von Sicherheit und der Förderung von Ideenreichtum und Kreativität der Studenten. Aus diesem Grund sind viele Regeln so ausgelegt, dass wir keine technische Lösung, sondern Grenzen vorgeben. Dadurch haben die Studenten die Möglichkeit, die Regeln weiträumig zu interpretieren.

Welche Auswirkung hat diese Entwicklung der einzelnen Reglements?

Röske: Sie machen das Leben für die Teams schwieriger. Viele treten bei mehr als einem Wettbewerb an. Wenn diese Wettbewerbe jedoch voneinander abweichende Regeln haben, müssen die Teams teilweise Ihre Fahrzeuge umbauen oder die notwendigen Dokumente, wie zum Beispiel den Cost Report, mehrfach erstellen. Dies kostet viel Geld und vor

Röske: The development of the rules takes part in the Rules Committee. Here, every event has one seat. Usually the competitions of the actual year are analyzed on the perspective of safety. But last year the focus was on the unifying of the rules. For this purpose, all differences of rules systems were examined. In many discussions the reasons were argued and possibilities were searched for to find a shared solution.

When every competition has its own seat, who is sitting there when so many themes are discussed?

Röske: Not every theme is discussed in detail in the Rules Committee. So-called sub committees are formed, in which particular topics are discussed by experts.

For this work you surely have to meet and discuss very often. How do we have to imagine such discussion rounds? Do you monthly meet in the different countries?

Michaels (smiles): That would be great and mean we would get to travel a lot. But unfortunately it does not work like this because it would cost too much travelling time and money. You have to consider that we are just volunteers. But we try to communicate weekly as efficiently as possible via telephone, video conferences and the internet.

Modern technique is especially advantageous for the international participants, because instead of bringing the extensive rules in printed form to the event they today easily use the laptop.
Die moderne Technik ist vor allem für die internationalen Teilnehmer von Vorteil, da sie das umfassende Regelwerk nicht mehr ausgedruckt mit zum Event bringen müssen, sondern ganz einfach auf ihrem Laptop.

Folie: But without any meeting it does not work. Last year when we began to develop the FS Electric rules together with other competitions there were many points to discuss in the beginning. This was why we met during FSE at the Hockenheimring with our colleagues from Great Britain and were able to discuss many topics fast and efficiently.

Can you say that the Formula Student Electric was a forcing power considering the development of the rules for cars with electrical drive systems?

Michaels and **Folie** together: Yes, definitely.
Folie: When we began in 2009 with working on rules for the Formula Student Electric this was all very new for us. The experiences from 2010 and 2011 were integrated into the allem Zeit, die den Studenten dann für Ihr Studium fehlt.
Michaels: Ergänzend dazu gibt es auch auf Seiten der Organisatoren zusätzlichen Aufwand. So müssen wir zum Beispiel die Nachweise für die Sicherheit der Fahrzeuge für jeden Wettbewerb einzeln prüfen, obwohl wir hier beim Reglement eine Gleichheit von über 95 Prozent haben.

Und diesem Trend wollen sie nun entgegenwirken. 2010 hat im Rahmen der Formula Student Germany erstmals das World Council getagt. Das ist eine Gruppe, die aus Vertretern der verschiedenen Formula Student Wettbewerbe besteht. Wie hat sich das auf die Entwicklung des Reglements ausgewirkt?

Röske: Das World Council war der Auftakt für eine stärkere Zusammenarbeit der einzelnen Wettbewerbe weltweit. Hierbei ging es nicht nur um die Regelwerke der einzelnen Events, sondern viel mehr darum, in allen Bereichen der Wettbewerbsorganisation zusammenzuarbeiten. Das Rules Committee wurde vom World Council mit der Vereinheitlichung der Regelwerke bis spätestens in 2013 beauftragt. 2013 wird es ein einheitliches Regelbuch für geben, das den Teams ermöglicht ohne Änderungen am Fahrzeug bei jedem Event weltweit teilzunehmen.
Folie: Das gilt nicht nur für die Fahrzeuge mit Verbrennungsantrieb, sondern auch für die mit Elektromotor. Ab 2013 wird es also nur noch ein Reglement für alle Wettbewerbe geben.

Das ist doch eine sehr positive Entwicklung. Aber wie haben Sie es geschafft, sich mit so vielen Wettbewerben abzustimmen und ein Reglement zu entwickeln?

Röske: Die Entwicklung des Reglements findet im Rules Committee statt. Hier hat jeder Event einen Sitz. In der Regel, werden die Wettbewerbe des aktuellen Jahres darauf hin analysiert, ob das Regelwerk aus dem Blickwinkel der Sicherheit angepasst werden muss. Im letzten Jahr lag der Fokus jedoch auf der Vereinheitlichung des Reglements. Hierfür wurden alle Regelwerke genau auf Ihre Unterschiede hin untersucht. In vielen Gesprächen wurden die Gründe erörtert und Möglichkeiten gesucht, eine gemeinsame Lösung zu finden.

Wenn jeder Wettbewerb nur einen Sitz hat, wen entsenden sie dann bei so vielen unterschiedlichen Themen?

Röske: Es ist nicht so, dass im Rules Committee alle Themen im Detail diskutiert werden. Hier werden sogenannte Sub-Committees gebildet, in denen dann für das jeweilige Thema Experten arbeiten.

Diese Arbeit ist doch sicherlich mit vielen Treffen und Diskussionen verbunden. Wie müssen wir uns diese Abstimmungsrunden vorstellen? Treffen sie sich monatlich in den teilnehmenden Nationen?

Michaels (grinst): Das wäre sicherlich spannend, da würden wir viel herumkommen. Aber ganz so ist es nicht, da die Reisezeiten sowie die Kosten dies nicht zulassen. Immerhin sind wir alle Ehrenamtliche. Wir versuchen uns wöchentlich so effizient wie möglich über Telefonkonferenzen, Videokonferenzen und natürlich alle Möglichkeiten die das Internet bietet abzustimmen.

development of the rules. We were the first competition with a complete rules system. Last year, the events in Austria, Spain and Italy adopted our rules.
Michaels: In the rules for 2013, you can find FS Electric. But we also adopted many points from our colleagues from Great Britain. The discussions have been ongoing for over a year which is the reason why the rules for the different competitions for electrical cars in Europe are already almost identical for the 2012 competition.

What were the biggest differences in the rules for cars with electrical drive trains?

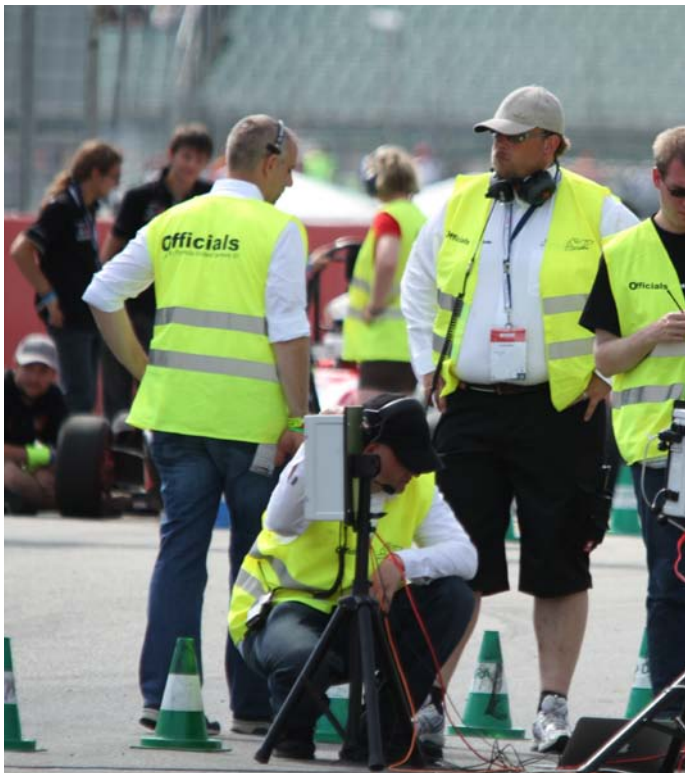
Folie: To count all differences would take too much time, but obvious examples are the power limitation as well as the maximal allowed electric voltage. Here we had to work hard to convince the others.

Thank you very much for these interesting insights. But let us ask one last question: How will it go on?

Michaels: First of all we hope for an exciting Formula Student Germany 2012. But when we look into the future, at the end of May the draft for the new rules 2013 were released. At the moment we are working at the final version.
Röske: What is really new is that from 2013 on, the rules will be valid also for 2014. From then on we will work on the rules in a two-year rhythm. In this way the teams can start in a new season more relaxed and especially optimize everything from the former season.

Well that sounds really good for the teams. So we will see how it works for them with the new rules system in 2013. Thank you very much for the interview.

Frank Röske (dritter von links) im Gespräch mit Lukas Folie (erster von links).
Frank Röske (third from left) in conversation with Lukas Folie (first from left).



Folie: Aber ganz ohne Treffen geht es dann doch nicht. Als wir im letzten Jahr damit begonnen haben, das Reglement für die FS Electric mit den anderen Wettbewerben weiterzuentwickeln, gab es zu Beginn viele Diskussionspunkte. Im Rahmen der FSE haben wir uns jedoch am Hockenheimring mit den Kollegen aus Großbritannien und den USA getroffen und konnten so viele Themen, die wir lange und zum Teil intensiv diskutiert haben, schnell klären.

Kann man sagen, dass die Formula Student Germany bei der Erstellung des Regelwerks für die Fahrzeuge mit Elektroantrieb eine treibende Kraft ist?

Michaels und **Folie** gemeinsam: Ja, definitiv.
Folie: Als wir 2009 mit der Erarbeitung des Regelwerks für die Formula Student Electric begannen, betraten wir in vielen Bereichen Neuland. Die Erfahrung aus den Wettbewerben 2010 und 2011 sind in die Weiterentwicklung der Regeln geflossen. Wir haben als erster Wettbewerb ein vollumfängliches Regelwerk erstellt. Schon im Vorjahr haben die Events in Österreich, Spanien und Italien unser FSE Reglement übernommen.
Michaels: In vielen Bereichen des Regelwerks ab 2013 findet man das FS Electric Reglement wieder. Wir haben jedoch auch viele Punkte von unseren Kollegen in Großbritannien übernommen. Die Abstimmungen laufen schon seit mehr als einem Jahr, sodass in Europa Regeln für die Fahrzeuge mit Elektroantrieb schon 2012 fast identisch sind.

Was waren die größten Unterschiede der Reglements für die Elektrofahrzeuge?

Folie: Alle Unterschiede aufzuzählen würde den Rahmen sprengen, aber plakative Beispiele sind die Leistungsbeschränkung sowie die maximale zulässige Spannung. Hier haben wir sehr viel Überzeugungsarbeit leisten müssen.

Vielen Dank für diese Interessanten Einblicke, aber gestatten sie uns noch eine letzte Frage. Wie wird es weitergehen?

Michaels: Zu erst einmal hoffen wir auf eine spannende Formula Student Germany 2012. Aber wenn wir vorausschauen: bereits seit Mai ist der Entwurf für die Regeln 2013 veröffentlicht. Im Moment arbeiten wir an der finalen Version.
Röske: Und was völlig neu ist, das Reglement für 2013 wird auch 2014 gelten. Wir werden dann im zwei Jahreszyklus die Regeln überarbeiten. Somit können die Teams immer etwas entspannter in die zweite Saison starten und vor allem alles aus der vorhergehenden Saison optimieren.

Ja, das hört sich wirklich gut an für die Teams. Wir sind also gespannt wie es 2013 mit dem neuen Regelwerk für alle laufen wird. Vielen Dank für das Gespräch.

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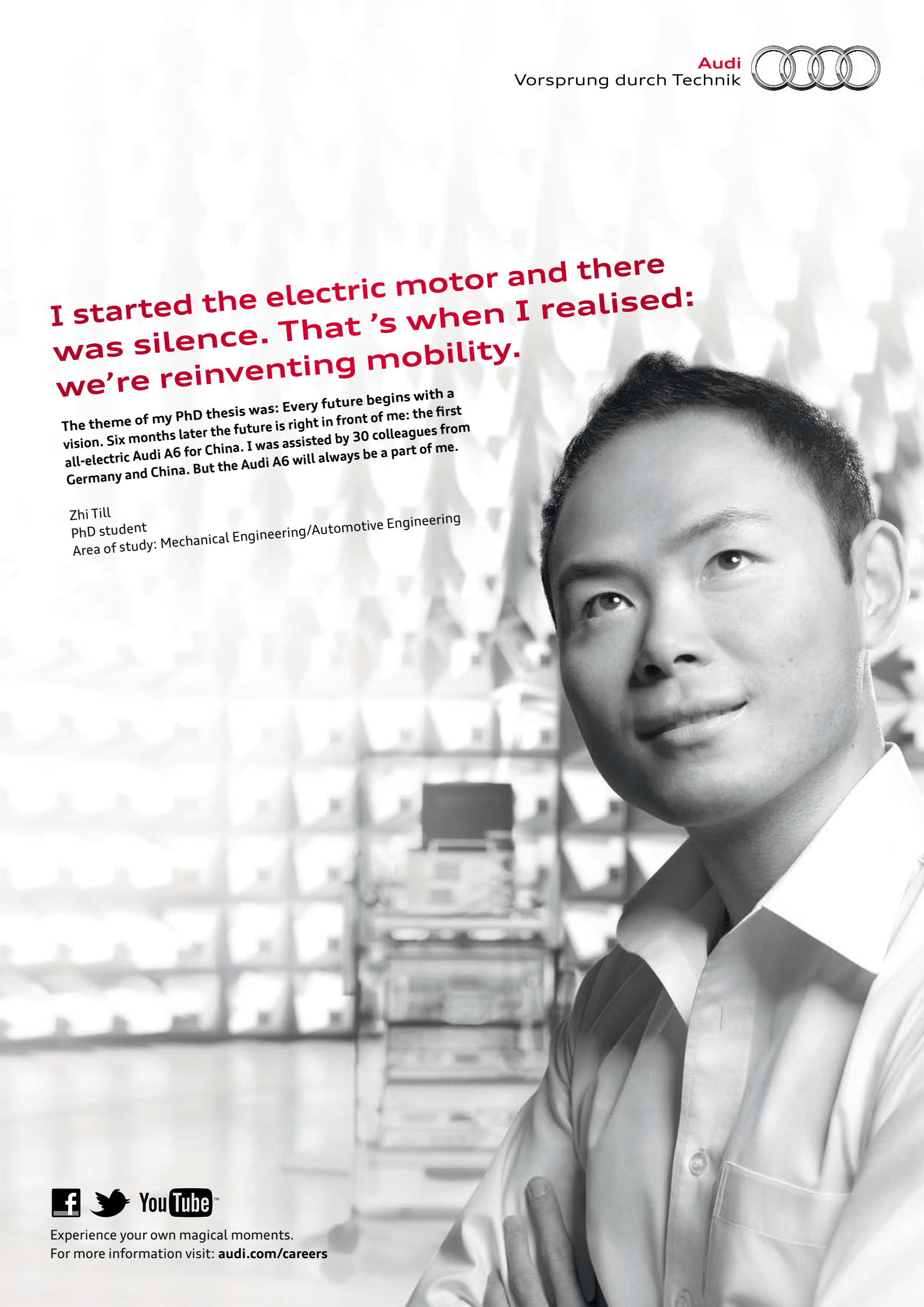
Zhi Till
PhD student
Area of study: Mechanical Engineering/Automotive Engineering



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Many people dream of being the man in charge. Especially for young engineers the idea of creating something their own is very tempting. However, to realise such a dream is more easily said than done. The organisers of Formula Student Germany (FSG) are therefore very pleased to see that among former FSG participants a number of start-up companies have been founded.

One could argue that Formula Student has provided its former participants with the toolset to found their own company. As at the basis of the competition, simply put, automobile companies are founded and operated by students. To find out to which extend Formula Student experiences really contribute to founding one's own company, the FSG editorial board interviewed the founders of Roding Automobile, Georg Käsmeier, Günther Riedl, Ferdinand Heindlmeier and Robert Maier.

Source / Quelle: Roding Automobile GmbH

The founders of Roding Automobile Georg Käsmeier, Günther Riedl, Ferdinand Heindlmeier und Robert Maier
Gründerteam der Roding Automobile GmbH: Georg Käsmeier, Günther Riedl, Ferdinand Heindlmeier und Robert Maier

Passion, courage and drive

End of 2002, beginning of 2003, the team that will later found the Roding Automobile GmbH get to know each other via Formula Student. The four of them are fascinated by cars and motorsports and share the passion "to create something of your own" and "to realise creative ideas", looks Günther Riedl back. In the beginning they are somewhat ridiculed in their desire to found their own Formula Student team. Robert Maier, managing director of Roding Automobile GmbH, recalls: "At first we were not taken seriously at all. I remember a quote of one of our professors in automotive engineering: „It is impossible to realise such processes in the given timeframe." The fact that our skills and abilities were underestimated like this, motivated us even more to create something of our own, something big." And thus the Formula Student Team of TU Munich, TUfast, was founded.

In the beginning the team hardly had any resources, "except for the use of the university workshop and a couple of hundred Euros from our parents and grandparents. Nevertheless, we tackled the challenge with passion, courage and drive," tells Robert Maier. And it paid off. Soon the team could infect more students with their fascination and the number of team members grew. TUfast became known more and more, and not for long drew the attention of sponsors. One of the first sponsors was the midsize company Stangl & Co

Viele träumen davon eines Tages der eigene Chef zu sein. Besonders für junge Ingenieure ist der Anreiz etwas Eigenes zu schaffen groß. Doch ist es nicht leicht diesen Traum zu realisieren. Umso mehr freuen sich die Organisatoren der Formula Student Germany, dass unter den ehemaligen Teilnehmern einige sind, die es geschafft haben ein Start-Up zu gründen.

Im Prinzip kann man sagen, dass die Formula Student den ehemaligen Teilnehmern die Grundlagen für eine solche Gründung beigebracht hat, denn letztendlich basiert auch der Wettbewerb auf von Studenten gegründeten und betriebenen Automobilfirmen. Um herauszufinden inwiefern die Formula Student Erfahrungen genau dabei helfen ein eigenes Unternehmen aufzubauen, hat die FSG Redaktion mit den Gründern von Roding Automobile, Georg Käsmeier, Günther Riedl, Ferdinand Heindlmeier und Robert Maier gesprochen.

Leidenschaft, Mut und Willen

Ende 2002, Anfang 2003 lernt sich das spätere Gründer Team der Roding Automobile GmbH über die Formula Student kennen. Alle vier sind von Autos und Rennsport fasziniert und teilen die Begeisterung dafür „etwas eigenes zu schaffen" sowie „kreative Ideen zu verwirklichen", blickt Günther Riedl zurück. In ihrem Wunsch ein eigenes Formula Student Team zu gründen werden sie anfangs jedoch belächelt. Robert Maier, Geschäftsleiter der Roding Automobile GmbH, erzählt: „Anfänglich wurden wir überhaupt nicht ernst genommen. Ich erinnere mich an einen Kommentar von einem unserer Fahrzeugtechnik Professoren: „In der Kürze der Zeit so umfangreiche Prozesse darzustellen ist überhaupt nicht möglich." Genau diese Unterschätzung unserer Fähigkeiten, hat uns motiviert zu beweisen, dass wir in der Lage sind etwas Eigenes und Großes zu schaffen". Und somit war die Gründung des Formula Student Teams der TU München, TUfast, beschlossen.

Zu Beginn hatte das Team kaum Ressourcen, "außer der Benutzung der Werkstatt an der Uni und ein paar hundert Euro von unseren Eltern und Großeltern. Dennoch sind wir mit Leidenschaft, Mut und Willen an das Projekt heran gegangen" erzählt Robert Maier. Und das hat sich gelohnt. Schon bald konnte das Team mehr Studenten mit seiner Faszination anstecken und weitere Teammitglieder gewinnen. TUfast wurde immer bekannter und zog auch die Aufmerksamkeit von Sponsoren auf sich. Unter anderem die Inhaber eines mittelständigen Unternehmens, Stangl & Co Präzisionstechnik. Diese belieferten das Team mit Fräs- und Präzisionsteilen und hier wurde die Basis gelegt für eine spätere Freundschaft, die eine wichtige Rolle bei der späteren Gründung von Roding Automobile spielen wird.

Nach dem Studium

In dieser Konstellation wurden zwei Formula Student Fahrzeuge gebaut, dann war für drei der vier Teamgründer das Studium zu Ende. Günther Riedl jedoch war noch ein weiteres

Präzisionstechnik. It provided the team with milled precision parts. At this stage the basis for a friendship with the owner of Stangl & Co was laid, which will play an important role in the later founding of Roding Automobile.

After university

After having built two race cars, three of the four members of the TUfast founding team graduated. Only Günther Riedl continued for one more year to build the 2006 TUfast car. The change from university to working life did not mean that the fascination and passion were over, to the contrary. "The idea to build a modern light-weight road vehicle was for us self-evident after our experiences with Formula Student" confirms Maier. And here one thing came to the other. The four young engineers wanted to become self-employers and Stangl & Co was on the lookout for a product to show its competence at the market. A light-weight sports car fit the bill. Consequently Stangl & Co supported the founding of Roding Automobile with capital, manufacturing resources and know-how.

Before founding the company, the four founders carried out a feasibility study. Here amongst others the available market for a light-weight sports car, its potential customers, required technology, economic feasibility and product placement were analysed. Based on this study the strategic decision was taken to focus on economic CFPR (carbon fibre reinforced plastics) technology. This means that techniques should be used that have a chance to be applied in mass production. As an example Maier refers to an intelligent structure designed with the strengths of fibre-reinforced composites in mind, and for which manufacturing is already taken into account in the design stage. Dry fabrics, a simple tooling strategy and a focus on resin infusion are, amongst others, important factors.

As soon as the feasibility study was completed the Roding Automobile GmbH was founded in 2008. Directly after the company had been founded the development of the Roding Roadster was commenced. A modular platform with a CFRP architecture was developed. Riedl explains: "the nice thing about the platform is that it can accommodate a conventional powertrain with a combustion engine as well as a battery electric drive".
2009 the concept study was presented to the public at the IAA in Frankfurt for the first time. Maier remembers: "We could collect valuable market feedback here. Of course, technology validation was also an important aspect of the concept study. Not everything you think out on paper works at the first attempt in reality. As for Formula Student, testing is one of the most important aspects of the development of a new car". The collected data were used to develop the series production version of the Roding Roadster, which debuted at the 2012 Geneva Motor Show.

Jahr dabei und baute auch am 2006er Auto von TUfast mit. Mit dem Ende des Studiums und dem Wechsel in das Berufsleben endeten jedoch nicht Faszination und Leidenschaft. „Die Idee ein modernes Leichtbau Fahrzeug für die Straße zu entwickeln, kam durch unsere Formula Student Erfahrungen auf" bestätigt Maier. Und so kam eins zum anderen. Die vier ehemaligen Tufast Mitglieder wollten sich selbstständig machen und der ehemalige Sponsor Stangl & Co suchte nach einem Produkt, mit dem es seine Kompetenz am Markt unter Beweis stellen konnte. Ein Leichtbausportwagen war da genau das Richtige. So ermöglichte Stangl & Co. mit Kapital, Fertigungsressourcen und Know-how die Gründung der Roding Automobile GmbH.

Bevor es jedoch zur Gründung kam, wurde eine Machbarkeitsstudie angefertigt. In dieser wurden unter anderem der Markt für einen individuellen Leichtbausportwagen, potentielle Kunden, notwendige Technologien, Wirtschaftlichkeit und Positionierung des Produktes untersucht. Aus den Ergebnissen folgte die strategische Entscheidung, auf die wirtschaftliche CFK (kohlenstofffaserverstärkter Kunststoff) Technik zu setzen. Denn auf diese Weise können Verfahren anwendet werden, die eine Chance haben in Großserien eingesetzt zu werden. Als Beispiel nennt Maier eine intelligente faserverbundgerechte Konstruktion, die bereits die Fertigungstechnologie von Beginn an mitberücksichtigt, Trockengelege, eine einfache Werkzeugstrategie und die Konzentration auf Infusionsverfahren sind unter anderem wichtige Stellhebel.

Nach Beendigung der Machbarkeitsstudie und der Festlegung der Strategie wurde 2008 die Roding Automobile GmbH gegründet. Direkt nach der Firmengründung begann die Entwicklung des Roding Roadsters. So wurde eine modulare CFK Fahrzeugarchitektur entwickelt. Riedl erläutert: „Das tolle an der Plattform ist, dass sie sowohl für einen konventionellen Antriebsstrang mit Verbrennungsmotor, als auch für einen batterieelektrischen Antrieb geeignet ist".
Die Konzeptstudie wurde 2009 auf der IAA in Frankfurt zum ersten Mal vorgestellt. „Hier ist einiges an Marktfeedback auf uns zugekommen", erinnert sich Maier. „Natürlich war bei dieser Konzeptstudie auch die technische Absicherung wichtig. Denn was auf Papier funktioniert, funktioniert ja leider nicht immer direkt in der Realität. Wie bei der Formula Student: testen ist einer der wichtigsten Punkte bei der Entwicklung eines neuen Autos." Die gesammelten Erkenntnisse aus den Tests wurden bei der Entwicklung des Serien Roding Roadsters umgesetzt. Dieser feierte seine Weltpremiere 2012 beim Genfer Automobilsalon.

Source / Quelle: Roding Automobile GmbH

The Formula Student Network

More than a sports car manufacturer, Roding Automobile is a technology company that specialises in the development of economical lightweight structures. Furthermore they advise automotive industry on the subject of structural topology and part manufacturing and offer engineering services. All in all that is a lot of work, "and therefore we try to maintain close contact with Formula Student teams", says Maier, "to recruit new employees, as well as interns, graduate or Ph.D. students."

In summary one can say that the founders of Roding Automobile could put their Formula Student experience to good use. "As well in constructing our Formula Student cars as during the events, we were able to make valuable contacts within automotive industry. This helped us in building a strong network", confirms Maier.

Formula Student functions as a pool for new, high-qualified and already experienced employees. At the same time it supports the students in gaining required knowhow and confidence in their own abilities. It is therefore to be expected that there will be more start-ups founded by Formula Student alumni in the years to come.

Source / Quelle: Roding Automobile GmbH

Das Formula Student Netzwerk

Mehr noch als eine kleine Sportwagenmanufaktur ist Roding Automobile ein Technologieunternehmen, das sich auf die Entwicklung von wirtschaftlichen Leichtbaustrukturen spezialisiert hat. So beraten sie die Automobilindustrie zum Thema Strukturauslegung und Bauteilfertigung und liefern weitere Ingenieurdienstleistungen. Dies macht viel Arbeit, „und deswegen versuchen wir den engen Kontakt zu den Formula Student Teams für die Rekrutierung von neuen Mitarbeitern, Semesterstudenten, Diplomanden oder Doktoranden zu nutzen", so Maier.

Die Formula Student Erfahrung hat den Gründern von Roding Automobile einiges gebracht. „Sowohl bei der Konstruktion unserer Formula Student Fahrzeuge, als auf dem Events selbst, haben wir wertvolle Kontakte in der Automobilindustrie knüpfen können. Auf diese Weise konnten wir ein starkes Netzwerk aufbauen", bestätigt Maier.

Die Formula Student fungiert als Pool für neue hoch-qualifizierte und bereits erfahrene Mitarbeiter für die Unternehmen die Automobil und Zulieferindustrie. Gleichzeitig unterstützt sie die Studenten bei der Gewinnung des notwendigen Know-how und der Entwicklung von Selbstvertrauen in die eigene Leistung. Es kann also durchaus sein, dass es in den kommenden Jahren noch weitere Start-Ups von Formula Student Alumni geben wird.

Technical data of the Roding Roadster:

Vehicle concept:	2-seater mid-engine roadster
Chassis:	self-supporting CFRP-Monocoque, Front- and rear hybrid carbon-aluminium construction
Length:	4106 mm
Width:	2024 mm
Height:	1190 mm
Wheelbase:	2495 mm
Engine:	BMW 6 cylinder petrol engine with turbocharger
Engine volume:	2995 cm3
Max. power:	235 kW (320 PS)
Max. torque:	450 Nm (1300 – 4500 rev/min)
Traction:	rear
Transmission:	6 speed manual gearbox
Engine placement:	rear-middle,transverse
Empty weight:	ca. 950 kg
Luggage space	220 l
Tank volume:	55 l
Top speed:	280 km/h
Acceleration:	3,9 s (0 - 100 km/h)
CO2-Emission:	198 g/km

Technische Daten des Roding Roadster:

Fahrzeugkonzept:	2-sitziger Mittelmotor Roadster
Karosserie:	Tragendes CFK-Monocoque, Vorder- und Hinterwagen in Carbon-Alumninium-Hybrid-bauweise
Länge:	4106 mm
Breite:	2024 mm
Höhe:	1190 mm
Radstand:	2495 mm
Motor:	BMW 6 Zylinder Ottomotor mit Turbolader
Hubraum:	2995 cm3
Max. Leistung:	235 kW (320 PS)
Max. Drehmoment:	450 Nm (1300 – 4500 U/min)
Antrieb:	Heck
Getriebe:	6 Gang Handschaltgetriebe
Antriebsanordnung:	Heck-Mittel in Querausrichtung
Leergewicht:	ca. 950 kg
Kofferraum:	220 l
Tankvolumen:	55 l
Höchstgeschwindigkeit:	280 km/h
Beschleunigung:	3,9 s (0 - 100 km/h)
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What do the Formula Student teams from Stuttgart, Braunschweig, Munich, Karlsruhe, Graz, Nuremberg-Erlangen, and Ravensburg have in common?

a) They really live the FSG spirit

b) They all go for FSG victory

c) They are "powered" by Tognum

d) All answers are correct

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THE PERSPECTIVE OF A DESIGN JUDGE
AUS DER PERSPEKTIVE EINES JUROREN

An article by Dr.-Ing. Norbert Dölle
Ein Artikel von Dr.-Ing. Norbert Dölle

The big German automotive companies advertise with slogans like “the best or nothing”, “truth in engineering“ or “the ultimate driving machine”. One might ask, what this has to do with Formula Student. After all, no comfortable luxury cars are engineered and built for the competition. Most team members have the attitude to search for new technical solutions and not to settle for less than the best in their blood. In the end all engineers and designers are connected by one thing: the fascination for their product, whether it is a luxury car or a race car. The joy of driving may be obvious in this, for students and judges alike.

Time and again we chassis engineers are asked for the best solution of the load-bearing structure of the car, a fibre-reinforced composite monocoque with or without a honeycomb core, an aluminium sandwich etc. and whether one can still win with a space frame structure. There is no overall right answer to those questions. It is obvious that you can still build a competitive car with a steel space frame structure. Not in the last place does a space frame offer the excellent possibility to tailor the structure to the loads applied to it and to optimise it with relatively simple techniques. The best structure can only be determined by considering a broad range of evaluation criteria as function, weight and cost.
Weight plays an especially important role, both from a functional point of view as well as value for the customer, because lightweight design is a prerequisite for dynamic and agile behaviour of a car. Even more important is the evalu-

Mit Hochglanz-Slogans wie „Das Beste oder Nichts“, „Vorsprung durch Technik“ oder „Freude am Fahren“ werben große deutsche Automobilkonzerne. Was hat das alles mit der Formula Student zu tun? Schließlich werden da keine komfortablen Großraumlimousinen konstruiert und gebaut. Neue technische Lösungen zu suchen und nur mit der besten zufrieden zu sein, das liegt in den Genen der meisten Team Mitglieder. Am Ende verbindet alle Ingenieure und Entwickler eins: die Begeisterung für ihr Produkt, egal ob es eine Großraumlimousine oder ein Rennwagen ist. Und der Spaß am Fahren versteht sich von selbst. Sowohl bei den Studenten als auch den Juroren.

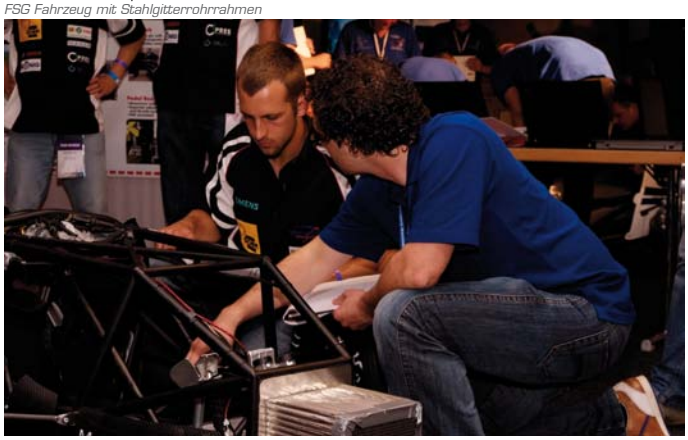
Wir Rohbau-Juroren werden immer wieder gefragt, welches die beste Bauform für die tragende Struktur ist, Stahlrahmenkonstruktion, FVK-Monocoque mit oder ohne Wabenkern, Aluminium-Sandwich, etc. und ob man mit einer Rahmenstruktur noch gewinnen kann. Eine allgemein gültige Aussage dazu gibt es nicht. Klar ist, dass auch mit einer Stahlrahmenstruktur noch ein konkurrenzfähiges Auto gebaut werden kann. Schließlich bietet die Rahmenbauweise eine hervorragende Möglichkeit, die Konstruktion belastungsgerecht auszulegen und mit vergleichsweise einfachen Mitteln zu optimieren. Die Auswahl einer bestmöglichen Bauweise lässt sich nur unter Berücksichtigung verschiedenster Bewertungskriterien wie unter anderem Funktion, Gewicht und Kosten treffen.
Aus Sicht der Funktion und des Kundennutzens ist das Ge-

Space Frame & Monocoque

In their requirements of the passenger cabin of a race car the rules of Formula Student Germany are mainly geared to the space frame. The allowable pipe thickness, the material gauges as well as geometries are specified. Teams that want to build, for instance, a fibre-reinforced composite monocoque, must prove that their structure fulfills the minimum stiffness and strength requirements.
What is the better choice depends on the design philosophy and know-how of a team. Both of the cars shown made it into the design finals last year.

Das Regelwerk der Formula Student Germany orientiert sich bei den Anforderungen an die Fahrgastzelle eines Rennwagens vor allem an der Rahmenstruktur, auch Spaceframe genannt. Die erlaubte Rohrdicke, das Material sowie die Geometrie sind vorgegeben. Teams die ein Chassis beispielsweise aus FVK (Faserverbundkunststoff) bauen möchten, müssen beweisen, dass die Struktur die Mindestanforderungen von Steifigkeit und Festigkeit erfüllt.
Was die bessere Wahl ist, hängt von der Entwurfsphilosophie und dem Know-how eines Teams ab. Die beiden gezeigten Autos haben es letztes Jahr bis in die Design Finals geschafft.

FSG car with steel space frame
FSG Fahrzeug mit Stahlgitterrohrrahmen



FSG car with monocoque
FSG Fahrzeug mit Monocoque

ation of functional characteristics like torsional and bending stiffness or the lightweight grade, which relates torsional stiffness with the mass and geometry of the vehicle.
Apart from the figures that are listed in the documentation, the presentation during the design review plays a decisive role. First and foremost, students should be able to explain and motivate their boundary conditions, design philosophy and above all their design decisions. In my view, after the brief presentation of the overall team and the allocation of those responsible for individual areas, a short presentation with pictures, sample components, the essential calculations and simulations is the best introduction to the design competition. The subsequent professional discussion is important. Here, the judges can see very quickly who has a thorough understanding of the construction and understands the context for design, sizing and subsequent production.
Judges are reluctant to hear statements like: "we did so exactly the same last year," or, "we did not have time for that". Of course, it is obvious that it is hard to improve on a top ranking car from last year, but also there one can explain that during redesign for changed boundary conditions a similar technical solution was selected.
Sometimes the question is asked, whether it pays off for a student to participate in a Formula Student team. From my own experience I can only say, that the students we could recruit at Formula Student events for an internship or their graduation thesis, belonged to the top performers. And without exception they all found a job within an automotive environment. The chance to gain small-scale vehicle know-how whilst studying from the very first concept up to the final product across all disciplines is certainly rare. Whether it makes sense to invest a year in Formula Student, everyone should decide for themselves. A combination with an internship, a study or thesis is optimal from my point of view.

For me as a design judge, it is fascinating again and again to see the passion and commitment that students put into their vehicles and that under the most varying boundary conditions. Of course, it is very easy to see which teams receive top support form their university and sponsors and which need to get by with less technical and financial resources. However, having the best equipment is no guarantee for victory. In the end engineering knowledge, team spirit and the ability to explain their own technical solutions to the judges and to inspire them are the things that count in the design competition. That is what makes the event so attractive.

Source / Quelle: Norbert Dölle

About the author:
Dr.-Ing. Norbert Dölle studied mechanical engineering at Clausthal-Zellerfeld and Paderborn. In 2001 he received his doctorate in Paderborn in the simulation of mechanical joining processes. Subsequently, at Femutec Engineering Company, Hamburg, he was responsible for R&D projects and joining technology. Since 2004 he works for Daimler AG in Ulm and Sindelfingen. Nowadays, in Daimler Research and Advanced Engineering, he is responsible for the development of new simulation methods and the evaluation of the preliminary development of the functions of stiffness, strength, durability and NVH.

wicht natürlich von besonderer Bedeutung. Schließlich ist der Leichtbau Enabler für Dynamik und Agilität. Umso entscheidender sind für die Bewertung der Konstruktion Funktionswerte wie z. B. die Torsions- und die Biegesteifigkeit oder die Leichtbaugüte, welche die Torsionssteifigkeit in Beziehung zur Masse und der Geometrie setzt.
Neben den reinen Kennwerten, die in der Dokumentation stehen, ist die Präsentation im Design Review von entscheidender Bedeutung. Das ausschlaggebende in diesem Wettbewerb ist, dass die Teams ihre Randbedingungen, Auslegungsphilosophien und vor allem ihre Entscheidungen erläutern und begründen können. Nach der kurzen Gesamtvorstellung des Teams und der Zuordnung der Verantwortlichen für die einzelnen Teilbereiche, ist aus meiner Sicht eine kurze Präsentation mit Bildern, Musterbauteilen, den wesentlichen Berechnungen und Simulationen der beste Einstieg in den Design-Wettbewerb. Wichtig ist die anschließende Fachdiskussion. Dabei erkennen die Juroren sehr schnell, wer wie tief in der Konstruktion steckt und die Zusammenhänge für die Auslegung, Dimensionierung und die anschließende Fertigung verstanden hat.
Statements wie „das haben die im letzten Jahr schon genau so gemacht" oder „dazu war keine Zeit" hören die Juroren nur ungern. Natürlich ist klar, dass ein Top-Auto aus dem letzten Jahr nur schwer verbessert werden kann, aber auch dabei kann erläutert werden, dass beim Re-Design unter den veränderten Randbedingungen eine vergleichbare technische Lösung herausgekommen ist.
Manchmal wird die Frage gestellt, ob sich der Einsatz der Studenten in den FSG-Teams lohnt. Ich kann aus meiner Erfahrung nur sagen, dass die Studenten, die wir aus den Formula Student Events heraus für eine Abschlussarbeit oder ein Praktikum gewinnen konnten, sicher zu den Top-Performern gehört haben. Und alle sind später ohne Probleme im Automobilumfeld untergekommen. Die Chance, während des Studiums in kleinem Maßstab Fahrzeug-Know-how vom ersten Pinselstrich bis hin zur fertigen Konstruktion über alle Gewerke hinweg sammeln zu können, gibt es sicherlich selten. Ob es sinnvoll ist, ein oder zwei Semester nur in die Formula Student zu investieren, muss jeder für sich selbst entscheiden. Eine Kombination mit einem Praktikum, einer Studien- oder Abschlussarbeit ist aus meiner Sicht optimal.

Für mich als Juror im Design-Event ist faszinierend, immer wieder zu sehen, mit welcher Leidenschaft und mit welchem Einsatz die Studenten an Ihren Fahrzeugen arbeiten. Und das unter den unterschiedlichsten Randbedingungen. Natürlich wird sehr schnell deutlich, welche Teams mit Top-Unterstützung von der Hochschule und von Sponsoren an den Start gehen und welche mit weniger technischen und finanziellen Mitteln auskommen müssen. Doch die beste Ausstattung ist kein Garant für den Sieg. Am Ende zählen im Design-Wettbewerb Ingenieurwissen, Teamgeist und die Fähigkeit, den Juroren die eigene technische Lösung zu erläutern und sie dafür begeistern zu können. Das macht den Reiz des Events aus.

Über den Autor:
Dr.-Ing. Norbert Dölle studierte Maschinenbau in Clausthal-Zellerfeld und Paderborn. 2001 promovierte er in Paderborn im Bereich Simulation mechanischer Fügeprozesse. Anschließend war er bei der Femutec Ingenieurgesellschaft, Hamburg, für die FSE- und Fügetechnik-Projekte zuständig. Seit 2004 ist er für die Daimler AG in Ulm und Sindelfingen tätig. Heute ist er in der Daimler Forschung und Vorentwicklung für die Entwicklung neuer Simulationsmethoden und die Bewertung der Vorentwicklungsprojekte für die Funktionen Steifigkeit, Festigkeit, Betriebsfestigkeit und NVH zuständig.

FSG 2011 - IMPRESSIONS
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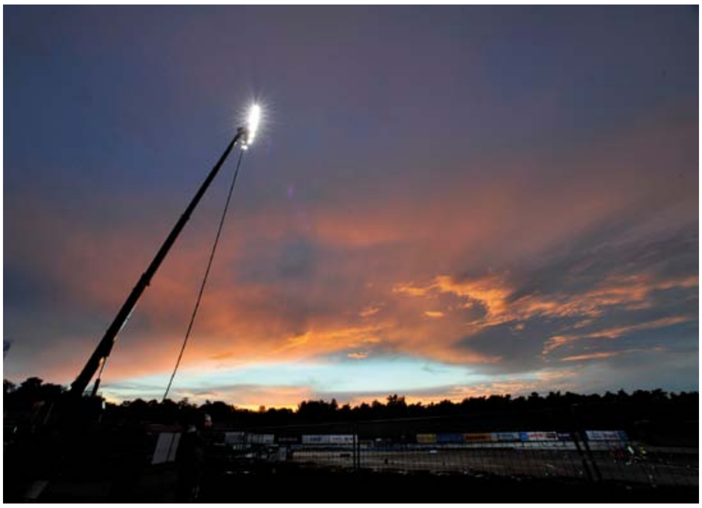

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MAHLE
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Last Lap






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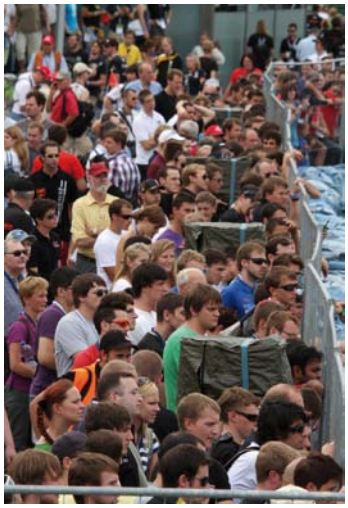

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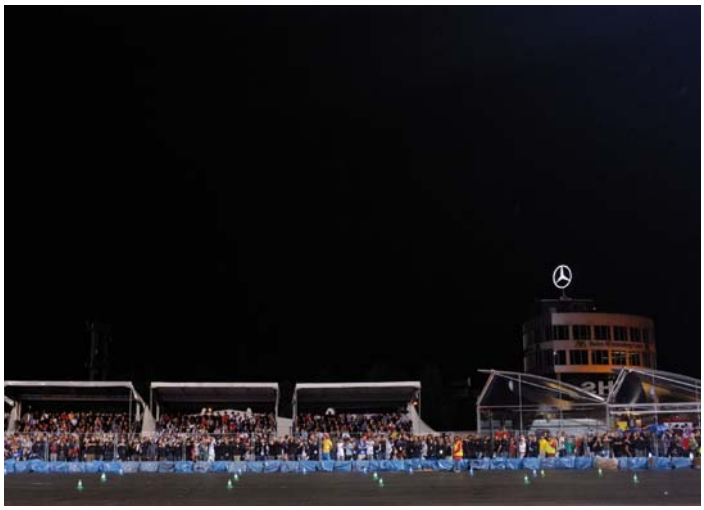

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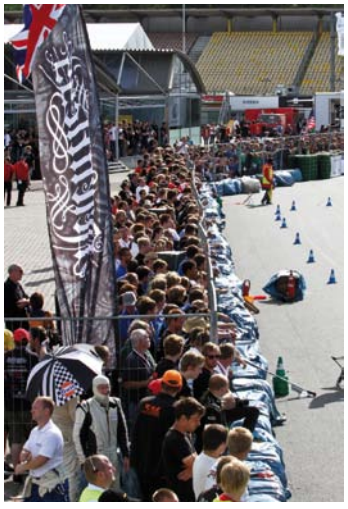








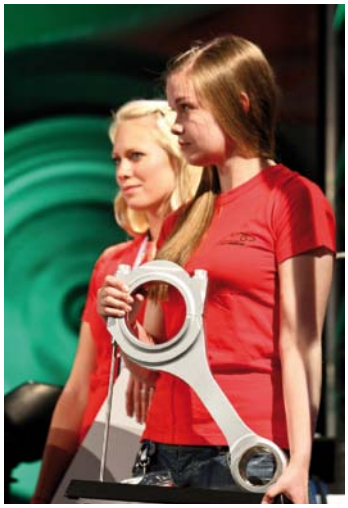






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More pictures on: media.formulastudent.de

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Editorial and Design
Johanna Scheider
scheider@formulastudent.de
Ann–Christin Bartölke
bartoelke@formulastudent.de

Translation
Johanna Scheider
Ann-Christin Bartölke
Julien van Campen

Proofreading
Johanna Scheider
Ann–Christin Bartölke
Julien van Campen
Lena Töppich

Photos*
Formula Student Germany:
Ingo Reichmann
Kimmo Hirvonen
Klaus Bergmann
Harald Almonat
Ole Kroeger
Julien van Campen
* if without reference; excluding team profiles

Team profiles
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Advertising
mazur | events + media
Daniel Mazur
Niedersachsenstr. 8
D-30853 Langenhagen
Mobile: +49 (175) 5085001
Phone: +49 (511) 2351-8890
Fax: -8891
mazur@formulastudent.de

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www.formulastudent.de
contact@formulastudent.de

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Johanna Scheider
scheider@formulastudent.de
Ann–Christin Bartölke
bartoelke@formulastudent.de

Übersetzung
Johanna Scheider
Ann-Christin Bartölke
Julien van Campen

Korrektur
Johanna Scheider
Ann–Christin Bartölke
Julien van Campen
Lena Töppich

Fotos*
Formula Student Germany:
Ingo Reichmann
Kimmo Hirvonen
Klaus Bergmann
Harald Almonat
Ole Kröger
Julien van Campen
* wenn ohne Angabe; Teamprofile ausgenommen

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Anzeigen
mazur | events + media
Daniel Mazur
Niedersachsenstr. 8
D-30853 Langenhagen
Mobile: +49 (175) 5085001
Phone: +49 (511) 2351-8890
Fax: -8891
mazur@formulastudent.de

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80	Latacunga ESPE	Ecuador	30	69
82	Cambridge U	United Kingdom	74	58
83	Cottbus TU	Germany	4	59
85	Padova U	Italy	47	79
86	Madrid TU	Spain	78	71
88	Beijing IT	China	18	55
90	Antwerpen KdG	Belgium	56	54
92	Oxford Brookes U	United Kingdom	35	78
94	Esslingen UAS	Germany	6	61
96	Mittweida UAS	Germany	69	74
97	Schweinfurt UAS	Germany	60	85
99	Aachen RWTH	Germany	64	52
101	Milano PT	Italy	72	73
106	Hannover UAS	Germany	28	64
107	Graz UAS	Austria	13	63
111	Tampere UAS	Finland	44	87
115	Nevers ISAT	France	37	78
116	Kempten UAS	Germany	22	68
119	Viterbo U Tuscia	Italy	3	90

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PARTICIPATING FSE TEAMS 2012
TEILNEHMENDE FSE TEAMS 2012

Car	City / University	Country	Pit	Page
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E4	München TU	Germany	E5	103
E11	Ravensburg DHBW	Germany	E22	105
E12	Köln UAS	Germany	E24	101
E14	Deggendorf UAS	Germany	E19	96
E17	Augsburg UAS	Germany	E8	94
E20	Bayreuth U	Germany	E21	95
E21	Karlsruhe KIT	Germany	E15	100
E22	Stuttgart DHBW	Germany	E7	107
E23	Hamburg TU	Germany	E10	99
E25	Darmstadt TU	Germany	E16	95
E26	Stuttgart U	Germany	E1	108
E31	Odense SDU	Denmark	E13	104
E32	München UAS	Germany	E14	103
E33	Zürich ETH	Switzerland	E6	109
E34	Ingolstadt UAS	Germany	E17	99

Car	City / University	Country	Pit	Page
E37	Sint-Katelijne-Waver DNI	Belgium	E28	106
E40	Eindhoven TU	Netherlands	E26	98
E41	San Sebastián TECNUN	Spain	E30	106
E44	Dresden TU	Germany	E18	97
E54	Barcelona UPC	Spain	E9	94
E58	Leuven Group T	Belgium	E32	102
E62	Regensburg UAS	Germany	E20	105
E64	Kaiserslautern TU	Germany	E31	100
E65	Wiesbaden UAS	Germany	E29	108
E67	Osnabrück UAS	Germany	E4	104
E69	Diepholz UAS	Germany	E2	97
E71	Stockholm KTH	Sweden	E3	107
E76	Freiberg TU	Germany	E23	98
E85	Montréal Poly	Canada	E11	102
E96	Zwickau UAS	Germany	E25	109
E97	Landshut UAS	Germany	E27	101

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Ulrike Krafft
ESP-Applicator
Bosch Engineering
Racing Driver
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AACHEN
RWTH Aachen University

Car 99 Pit 64

Germany

Ecurie Aix - innovation and passion. A hybrid team, building combustion and electric cars, with over 50 exceptional and passionate students, Ecurie Aix is truly unique. As one of the first European teams to compete in Formula Student, Ecurie Aix has adopted a worldwide exclusive CVT (Continuously Variable Transmission), is the only team that has conducted crash tests on their monocoque and additionally uses a unique multi-link-front axis with a mono-shock-absorber. This year, the eac09 will premiere at the FSG event with a full monocoque, a distinctively designed intake and exhaust. Our engine will be combined with our own electro-hydraulic shift system and high professional new ECU (Engine Control Unit). But this is only possible with our members and partners. So we would like to thank all our supporters, enabling our entire team to participate once again with our ninth combustion car.

FRAME CONSTRUCTION CFRP Monocoque with tubular steel roll bars

MATERIAL CFRP

OVERALL L / W / H (mm) 2823 / 1440 / 1059

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 123 / 150

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring, damper

TYRES (Fr / Rr) 20.5x7, Hoosier R25B / 20.5x7, Hoosier R25B

WHEELS (Fr / Rr) 7x13, -25mm offset, 1pc Al Rim/7x13, -25mm offset, 1pc Al Rim

ENGINE Kawasaki ZX600R-9F

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.3:1

FUEL SYSTEM Student designed intake fuel injection. Controlled with a Bosch MS5.0 ECU

FUEL RON98

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 10500

DRIVE TYPE chain

DIFFERENTIAL Drechsler clutch pack limited slip, 46 Nm preload

COOLING side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4- Disk system, floating, steel, hub mounted rotors, four piston fixed mounted callipers

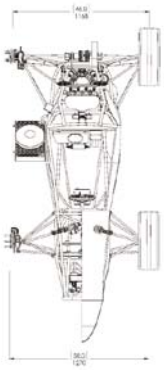
ELECTRONICS DDU7 Driver Interface, Fuse Box. CAN to WLAN with custom build software

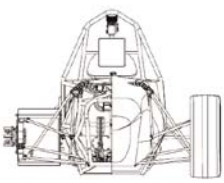
AKRON
University of Akron

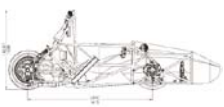
Car 18 Pit 65

United States

In 1999 Zips racing scored their first championship at an SAE event. Since then the team has been working hard to find their way back to the podium in Michigan. 2011 proved to be a huge success for Zips Racing. Having the opportunity to compete in the United States, Austria, and Germany the team has gained a vast amount of knowledge, which has been carried over to the 2012 season. With high exceptions and passion for 2012, the team has set their sights on placing in the top 5 overall at all competitions they compete in. See you at the starting line! Special thanks to all of the 2012 Zips Racing sponsors, we couldn't have done it without you!!!







FRAME CONSTRUCTION Steel Tube Chassis

MATERIAL 4130 Chromoly

OVERALL L / W / H (mm) 2400 / 1448 / 1038

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1613 / 1270 / 1168

WEIGHT WITH 68kg DRIVER (Fr / Rr) 111 / 142

SUSPENSION Double unequal/ non parallel wishbone. Pushrod actuated coilovers

TYRES (Fr / Rr) Goodyear

WHEELS (Fr / Rr) 6.5 inch wide 1 pc Mg Rim, 38.1mm pos offset

ENGINE Yamaha R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 43mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.8:1

FUEL SYSTEM

FUEL Student designed + built with sequential injection

MAX POWER DESIGN (rpm) 12500

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Salisbury Limited Slip

DIFFERENTIAL Drexler Formula Student V3 Differential

COOLING Water Cooled

BRAKE SYSTEM 4 disc system with ISR Radial Mounted Calipers

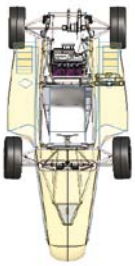
ELECTRONICS Motec Everything

ALEXANDRIA
University of Alexandria

Car 51 Pit 58

Egypt

The AUMotorsports Team 2012 car has been designed with an overall aim of simplicity and reasonable performance. Our former team took part in the FSG 2010 competition and they graduated the same year. Our team started 9 months after that with almost all freshmen; hence we've gained our knowledge through reading and analyzing the 2010 car. We've also used many parts from the old car as we already have the experience working with them. The car is designed with an overall weight goal of 280 kg including the 80 kg driver. The suspension system features adjustable camber, kingpin, castor and toe angles to test as many setups as we can. The data is to be analyzed and to help with the next year's car development. The engine is turbocharged and managed through Megasquirt module.



FRAME CONSTRUCTION Tublar steel spaceframe

MATERIAL 4130 ChroMoly Steel

OVERALL L / W / H (mm) 3015 / 1530 / 1238

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1300 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 111 / 167

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) Double unequal length A-Arm. Push rod actuated spring and damper

WHEELS (Fr / Rr) 6.0x13, 35 mm offset, 1 pc Advanti Al Rimm, front and rear

ENGINE 2007 Suzuki GSX-R600

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Open-source MegaSquirt system

FUEL 95 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE 6-speed sequential gearbox, #520 chain

DIFFERENTIAL Quaife torque sensing helical gear LSD

COOLING Side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4 disc system, Honda CBR 100 rear rotors with 220 mm OD and 115 mm ID, hub mounted

ELECTRONICS Electric shifting system, Megasquirt ignition and injection control module

AMBERG
University of Applied Sciences Amberg-Weiden

Car 23 Pit 11

Germany

The Running Snail Racing Team was established in August 2004. Since then, we have participated in several Formula Student events for 8 years. This year we will take part at the Formula Student Events in England, Germany and Hungary. The racing car RS12 – LC4 continues the concept of a Formula Student car by convincing through best dynamic ability as well as a high level of manufacturing quality. The RS12 is based on the results of the tests and competitions of our first seven cars. Our aim was again to reduce the weight, to keep our high quality standards, give the car a good drivability and reach better ergonomics for the drivers.

FRAME CONSTRUCTION Steel tube space frame with CFRP front monocoque and CFRP seat

MATERIAL E235, E355

OVERALL L / W / H (mm) 2649 / 1416 / 1135

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1590 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 107 / 119

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally orientated Oehlins spring/damper units

TYRES (Fr / Rr) 20.5x7-13 R25B Hoosier (front and rear)

WHEELS (Fr / Rr) 13

ENGINE 2011 KTM LC4 690

BORE / STROKE / CYLINDERS / DISPLACEMENT 102mm / 74.6mm / 1 cylinders / 610cc

COMPRESSION RATIO 14:1

FUEL SYSTEM Student designed / built fuel injection system using Bosch MS4 ECU

FUEL 100 octane petrol (Shell Optimax)

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 5000

DRIVE TYPE D.I.D 520 rollerchain

DIFFERENTIAL Drexler limited slip, lock-up value: 29%-88%

COOLING Single side pod mounted radiator with controlled electic waterpump, fan and coolant-oil heat exchang

BRAKE SYSTEM 4-Disk system, self developed rotors with 220 mm diameter, adjustabel brake balance

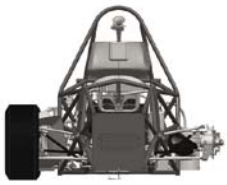
ELECTRONICS Car control unit, multifunctional steering wheel, electric shifting system, data logging

ANN ARBOR

University of Michigan - Ann Arbor

Car 8 Pit 32

United States



FRAME CONSTRUCTION steel space frame

MATERIAL 4130 chrome moly steel

OVERALL L / W / H (mm) 2478 / 1368 / 1052

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1168 / 1143

WEIGHT WITH 68kg DRIVER (Fr / Rr) 121 / 137

SUSPENSION Double unequal length A-Arms, pull/push rod actuated horizontally orientated spring and damper

TYRES (Fr / Rr) Hoosier 6.0/18.0X10 LCO

WHEELS (Fr / Rr) 6 inch wide, 1pc Al Rim, 50mm neg. offset

ENGINE Honda CBR 600 RR

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.2

FUEL SYSTEM Sequential injection Bosch EV12 injectors

FUEL 93 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain drive (520 chain)

DIFFERENTIAL 60/30 ramps on a 1.5 way Salisbury type limited slip diff. with clutch stacks

COOLING Side pod-mounted radiator (330mm x 254mm) with thermostatic controlled elec. fan

BRAKE SYSTEM Floating, HSLA-80, hat mounted, 203mm front, 184mm rear rotors with custom designed front calipers

ELECTRONICS Bosch MS4.4 Sport ECU and C40 logger, 900 MHz unidirectional telemetry, 10-way traction control

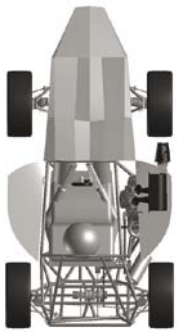
MRacing's 26th car, Princess, represents the team's 4th consecutive entry into Formula Student Germany. Each member's crazy passion for her has led to a car worthy of the block M. This 4-cylinder space frame car has already finished 5th at Formula SAE Michigan and represents the continued success of the team out of Ann Arbor, Michigan. A focus on reliability and extensive testing has made MRacing a formidable team, finishing in the top 10 in its last 7 competitions. The team would like to thank its great network of sponsors and contributors who have made the team's goals a reality.

ANTWERPEN

Karel de Grote University College

Car 90 Pit 56

Belgium



FRAME CONSTRUCTION Tubular Spaceframe

MATERIAL Steel - cold draw, seemless precision tube E355

OVERALL L / W / H (mm) 2306 / 1300 / 1200

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1267 / 1267

WEIGHT WITH 68kg DRIVER (Fr / Rr) 135 / 165

SUSPENSION Double unequal length A-Arm. Direct acting spring and damper

TYRES (Fr / Rr) 16/53-13 Michelin S6B

WHEELS (Fr / Rr) 13 inch Keizer Wheels (Magnesium)

ENGINE Aprilia RXV 550

BORE / STROKE / CYLINDERS / DISPLACEMENT 80mmmm / 55mmmm / 2 cylinders / 550cc

COMPRESSION RATIO 16:1

FUEL SYSTEM Motec, Bosh injectors, selfbuilt system

FUEL E-85

MAX POWER DESIGN (rpm) 7000

MAX TORQUE DESIGN (rpm) 5000

DRIVE TYPE 2 chain drives

DIFFERENTIAL Limited Slip differential Drexler FSAE

COOLING Stock Aprilia RXV radiators equiped with fans

BRAKE SYSTEM 4 Disk system, self developed, 220mm disks (fr and rr)

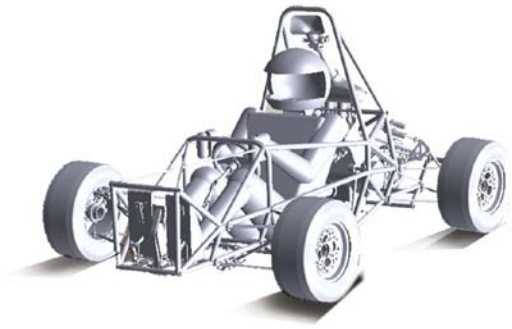
ELECTRONICS Electropneumatic shifting system, gear indicator and LED's on dashboard

We are a motivated Belgian team with approximately 20 students from different backgrounds but all with an affinity for Racing and cars in general. The concept we chose to further develop is our „Side Engine". The concept was developed by last year's team and we chose to further develop and refine this concept. In this setup we put the motor next to the driver to centralise all mass, giving our car low inertial properties and good handling in the corners. This setup also helps us in creating a relatively short car.

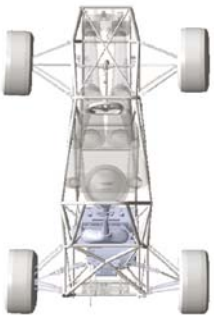
BEIJING
Beijing Institute of Technology

Car 88 Pit 18

China



BIT Formula Racing Team was founded in June,2009, with more than 50 undergraduates and graduates who are interested in automobile technology. Our team holds the concept of passion, cooperation and innovation, aiming at improving research and creative abilities of college students. During the last two years, we designed and manufactured our first and second car with excellent performance in each competition. After obtaining the first championship of Formula Student China(FSC), BIT racing team achieved another peak at the 9th JSAE, winning the first place in acceleration, ranking 19th in general among 75 teams. The second generation of Black Shark brought us another championship in FSC 2011.



FRAME CONSTRUCTION 4130 tubular space frame

MATERIAL 4130 tubular steel

OVERALL L / W / H (mm) 2065 / 1430 / 1080

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1500 / 1255 / 1280

WEIGHT WITH 68kg DRIVER (Fr / Rr) 122 / 151

SUSPENSION double wishbone

TYRES (Fr / Rr) 152.4*66 R10, Hoosier LC0

WHEELS (Fr / Rr) 6*10 25.4 offset, 3 pc Al Rim

ENGINE Honda CBR600F4i

BORE / STROKE / CYLINDERS / DISPLACEMENT
67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM fuel injection

FUEL 98 octane

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 7500

DRIVE TYPE chain drive

DIFFERENTIAL Clutch pack limited slip, 162Nm preload, 1.5 bias ratio

COOLING side mounted

BRAKE SYSTEM 4-Disk system, adjustable brake balance

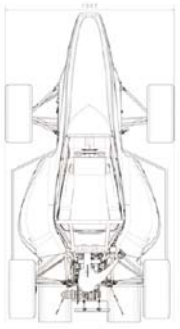
ELECTRONICS Multifunctional Steering Wheel

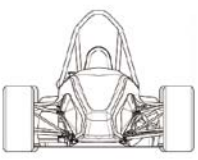
BERLIN
Technische Universität Berlin

Car 55 Pit 52

Germany

In this season's racing car, the FT2012, we changed our motor concept to a one-cylinder motor, forcing a complete new car design. Still, we have got nothing to hide: our aim was to sustain our high quality in manufacturing and the transparent bodywork, allowing spectators to have a look at the car's technology. Our team was committed and worked passionately to reach an ambitious goal. Again, we are excited to be part of the FSG and hope it'll be the lucky number seven!





FRAME CONSTRUCTION Tubular space frame

MATERIAL Docol Roll 800 steel round tubing

OVERALL L / W / H (mm) 2780 / 1516 / 1128

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1578 / 1277 / 1249

WEIGHT WITH 68kg DRIVER (Fr / Rr) 114 / 140

SUSPENSION Double unequal length carbon tube A-Arm. Pushrod Rr Pullrod Fr. Actuated 4-way-adjustable dampers

TYRES (Fr / Rr) Hoosier R25B 20.0x7.5-13

WHEELS (Fr / Rr) 7.0x13 OZ Racing Aluminium Rims

ENGINE 2007 BMW G 450 X

BORE / STROKE / CYLINDERS / DISPLACEMENT
98mm / 59.6mm / 1 cylinders / 450cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM ECU with sequential injection and ignition. Adhesive bonded fuel tank

FUEL RON98

MAX POWER DESIGN (rpm) 10800

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Chain drive

DIFFERENTIAL Drexler differential, limited slip.

COOLING One side pod mounted radiator with water temperature controlled electric fan

BRAKE SYSTEM Floating discs, 230mm (front) & 212mm (rear) diameter, 4 callipers, adjustable brake balance

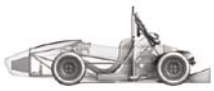
ELECTRONICS Multifunctional steering wheel, electropneumatic shifting system

BERLIN

University of Applied Sciences Berlin

Car 38 Pit 23

Germany



FRAME CONSTRUCTION tubular space frame

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2951 / 1377 / 1217

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1992 / 1195 / 1163

WEIGHT WITH 68kg DRIVER (Fr / Rr) 143 / 168

SUSPENSION Unequal length A-arms, push rod actuated Sachs Damper

TYRES (Fr / Rr) Dunlop 6x13

WHEELS (Fr / Rr) 6.5x13, -13mm offset, 2pc Al Rim / 7.5x13, -18mm offset, 2pc Al Rim

ENGINE Modified Yamaha R6 (2005)

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 600cc

COMPRESSION RATIO 14.2:1

FUEL SYSTEM AME Motronic 4.8 with sequential injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11600

MAX TORQUE DESIGN (rpm) 10500

DRIVE TYPE Chain drive

DIFFERENTIAL Drexler slip limited differential

COOLING side mounted radiator and 225mm electric fan

BRAKE SYSTEM 4 disc system, ISR Calipers, APRacing Master Cylinders, adjustable brake balance

ELECTRONICS live telemetry system, electronical shift and clutch actuation, selfdesigned display

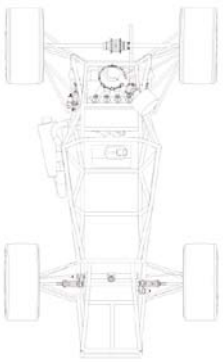
And the winner of the Sportsmanship Award of the Formula Student Germany 2011 is…UAS Berlin! Founded in 2005, HTW Motorsport is entering its 6th successful year of competition in Formula Student Germany and its 1st in Hungary. The team can rely on more than 40 students from a variety of majors so the project lives on a diversity of skills and ideas. Together it was possible to design and build the new BRC12 [Berlin Race Car 12] in keeping with our motto 'keep it simple!'. It's equipped with highly optimized lightweight construction, improved energy management and ergonomically modified seat, pedals and steering wheel position. In addition to that we assembled our race car with an aggressive but also elegant appearance. With the BRC12 and the incomparable team spirit HTW Motorsport is looking forward to a favorable season! Finally, we would like to express our gratitude to all our sponsors and supporters who make our project become reality!

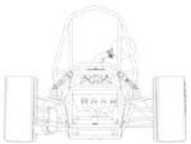
BIRMINGHAM

University of Birmingham

Car 77 Pit 51

United Kingdom





FRAME CONSTRUCTION One piece tubular spaceframe

MATERIAL Mild and T45 steel

OVERALL L / W / H (mm) 2555 / 1410 / 1068

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1570 / 1220 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 127 / 158

SUSPENSION Double unequal length A-Arm. Push rod actuated spring with 2 way adjustable KAZ Tech Dampers

TYRES (Fr / Rr) 20x7/7.5-13 Hoosier FSAE Tyre

WHEELS (Fr / Rr) Braid Formrace 13

ENGINE 2005/Yamaha YZF-R6 5SL, four stroke in line four

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.6mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.4:1

FUEL SYSTEM Bespoke sequential fuel injection, McLaren TAG400 ECU

FUEL 99 RON unleaded

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Chain drive, standard sequential gearbox

DIFFERENTIAL Drexler FSAE Limited Slip Differential

COOLING Side-mounted radiator and 178mm electric fan

BRAKE SYSTEM 4 disc system, floating rotors, adjustable brake balance and AP Racing master cylinders and calipers

ELECTRONICS Full autosport spec loom, electropneumatic shifting system, with live-telemetry and data logging

2012 sees UBRacing make their 15th entry into Formula Student. This year the team aims to improve on its overall result at FS compared to previous years. UBRacing are delighted to offer University of Birmingham students, from all years, the chance to take part in Formula Student and pride themselves in both the practical and professional development of team members. For 2012, the primary design objective was to design a car capable of being the most competitive UK entry and finishing top 10 overall at both Formula Student UK and Germany. For the first time, the team was able to make use of Tire Test Consortium data to drive specific suspension design decisions with the goal of getting the full performance potential from our chosen tyres. In conjunction with the support of the University of Birmingham and our sponsors, the team has been able to focus on the time management of the project and also preparation for the static events.

BOCHUM
Ruhr University Bochum

Car 25 Pit 29

Germany

Since last season the team of RUB Motorsport has tripled in size, so that the number of club members is increased up to 25 students. As there has been substantial progress in several areas such as improved cooperation in manufacturing, we worked out to unify high quality materials and smart constructions. Our team members are highly motivated to put the finishing touches to our next generation car. We look forward to present the RUBin 2012 this summer at FSA and FSG. Moreover the cooperation with the Ruhr-University Bochum is growing more and more. In the summer term 2012 the mechanical engineering department offers a seminar held by RUB Motorsport. This seminar deals with the CAD tool "Solid Works". Further possibilities for students to incorporate there interest for motorsport in there curriculum are for example thesis. In this case experienced staff members provide support and assist students on there way. Hopefully, our hard work will result in successful races this season.

FRAME CONSTRUCTION Front and rear Tubular space frame

MATERIAL 25CrMo4 25mm OD

OVERALL L / W / H (mm) 2850 / 1450 / 1080

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1700 / 1220 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 142 / 181

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizo

TYRES (Fr / Rr) 205x55 R13 Hoosier R25B

WHEELS (Fr / Rr) 8x13, 20mm offset, Al Rim

ENGINE 2005 Suzuki GSX-R K5

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Modified Suzuki GSX-R Injection system

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 1300

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE Original Suzuki G-Gear modiefied to MTA

DIFFERENTIAL Drexler Formula Student 2010 limited slip differential

COOLING rightside mounted radiator with electronic controlled electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 230mm diameter, adjustable brake balance. Brembo calipers

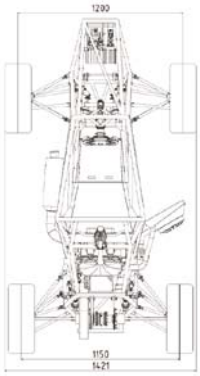
ELECTRONICS Multifunctional Steering Wheel, Electric Shifting System, Live-Telemetry System

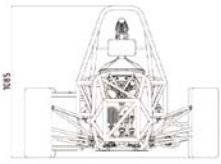
BUDAPEST
Budapest University of Technology and Economics

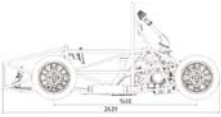
Car 40 Pit 38

Hungary

The BME Formula Racing Team was founded in 2008 at the TU Budapest. During our 5 years of existence we have built 5 gasoline and 2 electric powered racecars and more than 180 people have taken part in designing, procurement, production, building and have dealt with management, logistics and business affairs. Based on these experiences, the continuous development and testing of the past years we believe our team has grown up to the top teams. We have built and tuned a very fast racecar during testing so our target is to finish in the Top 10. The main objective of the design was to build a car that best fits the needs of a weekend car racer: be simple, ergonomic, easily maintainable and repairable, adjustable in many ways, beautiful in every single part from engineering aspects and be the fastest on track of course! Feel free to visit us in our pit garage to see and touch our racecar. We are happy to answer your questions!







FRAME CONSTRUCTION Steel tubular space frame

MATERIAL S 235 JR structural steel

OVERALL L / W / H (mm) 2731 / 1421 / 1085

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 143

SUSPENSION Double unequal length A-arm, pullrod/pushrod actuated

TYRES (Fr / Rr) Hoosier 20.5 x 7.0-13 / 20.5 x 7.0-13

WHEELS (Fr / Rr) Lightweight alloy 13 x 7 / 13 x 7, ET 22

ENGINE 2005 Yamaha R6 5SL

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Multi-point fuel injection, swirl tank

FUEL ROZ 100

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Chain

DIFFERENTIAL Drexler LSD

COOLING 1 side radiator with EWP

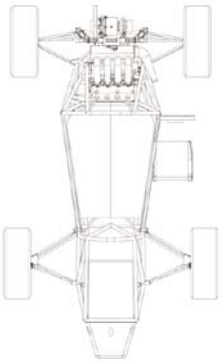
BRAKE SYSTEM F:4 piston calipers, R:2 piston calipers with proportioning valve, student designed rotors

ELECTRONICS 2D data logger, student designed: PDM, display, driver-communication system, CAN-Wi-Fi module

CAMBRIDGE
University of Cambridge

Car 82 Pit 74

United Kingdom



FRAME CONSTRUCTION Steel tubular spaceframe

MATERIAL Mild Steel, cold drawn seamless

OVERALL L / W / H (mm) 1164 / 2345 / 1251

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1568 / 1317 / 1215

WEIGHT WITH 68kg DRIVER (Fr / Rr) 142 / 166

SUSPENSION Double unequal length A-Arm. Pull rod actuated Risse spring / damper unites. Adj. Roll bar

TYRES (Fr / Rr) 20x7-13 A45 Avon / 20x7-13 A45 Avon

WHEELS (Fr / Rr) 6x13, 2 pc Braid Formrace, ET+18mm offset / 6x13, 2 pc Braid Formrace, ET +18mm

ENGINE 2004 Yamaha FZ6

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 600cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Student designed/built fuel injection with Megasquirt 2 ECU

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 8700

DRIVE TYPE 6 speed sequential gearbox

DIFFERENTIAL Torsen Limited Slip Differential, custom aluminium housing

COOLING Student designed radiator with electric fan

BRAKE SYSTEM 4-disc system, floating, hub mounted, 230mm OD, Brembo P32G (front) and Wilwood PS-1 (rear) calipers

ELECTRONICS Student built harness, CAN bus. Electronic gearshift, Compact Rio data logger and Megasquirt ECU

The FBR12 is Full Blue Racing's 6th entry to FSG. The car is a well balanced package aimed at providing the ideal driving experience for the amateur weekend racer, with complete setup freedom, good handling and throttle response together with excellent reliability. A target of a 20kg weight improvement from last year was set, achieved in part through the integration of a new carbon fibre composite rear plate. Setup adjustability has been a main focus of the vehicle dynamics on the FBR12 which features all new fully adjustable upright and hubs. The key target this year has been to complete the car ready for extensive testing from May onward allowing the team to develop the car and drivers further in terms of both reliability and performance before the competition. The team now comprises of over 40 members from the engineer, maths, science and humanities faculties and would not be able to compete without the help of over 30 sponsoring companies, to whom we owe a large gratitude.

COBURG
University of Applied Sciences Coburg

Car 50 Pit 26

Germany

FRAME CONSTRUCTION Tubular steel space frame

MATERIAL Mild steel S235 and S355

OVERALL L / W / H (mm) 2542 / 1431 / 1240

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1210 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 131 / 147

SUSPENSION Double unequal length anti-parallel A-Arm. Pull rod actuated with horizontally oriented dampers

TYRES (Fr / Rr) 20.5x7.0-13 R25B Hoosier on the front, 20x7.5-13 R25B Hoosier rear. 21x6.5-13 WET Hoosier

WHEELS (Fr / Rr) 7 inch wide, Al Rim, 31 mm neg.

ENGINE Yamaha R6/ RJ09

BORE / STROKE / CYLINDERS / DISPLACEMENT 65mm / 44,5mm / 4 cylinders / 600cc

COMPRESSION RATIO 14,1:1

FUEL SYSTEM Bosch MS4, asymetric injection timing, single iductive discharge ignition System (IDI)

FUEL Gasoline 98 octane

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Taylor race constant velocity joint

DIFFERENTIAL Limited slip differential, 30Nm preload

COOLING One custom made Radiator; mounted in right sidepod with 250mm fan

BRAKE SYSTEM 4- Disk system, self developed rotors with 238mm OD; adjustable brake bias; AP Racing Calipers

ELECTRONICS wiring harness sealed to IP66, electropneumatic shifting system, traction control, launch control

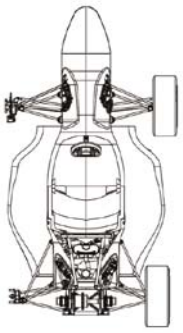
CAT-Racing, founded in 2007, is the Formula Student Team of the University of Applied Sciences Coburg. This year our 40 team members developed our fifth car, the C-12 Puma. The need for compact design leading to an even increasing complexity in system arrangement makes diligent planning and engineering inevitable. Therefore keeping up durability, maintainability as well as drivability with a short wheelbase results in enhanced a-arms bonding methods, a revised engine cooling system, simplified system boarders to shorten dismantling times. On track performance is increased due to adjustable anti roll bars and on overwrought intake manifold decreasing engine reaction time. CAT-Racing thanks all sponsors, friends and families who made this project possible.

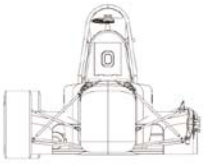
COLUMBUS
Ohio State University

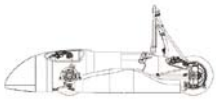
Car 30 Pit 50

United States

This year is The Ohio State University's first year competing at Formula Student Germany! After a one-year hiatus, we have successfully completed a ground up redesign with a new focus on serviceability, driver comfort, and performance. "Dirty Thirty" is a two-part carbon fiber monocoque, separated by just 12 bolts, providing easy serviceability. For driver comfort, a multifunction steering wheel with variable position clutch paddles, electronic flat foot shift paddles, and a full color LCD display with driver selectable outputs has been integrated. Further driver-centric features include launch and traction control, remote brake bias control, as well as a 3 stage LED shift indicator. The car also includes countless performance attributes such as custom metal matrix composite brakes, lightweight titanium uprights, carbon fiber control arms and a custom 3-speed gearbox. The Formula Buckeyes are exited to compete this year and wish all of the competing teams good luck!







FRAME CONSTRUCTION Two part carbon fiber monocoque

MATERIAL 2x2 twill 3K (45, 0, 45) with 12.7mm aluminum sandwich panel

OVERALL L / W / H (mm) 2687 / 1448 / 1160

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1270 / 1219

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 153

SUSPENSION Double unequal length A-Arm. Push rod actuated. Adjustable high and low speed jounce and rebound

TYRES (Fr / Rr) 20x7x13in Goodyear D-2704 all around

WHEELS (Fr / Rr) 7x13

ENGINE Honda CBR600f4i

BORE / STROKE / CYLINDERS / DISPLACEMENT
67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Motec M400

FUEL 98 octane unleaded

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Chain

DIFFERENTIAL Torsen

COOLING Side mounted diffuser to nozzle radiator with auxiliary fan

BRAKE SYSTEM Custom floating metal matrix composite rotors, outboard front, inboard rear. Driver adjustable bias

ELECTRONICS Steering wheel mounted color LCD with driver selectable readout, servo clutch, traction/launch cntrl

COTTBUS
Brandenburg University of Technology

Car 83 Pit 4

Germany

In 2012 the team of BTU Cottbus will participate at the FSG competition for the third time. Founded in 2007, the team now counts about 31 members from several departments of our university. We divided our team in five technical parts the engine, carriage, frame steering and electronic. Furthermore we get a new structure for the economic part of the team. There are some members for the financial- and material sponsoring and for the public relations. We are increasing our quantity of sponsors during the season 2011/2012. Special thanks go to our sponsors and our university workshops for supporting us with our ambitious project. Hard work by all of them, results in a weight reduction by 70kg compared with the first racecar. Reasons for that are the usages of high-tensile steel for the drive shafts or the application of carbon fiberfor the seat. The self-built oil sump is much flatter than the original one and allows us to position the engine lower and with it the center of gravity.

FRAME CONSTRUCTION Tubular space frame with variable wall thickness, honey comb structured body panels

MATERIAL Non-alloyed steel

OVERALL L / W / H (mm) 2864 / 1487 / 1250

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1270 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 154 / 144

SUSPENSION Double unequal length wishbone. Push rod actuated spring and damper, transverse mounted

TYRES (Fr / Rr) 20.5x7-13 R25B Hoosier

WHEELS (Fr / Rr) 20.5x7-13 R25B Hoosier

ENGINE Modified Suzuki GSXR-600 K5

BORE / STROKE / CYLINDERS / DISPLACEMENT
67mm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Walbro ECU sequential ignition and injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE Chain drive

DIFFERENTIAL Limited slip differential, torque bias ratio of 1,5

COOLING Single side pod mounted radiator with ECU controlled electrical fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 220/204mm diameter, adjustable brake balance

ELECTRONICS Electro-pneumatic shifting system, multifunctional cockpit and dashboard

DARMSTADT

University of Applied Sciences
Darmstadt

This year the Formula Student Team Darmstadt (FaSTDa) is taking part in the annual event of Formula Student Germany for the second time with its completely new racing car, „F12“. Our last year achievements, perfectly established and shown in Italy 2011, were significant weight reduction, up to 190 kg approximately (-10% compared to cars of the previous years), with an increase in engine power and torque. Consequently we have improved our vehicle with innovative components. Those characteristic features are the following: completely revamped suspension geometry with carbon fiber A-Arms and bespoke upright/wheel hubs, an optimized tube frame with increased stiffness, plus a custom pedal unit and steering wheel for the high-level driver ergonomics. The whole team appreciates much internal help and would like to sincerely thank all our sponsors for the great support this year! Regards FaSTDa

Car 54 Pit 46

Germany

FRAME CONSTRUCTION Front and rear tubular space frame

MATERIAL 1020 steel round tubing .75

OVERALL L / W / H (mm) 2685 / 2079 / 1141

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1250 / 1250

WEIGHT WITH 68kg DRIVER (Fr / Rr) 112 / 142

SUSPENSION Double unequal length A-Arm. Push rod actuated spring and damper

TYRES (Fr / Rr) 8x13, 65mm offset Keizer

WHEELS (Fr / Rr) 175/505R13, Dunlop SP Sport

ENGINE KTM LC4

BORE / STROKE / CYLINDERS / DISPLACEMENT 101mm / 76mm / 1 cylinders / 609cc

COMPRESSION RATIO 10,5:1

FUEL SYSTEM MPI,1 injector, Bosch fuel pump, MoTeC ECU

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 6900

DRIVE TYPE chain drive

DIFFERENTIAL Drexler Formula Student 2010 V.1 bevel differential gear

COOLING side mounted

BRAKE SYSTEM 4-Disk System self developed rotors with 240 mm diameter, adjustable brake balance, AP Racing CP2623

ELECTRONICS --

ERLANGEN

Friedrich-Alexander-Universität
Erlangen-Nürnberg

High-Octane Motorsports is the University of Erlangen-Nuremberg's FS team. This year our 45 team members developed our fifth race car, the FAUmax epsilon. Our main goals were to significantly reduce weight and to develope an aero package, by also refining our stand-alone drivetrain layout with a longitudinally mounted engine and a bevel gear. As a result we developed a lightweight car of 165 kg in combination with a powerful Aprilia V2 engine with 58 kW. We built a full aero package with the rear wing mounted on the undertray. To drastically reduce unsprung masses we developed 10 inch rims, which are made out of aluminium and CFRP. Our steel tube frame has an integrated CFRP sandwich structure as an underbody, combining high stiffness and low weight. The reliability of our electronics were enhanced by replacing all fuses with high side switches. So we try to tie on the successes from last season and want to thank all our sponsors for their great support!

Car 74 Pit 25

Germany

FRAME CONSTRUCTION tubular steel space frame with detachable rear frame; carbon fibre underfloor

MATERIAL S355

OVERALL L / W / H (mm) 2880 / 1435 / 1078

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1220 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 108 / 125

SUSPENSION Double A-Arm (Fr) Double unequal length A-Arm (Rr); Pull rod & horizontal dampers (Fr) Push rod (Rr)

TYRES (Fr / Rr) Hoosier 18

WHEELS (Fr / Rr) 6.5

ENGINE Modified Aprilia SXV 550

BORE / STROKE / CYLINDERS / DISPLACEMENT 80mmmm / 55mmmm / 2 cylinders / 553cc

COMPRESSION RATIO 15.6:1

FUEL SYSTEM self-designed fuel injection system using DTAfast S80 Pro ECU

FUEL E85

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE bevel gear drive with claw coupling

DIFFERENTIAL self-made limited slip differential with Drexler inner life

COOLING Aluminium counter-stream radiator; ECU controlled fan&pump

BRAKE SYSTEM 4 stainless steel disks; 200mm (Fr) 170mm (Rr) dia.; adj. proportioning valve; 4 one-piston caliper

ELECTRONICS selfdesigned MCU w. High-Side-Switches, Bluetooth live-telemetry logging, high-speed shifting servo

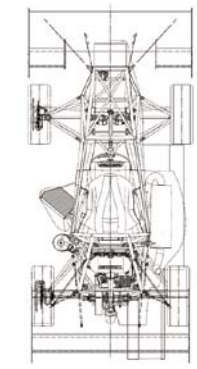
ESSLINGEN

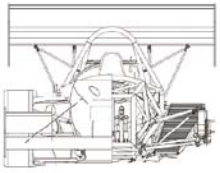
University of Applied Sciences
Esslingen

In 2006, the first building blocks for the foundation of the Rennstall Esslingen were placed at the UAS Esslingen. Meanwhile, it is the largest project at the university and one of the flagship projects. With the ,12 Stallardo, the sixth race car from Esslingen will start at the Formula Student Germany. The knowledge and experience of many Formula Student years are reflected in this car. The engine concept with a 4 cylinder engine transversely mounted, remains the same. However, we have revised and optimized each individual component. A specially developed gearbox, steering gear, cooling system are only a few examples. The Stallardo ,12 is the consequence of hard work, experience, smart ideas, reducing weight, passion for beautiful racecars, interdisciplinary cooperation and an unique team spirit combined with aplenty of good mood!

Car 94 Pit 6

Germany





FRAME CONSTRUCTION Tubular Space Frame

MATERIAL 25CrMo4 (4130) steel round tubing 19,05mm up to 31,75mm diameter,Carbon Fibre Floorpan

OVERALL L / W / H (mm) 3085 / 1440 / 1109

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1240 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 119 / 139

SUSPENSION Double unequal length A-arm, pull rod actuated Kaz/Penske 7800 2-way adjustable damper

TYRES (Fr / Rr) 20.0x7.0 R13 Goodyear D2704

WHEELS (Fr / Rr) 7x13, 2 piece carbon/magnesium

ENGINE Honda CBR600 RR PC37

BORE / STROKE / CYLINDERS / DISPLACEMENT 67,5mm / 42,5mm / 4 cylinders / 608cc

COMPRESSION RATIO 14,1

FUEL SYSTEM Bosch MS4, fuel injection, Walbro GSL392

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE 520 Chain

DIFFERENTIAL Clutch pack limited slip

COOLING Student designed U-Flow radiator, electric fan

BRAKE SYSTEM 4-Disk self developed rotors, Front: 4-piston ISR Caliper; Rear 2-piston ISR Caliper

ELECTRONICS Bosch MS4 ECU, electro mechanical shifting, self designed power and control electronics

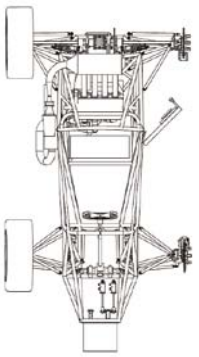
GLASGOW

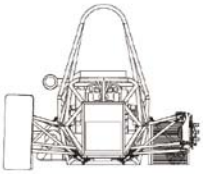
University of Strathclyde

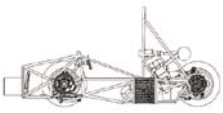
The University of Strathclyde Motorsport will be returning to Hockenheim to compete at their 5th FSG competition. The team will be competing with their 12th car, USM12, that has been designed with the focus on developing the current design philosophy while building on the lessons learnt from 2011. Following an upgrade to the CBR600RR engine last season, the team have designed bespoke intake, exhaust and cooling systems to maximise performance. Also an upgrade to the DTA S80 ECU has allowed the team to integrate both launch and traction control driving aids. USM have continued to develop the team structure by incorporating Vice Team Manager and Technical Director roles. This allows younger team members to gain vital experience thereby expanding the knowledge transfer beyond the technical expertise of designing a car. USM would like to thank all of our sponsors and the University of Strathclyde for their continued support and assistance through the 2012 season.

Car 15 Pit 27

United Kingdom







FRAME CONSTRUCTION TIG welded, tubular steel space frame

MATERIAL Mild steel tube, cold drawn seamless

OVERALL L / W / H (mm) 2580 / 1400 / 1145

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1535 / 1200 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 144 / 144

SUSPENSION Double unequal A-arm. Pull/Push actuated horizontally oriented spring and damper units

TYRES (Fr / Rr) 205x70 R13, Hoosier R25B / 205x70 R13, Hoosier R25B

WHEELS (Fr / Rr) OZ Superleggera 13

ENGINE Honda CBR600RR8 (PC40E)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,2:1

FUEL SYSTEM Student design/built, sequential fuel injection system

FUEL 98 RON

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain #525

DIFFERENTIAL Drexler limited slip differential

COOLING Sidepod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, student designed rotors with adjustable trunnion bar

ELECTRONICS Student design/built loom with integrated multifunctional dash

GÖTEBORG
Chalmers University of Technology

Car 14 Pit 61

Sweden

The Chalmers Formula Student team is excited to be competing in FSG for the first time in 2012. After 4th place at Silverstone last year, this year's team has a lot to live up to - and our ambitions are set accordingly. We have learned from past experience, including the need of keeping the car quickly and accurately adjustable to keep up performance in shifting track conditions. This is reflected in our design - focusing on accessibility and simplicity of adjustments. Among this year's more visible features is an advanced aerodynamics package, making our car not only well-performing, but also quite intimidating. Watch out, fellow Formula Students! We could not have done it alone. Our partners are helping us grow and evolve. However, our focus is not just on building the fastest car. Our true objective is to Deliver the Engineers of Tomorrow. At the end of each year, when the car moves towards retirement, 30 skilled and enthusiastic Engineers have barely (kick)started their career.

FRAME CONSTRUCTION Tubular Space Frame

MATERIAL 4130 CrMo

OVERALL L / W / H (mm) 2958 / 1411 / 1190

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1210 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 143 / 148

SUSPENSION Double unequal length A-arm. Push rod actuated spring/damper. Adj. Roll bar.

TYRES (Fr / Rr) 20.5x7-13 R25B Hoosier / 20x7.5-13 R25B Hoosier

WHEELS (Fr / Rr) 7 inch wide, 3 pc Al Rim, 26 mm neg. offset / 7 inch wide, 3 pc Al, 5 mm neg. offset

ENGINE Yamaha FZ6

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.1:1

FUEL SYSTEM Denso, sequential fuel injection

FUEL 99 RON unleaded

MAX POWER DESIGN (rpm) 1200

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chaindrive 520 motorcycle chain

DIFFERENTIAL Drexler Limited Slip (clutch type)

COOLING One side pod mounted radiator with switch controlled electric fans and front and rear ducting

BRAKE SYSTEM front 240 mm 4 piston caliper / rear 220 mm 2 piston caliper

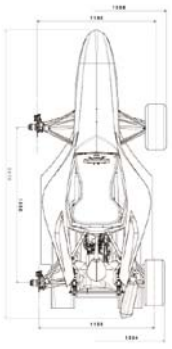
ELECTRONICS Electropneumatic Shifting System, selfdesigned Real-time analysis software, Wireless serial. com.,

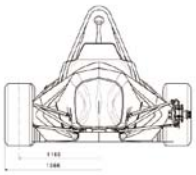
GRAZ
Graz University of Technology

Car 59 Pit 49

Austria

The TANKIA2012 is the most revolutionary development in the history of the TUG-Racing team. In recent years, we used an engine that was amongst the most powerful on the track. This year, we made a turn regarding this concept. The focus is now on lightweight and agility rather than merely power. The chassis has become slimmer, the tyres smaller and we shortened the track as well as the wheelbase. And we even went one step further: we switched the engine from a heavy 4-cylinder to a single-cylinder KTM. As a result of our changes, we estimate a much better fuel consumption and more agility. These improvements will provide the driver with enough confidence to stick it into the bends and prove our point. Our car comes with a carbon fiber monocoque and a carbon fiber space frame rear end, which is stiffer and makes it possible to remove the engine very quickly. The self-developed multifunctional steering wheel enables the driver to adjust vehicle parameters easily during the race.





FRAME CONSTRUCTION carbon fiber monocoque and carbon fiber spaceframe rear-end

MATERIAL carbon fiber prepregs, Nomex and Aluminum honeyconbs, carbon-inserts

OVERALL L / W / H (mm) 2869 / 1386 / 1028

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1180 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 114 / 114

SUSPENSION unequal length a-arms, front pull/rear push rod and bell crank actuated 4-way adjustable dampers

TYRES (Fr / Rr) 18x6.0-10 Hoosier LC0

WHEELS (Fr / Rr) 6x10, 19.05mm offset, 3pc Aluminium Rim

ENGINE 2012 KTM, 500EXC

BORE / STROKE / CYLINDERS / DISPLACEMENT 95.0mm / 72.0mm / 1 cylinders / 510cc

COMPRESSION RATIO 12.58:1

FUEL SYSTEM student designed and built, fuel injection, 2-spray preparation

FUEL gasoline

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE Chain, 520

DIFFERENTIAL Drexler, multiplate limited slip differential

COOLING side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4-disc system, self designed steel rotors, adjustable brake balance

ELECTRONICS multifunctional steering wheel, traction and launch control, live-telemetry system

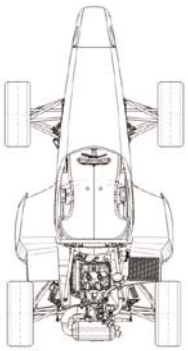
GRAZ

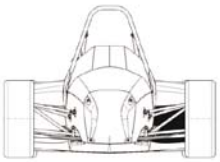
University of Applied Sciences
Joanneum Graz

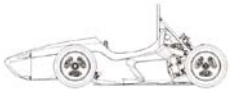
Joanneum racing graz is a highly motivated team from the UAS „FH Joanneum“, Graz. The team is well known as „The Weasels“ and competes in Formula Student since 2004. A new car has been built every year since then. The team members change every year, which brings a lot of new ideas into the team. The basic team consists of approximately 25 Automotive Engineering students supported by students from other study courses from the UAS Graz. Therefore joanneum racing graz is a very innovative team with new features in every car. As we traditionally use charged engines the new car is powered by a self-developed turbocharged 2-cylinder engine with direct injection which represents latest technology. The chassis of the car is a lightweight one-piece CFRP-monocoque. Last year's car showed that the combination of a lightweight chassis and efficient but also powerful turbocharged engine is competitive. The team 2012 enhanced engine technology and is keen on proving the competitiveness of their car!

Car 107 Pit 13

Austria







FRAME CONSTRUCTION Full CFRP monocoque sandwich construction

MATERIAL high-tensile-strength carbon fiber prepregs, Rohacell and aramid honeycomb core

OVERALL L / W / H (mm) 2725 / 1423 / 1023

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1220 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 116 / 147

SUSPENSION Double unequal length A-Arm, Pull rod actuated spring / damper (Öhlins TTX25), Adj. Roll bar

TYRES (Fr / Rr) 20.5x7 R13 - Hoosier R25B

WHEELS (Fr / Rr) 6x13,12.3mm offset, 1pc CFRP Rim

ENGINE Student designed engine

BORE / STROKE / CYLINDERS / DISPLACEMENT 83mm / 55mm / 2 cylinders / 595cc

COMPRESSION RATIO 10.2:1

FUEL SYSTEM high pressure direct injection with piezoelectric injectors

FUEL RON 100

MAX POWER DESIGN (rpm) 6500

MAX TORQUE DESIGN (rpm) 4000

DRIVE TYPE Finaldrive via gearwheels

DIFFERENTIAL 2010 DREXLER LSD, integrated in gearbox

COOLING side mounted radiator with electric fan and electric water pump

BRAKE SYSTEM 4-Disk system, self developed rotors, adjustable brake balance

ELECTRONICS multifunctional steering wheel, electropneumatic shifting and clutch system

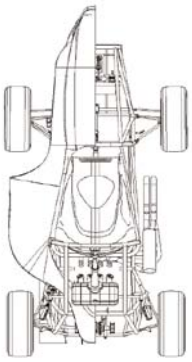
HAMBURG

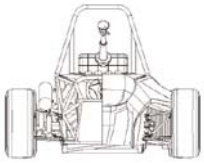
Helmut Schmidt University of Federal Armed Forces Hamburg

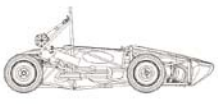
This year's vehicle of the Helmut-Schmidt-University / University of the German federal Armed Forces is the RUSH12. It is the fifth time that the Eleven-O-Six Racing (EOS) Team takes part at the Formula Student Germany in Hockenheim. The successor of the RUSH11 combines a lot of experience with new ideas and is a new fast vehicle made by EOS. Furthermore improvements in engine performance and chassis kinematics as well as a new light weight tubular space frame backup our high expectations for this year's event. Similar to its predecessor, the RUSH12 features an iPhone dashboard in order to provide any necessary information for the driver and the pit. Altogether the RUSH12 is our answer for the Formula Student Germany 2012. Thanks to all of our supporters, who made this amazing car possible.

Car 72 Pit 41

Germany







FRAME CONSTRUCTION Steel Frame out of steel round tubing and square steel tubing

MATERIAL Steel

OVERALL L / W / H (mm) 2737 / 1425 / 1115

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1220 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 125 / 167

SUSPENSION Double unequal length A-Arm. Pull-/Push-Rod actuated spring and damper.

TYRES (Fr / Rr) D2704 20.0x7.0-13 R110, Goodyear

WHEELS (Fr / Rr) 6 inch wide, 2 pc Al Rim, 18mm neg. offs

ENGINE Honda PC35, 4 cylinder

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 380cc

COMPRESSION RATIO 13.1:1

FUEL SYSTEM original Honda PC 35 sequential fuel injection

FUEL gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 10500

DRIVE TYPE chain 520 modul

DIFFERENTIAL multiplate LSD limited slip, 30-35 Nm preload, 1.82-15.67 bias ratio

COOLING single radiator with thermostatic controlled fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 230mm diameter

ELECTRONICS Launch Control, iPhone as dash logger and display connected via CAN to MoTec

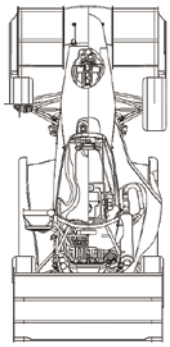
HAMBURG

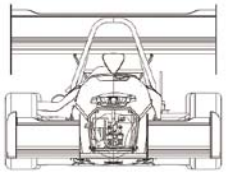
University of Applied Sciences
Hamburg

Since 2004 HAWKS Racing has participated successfully in the Formula Student. Hereby the H08 is the latest HAWKS Racing car in our garage. Representing yet another step towards excellence, it is a consequent evolution of previous seasons' cars. To reduce weight and increase stiffness we designed a new CFRP-monocoque. To improve our performance on track, we developed an extended aero package. Clutch and shifter are actuated via paddles at the steering wheel. The heart of the powertrain is a Kawasaki ZX6R-engine and is modified at our dyno. To handle all that power, we designed special brake calipers, which together with our new paddle assembly give the driver full control of the car. A body fitted CFRP-seat, an adjustable pedal box and intuitive controls are designed to guarantee a maximum level of comfort. In the tradition of building the most beautiful cars in FSAE, we equipped the new car with a breath taking bodywork.

Car 69 Pit 67

Germany





FRAME CONSTRUCTION Hybrid frame with CFRP monocoque in the front and tubular steel space frame in the rear

MATERIAL Prepreg / honeycomb sandwich and S235

OVERALL L / W / H (mm) 3135 / 1407 / 1045

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1669 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 140

SUSPENSION Double unequal lenght A-Arm. Pull rod actuated longitudinally/vertically oriented spring and damper

TYRES (Fr / Rr) 20.0 x 7.0 R13 Goodyear

WHEELS (Fr / Rr) 7.0 x 13, -22mm offset 1 pc Al rim

ENGINE Kawasaki ZX6R

BORE / STROKE / CYLINDERS / DISPLACEMENT 66mm / 43.8mm / 4 cylinders / 599cc

COMPRESSION RATIO 11.8:1

FUEL SYSTEM Student designed custom rubber safety cell, sequential injection

FUEL 98 RON

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE 520 Chain

DIFFERENTIAL Drexler limited slip differential

COOLING Left side mounted student designed radiator with electric fan

BRAKE SYSTEM Student desigend brake calipers, 250mm rotors, adjustable brake bias

ELECTRONICS Mechatronic clutch and shifter, Data logger, Live- Telemety, CAN bus, multifunctional display

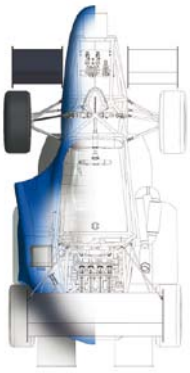
HANNOVER

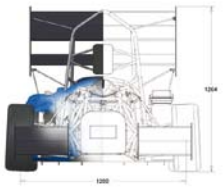
University of Applied Sciences
Hannover

In the 2012 season our team consists of 25 active members from a variety of different fields of studies. Our third car is more evolution than revolution, based on the successful predecessor. Every single part has been enhanced and optimized though, featuring a lot of new production methods like rapid prototype mouldings or special compound combinations. Also, for the first time our car is equipped with an array of aerodynamik devices like an active undertray and diffusor or rear/front wings with adjustable flaps. The engine has been tuned to deliver more torque, which works hand in hand with the drivetrain modifications. The chassis setup aims for maximum driveability and extreme cornering and is adapted to the live mounting of the rear wings. Our driver information system features a hood-mounted rpm display with programmable shift lights in addition to the main dashboard. To improve our practical engineering skills, basically all of the car has been manufactured by ourselves.

Car 106 Pit 28

Germany





FRAME CONSTRUCTION Tubular Frame Structure

MATERIAL Steel E355 20mm to 25mm dia

OVERALL L / W / H (mm) 2940 / 1465 / 1264

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1280 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 144 / 176

SUSPENSION Double unequal length A-Arms. Push-rod actuated horizontal orientated coilspring and damper

TYRES (Fr / Rr) 205/510 R13, Continental / 205/510 R13, Continental

WHEELS (Fr / Rr) 7.0x13, 31mm offset, 1 pc Al rim / 7.0x13, 31mm offset, 1 pc Al rim

ENGINE 2000 Kawasaki ZX-6, 4 Cylinder

BORE / STROKE / CYLINDERS / DISPLACEMENT 66.0mm / 43.8mm / 4 cylinders / 599cc

COMPRESSION RATIO 11.8:1

FUEL SYSTEM Student build, fuel injection, sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE chain drive, engine´s gear box

DIFFERENTIAL multi-disk limited-slip / Drexler FS 2010 V3

COOLING One side radiator; therm. contr. fans

BRAKE SYSTEM Floating, hub mounted, Cr25Mn4, 220mm outer dia, 165mm inner dia, solid

ELECTRONICS student build driver info system, bidirectional wireless modem, LiFePo Battery

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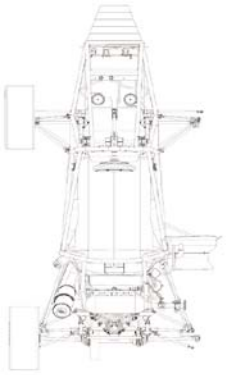
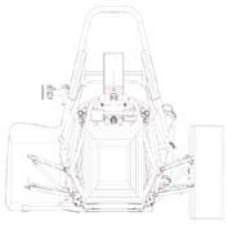
HATFIELD
University of Hertfordshire

Car 7 Pit 53

United Kingdom





FRAME CONSTRUCTION 2 piece steel tubular space-frame with bonded composite floor panel.

MATERIAL C350 mild steel, cold drawn seamless tube.

OVERALL L / W / H (mm) 2769 / 1346 / 1048

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1160 / 1110

WEIGHT WITH 68kg DRIVER (Fr / Rr) 127 / 127

SUSPENSION Double unequal length A-Arm. Pull Fr Push Rr rod actuated spring & coil-over damper, adjustable ARB.

TYRES (Fr / Rr) 18.0x6.0-10

WHEELS (Fr / Rr) 152.4mm Wide, 3 pc Al and Carbon Fibre Rim/ 152.4mm Wide, 3 pc Al and Carbon Fibre Rim.

ENGINE 2010 Yamaha YZF-R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.1:1

FUEL SYSTEM Student design/built, multi-point fuel injection.

FUEL 98 Ron Unleaded Petrol.

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE Single 520 chain.

DIFFERENTIAL Student Designed Spool.

COOLING Single side pod mounted radiator 295x295mm x1

BRAKE SYSTEM Bobbin float laser cut 304 stainless steel, hub mounted, 191mm OD/140mm IDx 4mm thick crossdrilled.

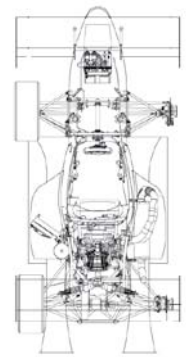
ELECTRONICS Student designed telemetry system & data acquisition system including lap time/split dash readout.

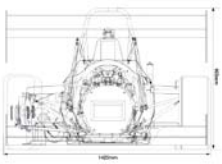
UH Racing has only one aim and that is to become the first UK team to win Formula Student Germany. Following last year's successful collaboration of Masters and Undergraduate students, UH Racing is looking to build upon our 7th place overall at FSG. The team has a well-defined structure including a core managerial team overseeing all aspects of the car. The broad knowledge of its 30 team member's makes UH Racing a strong contender and one to watch this year. Drawing upon a wealth of existing Formula Student knowledge the team has focused its attention on data driven designs. Strict performance targets were identified for each vehicle subsystem and every design has been reviewed with respect to the original design criteria. This year's strategy continues to develop statics but focus heavily on the overall dynamics of the team in order to operate efficiently and realise our full potential. Winning is the only thing that matters, everything else is a consequence of that.

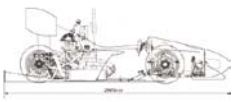
KARLSRUHE
Karlsruhe Institute of Technology

Car 21 Pit 17

Germany







FRAME CONSTRUCTION CFRP Monocoque front end and tubular steel space frame rear end

MATERIAL Carbon fibre reinforced plastic with structural foam / 15CdV6 Steel

OVERALL L / W / H (mm) 2885 / 1425 / 993

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1660 / 1220 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 119 / 144

SUSPENSION Double unequal length A-Arms. Pull (front)/ Push (rear) rod actuated KAZ damper with coil spring

TYRES (Fr / Rr) 20.5x7-13 R25B Hoosier

WHEELS (Fr / Rr) 20x7.5-13 R25B Hoosier

ENGINE Honda / CBR600F PC35 2003

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13:1

FUEL SYSTEM Student designed/built multi point injection fuel system using Bosch ECU

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE pneumatic actuated 4 speed gearbox

DIFFERENTIAL Drexler clutch pack limited slip differential, preloaded - adjustable bias ratio

COOLING One side pod mounted radiator, electric fans and water pump with student design controller

BRAKE SYSTEM Floating carbon-steel rotors, outer diameter 230mm/220mm (F/R), ISR four/two (F/R) piston caliper

ELECTRONICS self developed live telemetry & remote parametrization, wireless data acquistion on rotating rim

Being a team of about 60 students, KA-RaceIng builds two cars every year: one with an electric drivetrain and one with a combustion engine. Starting in autumn with conception and design, we set a tight production schedule to present our new cars in April. The KIT12 is our 6th combustion car and combines the best of new ideas and tested concepts. As we are building two cars, we develop several parts which meet the requirements of both cars and improve testing time and manufacturing effort. Since March 2011 we are developing a 2-cylinder, turbocharged, direct injected combustion engine at Mercedes-AMG GmbH especially for use in formula student vehicles. The KIT12 is developed and manufactured to run with this engine. Due to delays during development and testing we could not use the engine for startup of the vehicle and thus placed our last years' modified motorcycle engine in the KIT12. We would like to thank all supporters and are looking forward to an exciting event in Hockenheim.

KARLSRUHE

University of Applied Sciences
Karlsruhe

Car 22 Pit 1

Germany

Founded in 2006, High Speed Karlsruhe is entering its 6th season in the Formula Student competition. Forty motivated students of the "Technische Hochschule Karlsruhe" worked together for one year to design and build the new car, the F-106.The F-106 is a direct decedent of its predecessors. All our cars share the 600cc four cylinder engine and 13" wheels. The F-106 is the first to feature a CFRP monocoque chassis. This new design provides superior stiffness and a lower cg compared to the space frame previously used.The car uses a CAN bus system, which connects all control units and actuators. The electronic system is equipped with advanced data logging, traction and launch control. A WiFi system enables the engineers to monitor the vitals of the car in real time.We would like to thank all our sponsors and supporters for their efforts. Your support is greatly appreciated. We are looking forward to an exciting season with the F-106 racing here at FSG and later this year in Spain.

FRAME CONSTRUCTION CFRP monocoque with steel space frame rear

MATERIAL CFK Tenax-HTA40, GIMAPOX EL-3, Rohacell 31IG, E235+C round tubing with outer diameters of 26 to 30mm

OVERALL L / W / H (mm) 2616 / 1382 / 1083

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1190 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 127 / 141

SUSPENSION Double unequal length A-Arm. Pull rod actuated spring and damper

TYRES (Fr / Rr) 20.0/7.0-13, Avon A50

WHEELS (Fr / Rr) 7x13, 18mm offset, 2pc Al Rim

ENGINE Modified Honda CBR 600RR (PC37)

BORE / STROKE / CYLINDERS / DISPLACEMENT
67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.0:1

FUEL SYSTEM EFI Euro 4, füll sequentiell injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE full sequential gearbox

DIFFERENTIAL Torque sensitive limited slip bevel gear differential with internal preload adjustment

COOLING Left side pod mounted radiator with PWM controlled electric fan, electric pump

BRAKE SYSTEM 4-Disk system, self developed floating rotors 225 mm diam., driver adjustable brake balance

ELECTRONICS electropneumatic shifting, adjustable launch and traction control, datalogging, automatic fuse box

KASSEL

University of Kassel

Car 28 Pit 45

Germany

As we showed last year, Herkules Racing Team is definitely able to build a competitive car. We have further developed our car concept into the light weight direction. Clearly, we are using carbon reinforced plastic more often this year as well as aluminum instead of steel. We have also downsized many components in the car, and avoided welding wherever it is possible by using adhesives instead. In addition, we have improved our engine and powertrain: we gained 14 hp compared with our 1st car and saved about 3.5 kg rotated mass in the power train design. A feed forward traction control is another new development of ours, which hopefully brings some advantage. We are looking forward to this year's competition and we are confident we will be at our best.

FRAME CONSTRUCTION tubular steel frame

MATERIAL E 235 +C

OVERALL L / W / H (mm) 2512 / 1420 / 1350

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1226 / 1226

WEIGHT WITH 68kg DRIVER (Fr / Rr) 112 / 169

SUSPENSION carbon reinforced suspension. Öhlins Damper.

TYRES (Fr / Rr) Hoosier

WHEELS (Fr / Rr) Hoosier

ENGINE Suzuki GSX-R 600 K7

BORE / STROKE / CYLINDERS / DISPLACEMENT
67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Student designed, fully sequential fuel injection Open-source MegaSquirt system 3

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE

DIFFERENTIAL Drexler limited slip

COOLING

BRAKE SYSTEM

ELECTRONICS Electro hydraulic clutch system, feed forward traction control, super bright breaking light

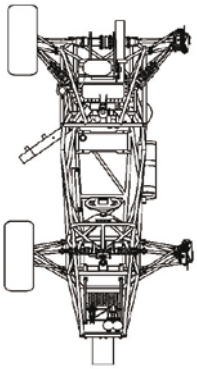
KEMPTEN

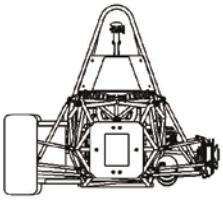
University of Applied Sciences
Kempten

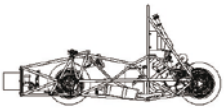
The Infinity Racing Team was established in 2007 and already in 2008 we could celebrate our first great success when we won the "Best Newcomer" award at the FSG. Our team currently consists of about 35 highly motivated and dedicated students out of all faculties of the UAS Kempten. Building on our success and the knowledge we gained during past competitions, we work towards the constant development and improvement of our racing cars to achieve an even better performance. In this year's competition, we will present our fourth car called "TOMSOI IV", we reduced its weight by approx. 25 kg compared to last year's car. For its construction, we used a light tube space frame. A motorsport ABS guarantees a high grade of security. Furthermore, our car features a live telemetry system and many options to change the car's setup. It is characterized by its high agility and the possibility of fast shifting via pedals on the steering wheel.

Car 116 Pit 22

Germany







FRAME CONSTRUCTION Tubular space frame

MATERIAL E235 + C1

OVERALL L / W / H (mm) 2660 / 1406 / 1189

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 135 / 152

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally orientated Penske spring/damper units

TYRES (Fr / Rr) 205x510 R13 / 205x510 R13, Continental 2012

WHEELS (Fr / Rr) 7,0X13 ET+31 / 7,0X13

ENGINE 2005 Yamha R6 RJ09 4 cylinder DOHC

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.4:1

FUEL SYSTEM Student designed fuel injection system using BOSCH MS4 ECU, sequential injection and ignition

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE chain drive / 520 chain

DIFFERENTIAL Salisbury type clutch pack differential from Drexler

COOLING One side mounted student designed radiator

BRAKE SYSTEM 4- Disk system, floating, steel, hub mounted rotors, ISR calipers

ELECTRONICS Student built live-telemetry system, streaming via ISM-Band, electropneumatic shifting system

KONSTANZ

University of Applied Sciences
Konstanz

Founded in 2005, the Bodensee Racing Team consistently improved its car as well as in-house skills and expertise. With our 38 team members we're looking forward to a favorable season 2012 and a great event in Hockenheim. We developed many parts of our last-season-car to design a faster and lighter "Iltis12". Different to our other cars we mount our dampers overhead this year. Additionally, the steering shaft is also mounted inside, so the whole car looks narrower. With a weight of 219 kilogram we reached our aim of a yearly lighter construction, along with a steel frame. Furthermore our special hybrid wheel rim made of carbon and aluminium allow a new category of weight and speed possibility. We get powered by a modified Suzuki GSX-R Engine with a 4-2-1 exhaust pipe system. The drive train assembly is fitted to the engine and supported at the rear frame tube, which results in high stiffness and easy handling.

Car 35 Pit 40

Germany

FRAME CONSTRUCTION tubular space frame

MATERIAL S235JR steel round tubing .1

OVERALL L / W / H (mm) 2836 / 1366 / 1068

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1620 / 1202 / 1210

WEIGHT WITH 68kg DRIVER (Fr / Rr) 132 / 154

SUSPENSION Double unequal length A-Arms. Push rod over-head oriented spring and TTX25 MkII FSAE damper

TYRES (Fr / Rr) 20x7,0-13 R25B Hoosier / 20x7,0-13 R25B Hoosier

WHEELS (Fr / Rr) 7 inch wide, 3 pc Al Rim, 30 mm offset / 7 inch wide, 3 pc Al Rim, 30mm offset

ENGINE modified Suzuki GSX-R 4 cylinder

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 600cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Student des/built ,fuel injection, sequential

FUEL 100 octane fuel/gesoline

MAX POWER DESIGN (rpm) 13000

MAX TORQUE DESIGN (rpm) 10500

DRIVE TYPE 40x 11 sprocket with 520er chain

DIFFERENTIAL Drexler, clutch pack limited slip

COOLING one side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM Stainless Steel, hub mounted, 238mm dia. Ap Racing Master Cylinder, CRG VEN 04 Calipers

ELECTRONICS multifunctional steering wheel, self-made dashboard

LATACUNGA
Army Polytechnic Institute

Our whole FESPE Team is really proud and happy to have the chance to participate for the second year, in the FSG 2012. More than being the unique Ecuadorian Team participating is such a prestigious competition; our team is focused on doing an outstanding performance. Then we have a great human talent, automotive design technology of last generation, suitable materials, manufacturing processes and efficient construction techniques. The team has 13 members. We have set ourselves the challenge of designing and building the new vehicle that has been based mainly on the rules imposed on us by SAE. We have optimized the space reducing its weight. Therefore, we get as outcome a good vehicle performance. In addition, the pilot has all the amenities of the case to ensure proper ergonomics. Our challenge was building a vehicle that is able to take part of a worldwide competition using resources in our Ecuadorian market. The power of our new car is an engine Kawasaki ZX6R.

Car 80 Pit 30

Ecuador

FRAME CONSTRUCTION Tubular spaceframe

MATERIAL Mild steel ASTM A 500

OVERALL L / W / H (mm) 2600 / 1380 / 1405

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1570 / 1403 / 1203

WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 150

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper at 30 °

TYRES (Fr / Rr) 155x60 R13 Hoosier R25B/155x60 R13 Hoosier R25B

WHEELS (Fr / Rr) 5,5x13/5,5x13 Aluminium Alloy

ENGINE Kawasaki ZX6R

BORE / STROKE / CYLINDERS / DISPLACEMENT 66mm / 43,8mm / 4 cylinders / 599cc

COMPRESSION RATIO 11,8:1

FUEL SYSTEM Multipoint injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain Transmission

DIFFERENTIAL Torsen

COOLING Radiators with electrical fan

BRAKE SYSTEM 4-Disks system, perfored rotors with 220mm diameter, dual piston, and adjustable brake balance

ELECTRONICS electronically controlled gearbox

LEMGO
University of Applied Sciences Ostwestfalen-Lippe

The OWL Racing-Team is a young team, established in 2008. Our first car, the OWL 09 (named after the region our school is located in) finished as the best newcomer at the FS event in Italy 2009. Driven by our passion and determination to achieve success and based on this experience our team has developed the new concept -the OWL 1.2- while implementing a number of advancements and interesting technical solutions in every aspect of the car. In 2012, we've set ourselves new goals. Having reinforced the team with new dedicated students from a variety of fields we want our car to finish under the top 25 at the Formula Student Germany event in Hockenheim. Specifically for this year's car we've designed a variable intake runner system with our acclaimed iris diaphragm used as the throttle. Moreover our long term plan is to manufacture an affordable high performance competitive car.

Car 58 Pit 59

Germany

FRAME CONSTRUCTION Steel tube space frame with Al Honeycomb floor panels

MATERIAL E355

OVERALL L / W / H (mm) 2834 / 1425 / 1108

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1200 / 1220

WEIGHT WITH 68kg DRIVER (Fr / Rr) 151 / 185

SUSPENSION Unequal length A-Arms. Pull rod actuated Fox DHX 5. spring/damper units

TYRES (Fr / Rr) 20,5 x7 R13 Hoosier R25B / 20x 7,5 R13 Hoosier R25B

WHEELS (Fr / Rr) 7.0 x 13, 18 mm offset, 1 piece AL Rim / 7.0 x 13, 32 mm offset, 1 piece AL Rim

ENGINE Suzuki GSX-R 600 (K6)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Student designed/built fuel injection system using Megasquirt ECU

FUEL 99 RON Unleaded

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8900

DRIVE TYPE 520 chain

DIFFERENTIAL limited slip differential

COOLING Suzuki GSX-R 600 radiator mounted in left sidepod

BRAKE SYSTEM Cast Iron, hub mounted, 220 mm dia. Grimeca Caliper

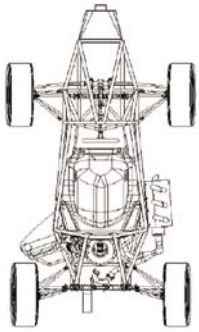
ELECTRONICS Multifunctional Steering Wheel, Launch control, elektronic gear control, variable air intake system

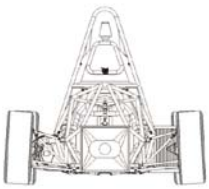
LIVERPOOL
University of Liverpool

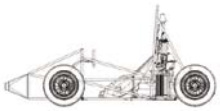
Car 24 Pit 68

United Kingdom

The University of Liverpool Motorsport team began life in 2005 and is now entering its seventh year in FSAE Competitions. The team comprises of 35 final year and penultimate year Mechanical and Product Design with Engineering MEng engineering students. The team's strategy for the 2012 competitions is one of consistency with design of ULM007 focused on reliability, serviceability and low cost manufacture. An all new Unsprung Suspension system based on 13" rims features custom wheel centres, all aluminium stub axles and AP Racing callipers.With focus on drive integration, the ULM007 chassis has an improved driver position, with adjustable pedal box and a student designed vacuum formed ABS seat. A revised bodywork methodology has resulted in a light weight vacuum formed ABS panel design with significant cost and manufacture lead time gains over glass/carbon fibre equivalents. Finally, the team wishes to thank our sponsors, without them the construction of the car wouldn't be possible.







FRAME CONSTRUCTION Tubular space frame, mechanically attached Aluminium rear bulkhead

MATERIAL CDS mild steel round tubes, TIG fusion welding, stainless steel 316-L filler

OVERALL L / W / H (mm) 2600 / 1350 / 1245

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1610 / 1222 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 128

SUSPENSION Double unequal length A-Arm. Front/Rear pull/push rod actuated spring and damper. Adjustable ARB.

TYRES (Fr / Rr) 20x6.2 R13 Avon A45 / 20x6.2 R13 Avon A45

WHEELS (Fr / Rr) 6.0x13, 50mm neg. offset, 2 pc Al Rim, student designed Al wheel centre front and rear

ENGINE 2010 Aprilia Van Den Bosch 550 V-twin Four Stroke

BORE / STROKE / CYLINDERS / DISPLACEMENT 80.0mm / 55.0mm / 2 cylinders / 549cc

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Student designed and built ,semi-sequential injection and wasted-spark ignition

FUEL 98 RON Super unleaded

MAX POWER DESIGN (rpm) 9400

MAX TORQUE DESIGN (rpm) 7200

DRIVE TYPE Tsubaki 520 alpha x-ring roller chain

DIFFERENTIAL Custom Aluminum Torsen Differential

COOLING Single side pod mounted radiator with ECU controlled electric fan

BRAKE SYSTEM 4-Disk system, 220mm diameter, AP Racing 4227 Quad piston Front, 4226 Dual piston Rear, fixed mtg

ELECTRONICS Wiring harness sealed to IP45, removable electronics housings, DTA S60 ECU with Live-Telemetry

LOUGHBOROUGH
Loughborough University

Car 29 Pit 70

United Kingdom

LUMotorsport is a volunteer organisation representing Loughborough University, the UK's top University for sports and engineering. LUMotorsport consists of 8 senior team members responsible for all aspects of the car including manufacturing, chassis, suspension, electronics and powertrain, 20 fresher team members and 7 members currently on industrial placement. LFS12 is designed both by the team and by students in academic modules. This year the car features a cast aluminium rear frame, which is 22% lighter than the steel space frame of 2011. The frame mounts the engine and rear suspension allowing the engine to be accessed in a matter of minutes for examination. The front of the car consists of a redesigned steel space frame with carbon fibre body panels, the design focuses on driver ergonomics for the 5th percentile female to the 95th percentile male. The car's electronics design is modular featuring data logging, traction control, launch control, pneumatic shifter and clutch.

FRAME CONSTRUCTION Tubular steel front spaceframes, bonded carbon fibre panels + cast aluminium rear subframe

MATERIAL 4130 and CDS Steel

OVERALL L / W / H (mm) 2854 / 1520 / 1018

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1565 / 1294 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 137 / 141

SUSPENSION Double unequal length A-Arm. Pull rod actuated spring and Cane Creek Double Barrel Dampers

TYRES (Fr / Rr) 20.5x7.0-13 Hoosier R25b

WHEELS (Fr / Rr) 20.5x7.0-13 Hoosier R25b

ENGINE Modified 2007 Honda CBR 600 RR 4 cylinder in-line

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Goodridge smooth bore hose – 4 fittings used, bespoke 4 point sequential injection

FUEL 98 Octane petrol

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 8300

DRIVE TYPE Chain

DIFFERENTIAL Drexler Formula Student Multi-disk Differential

COOLING Side Mounted Radiator with Front Duct Only and electric fan

BRAKE SYSTEM 4-Disk Floating bell mounted rotors, 0.5mm float, 220mm diameter, Outboard AP Racing Calipers

ELECTRONICS Motec ECU, datalogger, Multifunctional Steering Wheel, Pneumatic Shifting, Traction/Launch Control

MADRID
Technical University of Madrid (UPM)

Car 86 Pit 78

Spain

FRAME CONSTRUCTION Steel space frame with carbon fibre floor pans and aluminium waterjet back plate

MATERIAL S355 steel round tubing 16mm to 25 dia / Carbon fibre / 7075-T6 Aluminium

OVERALL L / W / H (mm) 2854 / 1403 / 1065

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1230 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 160

SUSPENSION Double unequal length A-Arms. Push rod actuated spring/damper F-SAE specific units

TYRES (Fr / Rr) 20.5x7.0 R13 Hoosier R25B / 20.5x7.0 R13 Hoosier R25B

WHEELS (Fr / Rr) 7.0x13, -33 mm offset, 3pc Al&Mg / 7.0x13, -2 mm offset, 3pc Al&Mg

ENGINE 2003 Yamaha R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,4:1

FUEL SYSTEM Semi-sequential injection and wasted-spark ingnition

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE 520 chain

DIFFERENTIAL Drexler limited slip differential with internal preload adjustement

COOLING Side pod mounted 900cc radiator and 260mm and thermostatic electric fan

BRAKE SYSTEM 4-Disk system, hub mounted, adjustable balance bar and rear proportioning valve

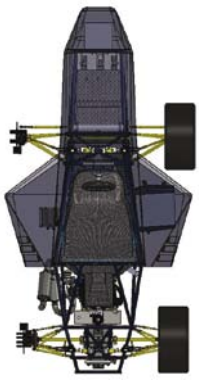
ELECTRONICS Multifunctional steering wheel, electropneumatic shifting system, AIM EVO4 Data Logging

Since 2003 UPM Racing Team, led by INSIA (Instituto Universitario de Investigación del Automóvil) and UPM (Universidad Politécnica de Madrid), has been participating in FSAE competitions, becoming the most experienced team in Spain. FSG'12 will be our 3rd participation at the Formula Student Germany Event. This year our 30 team members developed our 9th single seater: the UPM09, which is based on the experience gained with past cars. It is built around a tubular steel space frame, a four-cylinder engine and 13" wheels. We have focused our efforts on reliability to obtain a car that can go through all the dynamic tests achieving good times.

MANNHEIM
University of Applied Sciences Mannheim

Car 32 Pit 39

Germany



FRAME CONSTRUCTION Tubular space frame

MATERIAL 4130 steel round tubing 25mm dia

OVERALL L / W / H (mm) 2770 / 1453 / 1108

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1532 / 1227 / 1127

WEIGHT WITH 68kg DRIVER (Fr / Rr) 178 / 182

SUSPENSION Double, unequal length A-Arms. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 7.0/20.0-13, Avon A50 / A15

WHEELS (Fr / Rr) 8x13, 5mm neg. offset, 1 pc Al Rim

ENGINE Weber Motor / MPE610

BORE / STROKE / CYLINDERS / DISPLACEMENT 85.0mm / 53.5mm / 2 cylinders / 607cc

COMPRESSION RATIO 10,2:1

FUEL SYSTEM Student design/built, map based, multipoint electronic fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 7000

MAX TORQUE DESIGN (rpm) 4500

DRIVE TYPE Electric actuated transaxle gearbox

DIFFERENTIAL Salisbury type limited slip differential, 60 degree ramp angle

COOLING Side mounted radiator with thermostatic controlled electric fans and forward air duct

BRAKE SYSTEM 4-disk system, self developed floating rotors, 220/210mm dia, adjustable balace bar.

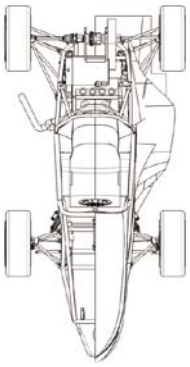
ELECTRONICS AIM data logger EVO4 with display, electric shifting system, LiFePo4 battery with BMS

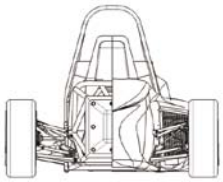
This year is the third season for the Delta Racing Team from the University of Applied Sciences Mannheim competing at our home-event in Hockenheim. Located around 30 km near the track, we are highly motivated to show the capability and performance of our car. Our most distinguishing feature is the in-line drive train composed of an intercooled turbo charged two cylinder engine and a separated 2-speed gearbox with integrated limited slip differential. Our main goals for this season is to improve reliability, reduce weight and burn a hell of rubber at the events. To reach this, we massively increased our use of composites, worked out weight reduction for many parts by not degrading stability and optimized the engine performance. The car was built to give our drivers a sharp weapon at hand, so ergonomics and suspension setup were fine tuned to their demands. In order to learn more about our car, we invite you to come over to our pit so we can proudly present you our brand new DR12TC!

MARIBOR
University of Maribor

Car 64 Pit 76

Slovenia





FRAME CONSTRUCTION Aluminium spaceframe

MATERIAL Al 6061 T6

OVERALL L / W / H (mm) 2760 / 1400 / 1135

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 158

SUSPENSION Double unequal length A-Arm. Pullrod,spring&damper, anti-roll bar (same front and rear)

TYRES (Fr / Rr) R13, subject to testing (Hoosier 7.0, Hoosier 7.5, Goodyear D2704)

WHEELS (Fr / Rr) R13, subject to testing (Hoosier 7.0, Hoosier 7.5, Goodyear D2704)

ENGINE 2008 Honda CBR 600 RR

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Stock Honda injectors, adjustable fuel pressure regulator

FUEL RON 98

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain

DIFFERENTIAL GKN clutch pack limited slip, adjustable pre-load, custom made aluminium housing

COOLING Sidepod mounted AL radiator, ECU controlled custom made fan and electro pump

BRAKE SYSTEM 4 discs, custom made; AP Racing calipers (4-cylinder front, 2-cylinder rear)

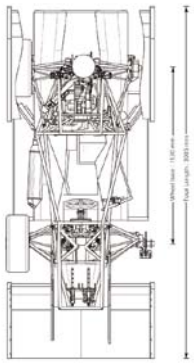
ELECTRONICS Multifunctional steering wheel, electronic shifter, DAQ system, Pit-to-Car radio

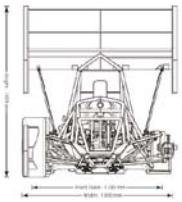
It is the second car for UNI Maribor Grand Prix Engineering. We are entering FS UK, FS AUT and FSG. The highlight remains the unique aluminium space frame. To lower the car's mass, composites were used for suspension arms, wheels, bodywork, seat, floor, intake, oil sump, steering wheel and throttle pedal. A lot of work was done on engine internals (new pistons for higher compression ratio, rotated camshafts for different valve opening diagrams, grinded cam profiles). The suspension aims to provide optimal camber curves and the ability to offer different heave and roll stiffness. The quick-shift system is simply a DC motor changing gears in under 100 ms. The custom made diff housing is as light as the most expensive commercial units. With a sophisticated DAQ system, including vehicle slip angle sensor, we were able to compare tires from two different manufacturers and improve our simulation based on TTC data. While studying to become engineers, we like to believe we are racers!

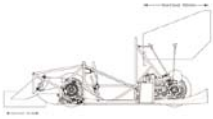
MELBOURNE
Monash University

Car 66 Pit 54

Australia







FRAME CONSTRUCTION Frt and rear tubular space frame/ Monocoque mid section, aluminium rear bulkhead

MATERIAL 1020 mild steel, 4130 chrome moly (roll hoops), carbon fibre and nomex honeycomb core panels

OVERALL L / W / H (mm) 3085 / 1300 / 1470

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1100 / 1050

WEIGHT WITH 68kg DRIVER (Fr / Rr) 133 / 135

SUSPENSION Double unequal length A-Arm. Pull/Push rod actuated spring / damper. Adjustable Roll bars

TYRES (Fr / Rr) 20x7-13 D2704 Goodyear / 20x7-13 D2704 Goodyear

WHEELS (Fr / Rr) 7x13, 63.5mm offset, 3 pc Al Rim / 7x13, -47.2mm offset, 3 pc Al Rim

ENGINE 2011 KTM 450SX-F

BORE / STROKE / CYLINDERS / DISPLACEMENT 97.0mm / 60.8mm / 1 cylinders / 449cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM MoTeC M400 ECU, sequential injection and fuel pressure regulator

FUEL 98 Octane Unleaded Gasoline

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 7500

DRIVE TYPE Single Reduction 428 Chain

DIFFERENTIAL Drexler clutch pack limited slip, 25Nm preload, 30deg ramp angle on power side

COOLING Single side radiator, thermostatic controlled electric fan. Swirl pot water

BRAKE SYSTEM 4-Disk system, self developed rotors with 207mm/172.5mm diameter, adjustable brake balance

ELECTRONICS Motec M400, PDM15, EDL, Traction control, Launch control, Gear change ignition cut. Denso Alternator

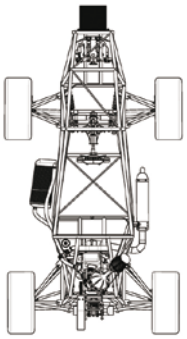
The Monash Motorsport M11 has been the team's first clean sheet redesign since 2006. Thanks to KTM, the team has recently switched to the 450SX-F single cylinder engine, which has helped us to dramatically reduce overall vehicle weight and fuel consumption. Taking advantage of the 2011 aerodynamics rule changes, the M11 runs one of the largest wings and diffuser packages ever seen in Formula Student to generate 90 kg of downforce at 60 km/h, and the car's and driver's weight in downforce at 105 km/h. Thanks to new Goodyear D2704 tyres the M11 can make the most of this additional download, and regularly sustains +2g cornering in competition. The M11 was completed four months prior to its first competition (FSAE-A 2011), and has completed 1200 km (equivalent to 54 Endurance lengths) before arriving at Formula Student Germany. We would like to thank RWTH Aachen for hosting us and we look forward to seeing all the teams in Hockenheim!

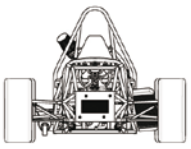
METZ
National Engineering School of Metz

This year, our team's philosophy is summarized with the following words: simplicity, reliability, lightness. To respect these original goals, the "Fearless" car is based on several main design points and/or innovations that are: • Switch from 4-cylinder engine (last year's prototype) to single-cylinder engine. • Switch from 13" rims (last year's prototype) to 10" rims. • Possible use of aluminum brake discs: 2012 innovation. • Lowering of the center of gravity's position to maximize the grip. • Car weight less than 200 kg (last year's prototype: 236 kg).

Car 57 Pit 9

France





FRAME CONSTRUCTION Steel tubular frame

MATERIAL 25CrMo4 round & square tubing, 25CrMo4 added axis, mild steel added plates

OVERALL L / W / H (mm) 2755 / 1410 / 1061

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 129

SUSPENSION Double equal (F) an unequal (R) length A-Arm, pull rod actuated spring / damper, adjustable roll bar

TYRES (Fr / Rr) Hoosier 19.5 x 6.5-10 R25B and WET

WHEELS (Fr / Rr) 6 x10, 21.4mm offset, 2 pc Al Rim

ENGINE KTM 525 EXC

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 65mm / 1 cylinders / 510cc

COMPRESSION RATIO 11:1

FUEL SYSTEM Electronic fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 6500

MAX TORQUE DESIGN (rpm) 6000

DRIVE TYPE Chain drive #520

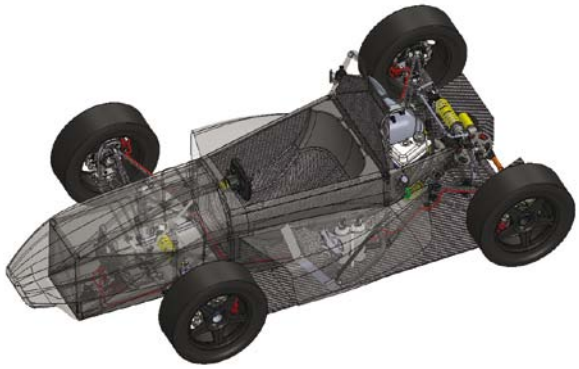
DIFFERENTIAL Drexler limited slip differential

COOLING Aluminum radiator with thermostatically controlled fan

BRAKE SYSTEM AP Racing, 16,8 mm bore front / 17,8 mm bore rear with driver adj. bias bar

ELECTRONICS Student des. datalogger, Multi-functional steering wheel, student des. electronic shifting system

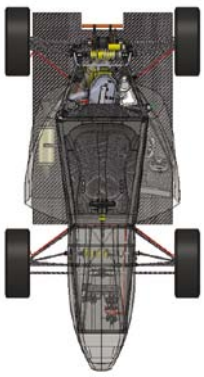
MILANO
Polytechnic University of Milan



The aim of the team is to produce a lightweight, powerful and reliable car. The small, but technically strong, team (only 26 people) has worked hard to optimize each subsection through all the car: an extremely detailed CAD model and many hours spent on FEA and CFD simulation helped us to reach our objectives. The team has worked also on the reliability of the engine, an Aprilia RXV 550 V-Twin, which allows to have high torque from the lower rpm's till redline, but is a very sensitive engine. The suspension system is unique, with a pull-rod sys. at front and a push rod sys. at rear and guarantees a simple and rapid set up of the car. The strong reductions of weight, although the chassis is a steel tubular one, and inertias complete the most competitive and well designed car ever conceived by the team. After the confirmation on the track of the performances of our small engineering jewel, Dynamis proudly presents its DPRC-XV012.

Car 101 Pit 72

Italy



FRAME CONSTRUCTION Tubular space frame

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2740 / 1270 / 1028

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1675 / 1280 / 1280

WEIGHT WITH 68kg DRIVER (Fr / Rr) 126 / 126

SUSPENSION Unequal length A-Arms. Push rod actuated. Ohlins spring/damper linear units. Anti roll bar

TYRES (Fr / Rr) 20.5x7.0-13 Hoosier

WHEELS (Fr / Rr) OZ cast aluminum 13

ENGINE Aprilia RXV550

BORE / STROKE / CYLINDERS / DISPLACEMENT 80mmmm / 55mmm / 2 cylinders / 553cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Student des/built ,fuel injection, semi-sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8900

DRIVE TYPE Chain #520

DIFFERENTIAL Bacci differential self-locking.Final drive ratio adj bt 2.92 - 3.23 by sprocket changes. Using 3.23

COOLING One left side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 2 Tilton master cylinders,mechanical bias bar,MQ and Beringer Al Calipers,student designed rotors

ELECTRONICS Dashboard, Gear control unit, Engine control unit, voltage regulator

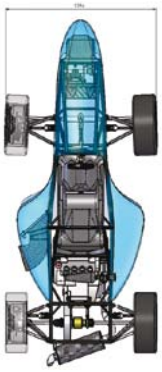
MITTWEIDA

University of Applied Sciences Mittweida

Car 96 Pit 69

Germany

Since the foundation of TMM in 2006, it has become a meeting point for motivated students from all faculties of the university, from Engineering to Media. They are all interested in motor-racing and follow the common aim in every season: a successful participation at the Formula Student competition. Going forward together, learning from each other, supporting one another. That´s just the strength of our team: Around 40 people from various courses with so many different mentalities and approches make up the team and provide many opportunities for new and unusual solutions and ways.



FRAME CONSTRUCTION Tubular spaceframe

MATERIAL Mild steel

OVERALL L / W / H (mm) 2850 / 1396 / 1185

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1170 / 1170

WEIGHT WITH 68kg DRIVER (Fr / Rr) 146 / 146

SUSPENSION Double unequal length A-Arms

TYRES (Fr / Rr) 205x510 R13

WHEELS (Fr / Rr) 205x510 R13

ENGINE Modified Honda CBR 600 (PC35)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Student designed fuel system using Trijekt ECU

FUEL 95 octane

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain 520

DIFFERENTIAL 6x adjustable limited slip Drexler differential

COOLING radiator mounted in sidepods

BRAKE SYSTEM 4 disk system mounted floating

ELECTRONICS Electropneumatic Shifting System

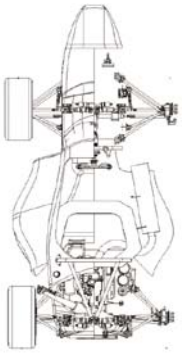
MONTRÉAL

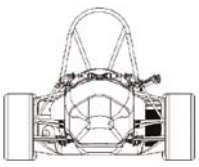
University of Québec - ETS

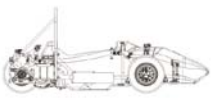
Car 31 Pit 7

Canada

The F2012 design is based on ambitious competition objectives. The chosen solution is a compact, lightweight, fuel efficient racecar designed using a numerical approach backed by extensive experimental validation.







FRAME CONSTRUCTION 1-piece monocoque

MATERIAL Carbon fiber & aluminium honeycomb composite, steel roll hoops.

OVERALL L / W / H (mm) 2527 / 1321 / 1041

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1162 / 1111

WEIGHT WITH 68kg DRIVER (Fr / Rr) 98 / 106

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 18x6.0-10 LCO Hoosier

WHEELS (Fr / Rr) 7.0x10 5mm offset 3pc Aluminium

ENGINE 2011 Yamaha WR450F

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 62.4mm / 1 cylinders / 449cc

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Motec M800, port injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE #420 cain

DIFFERENTIAL Drexler Limited-Slip Salisbury type

COOLING OEM radiators

BRAKE SYSTEM 4-disk system, 44W steel 200mm OD rotors, 2-piston calipers

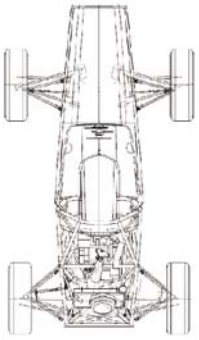
ELECTRONICS Custom dash display, Electropneumanic shifting system, Power management unit

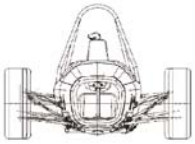
MOSCOW
Moscow State Technical University (MADI)

Car 75 Pit 15

Russia

Formula Student MADI is the first Russian FS/FSAE team and was founded in 2005. Since that time, the team has already released four FSAE cars. We are the first Russian team that decided to use CV-transmission in an FSAE car. In this year we made a great work. We fully changed the car. It is a new powerdrive, new drivetrain, absolutely new suspension with great amount of adjustments. And most importantly - Russia's first CFRP monocoque! Before us, no Russian team in motor sports did this. It is a first CFRP-monocoque fully produced in Russian. This was a main goal in this year - to master this technology. Now our team is ready to solve further problems. We are set to stay the best in Russia and try to achieve a good result in the competition. We are proud to take part in FSG event, so we want to thank our sponsors because it would not be happening without them.





FRAME CONSTRUCTION CFRP-monocoque front section with rear tubular space frame

MATERIAL Carbon&carbon-aramid fiber, Al-honeycomb & 0,2%-carbon steel tube(16-25mm diam.)

OVERALL L / W / H (mm) 2769 / 1485 / 1026

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1230 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 160

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 205/510 R13, Continental FSAE / 205/510 R13, Continental FSAE

WHEELS (Fr / Rr) 5.5x13, 36mm offset, 4 pc, Al Rim / 5.5x13, 36mm offset, 4 pc, Al Rim

ENGINE Modified Yamaha YFZ450R

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 63,4mm / 1 cylinders / 449cc

COMPRESSION RATIO 11,6

FUEL SYSTEM Yamaha injector, in student des/build injector body

FUEL 98 RON

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE Chain drive, chain #520

DIFFERENTIAL Quaife, 40 Nm preload

COOLING Rear mounted radiator with electric fan

BRAKE SYSTEM 4 on-wheel disk brake, with 220 / 205 mm rotor diameter, Wilwood PS-1 calipers

ELECTRONICS Power Commander unit

MOSCOW
Moscow State Technical University (MAMI)

Car 52 Pit 57

Russia

The Formula Student MAMI team from Moscow State Technical University «MAMI» is ready to present to you the Iguana EV04 race car. Full of energy and enthusiasm we burn with the desire to build fast cars. Iguana EV04 is a comparatively simple race car with striking asymmetrical design. Over 25 highly motivated students were involved in project. As a result the overall vehicle weight was reduced, the frame stiffness was increased, the intake system and the exhaust system were modified and a new Data Logging System was introduced in comparison with Iguana EV03. We are confident that our race car will not leave anyone indifferent. The team is ready to show good results at the FSG 2012 event.

FRAME CONSTRUCTION Tubular space frame

MATERIAL 1020 Steel (round tubing 12 to 30 mm outer diameter)

OVERALL L / W / H (mm) 2590 / 1445 / 1100

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1240 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 146 / 172

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented dampers and anti roll bar

TYRES (Fr / Rr) 205/510 R13, Continental

WHEELS (Fr / Rr) 7x13, 18mm offset, Braid Al Rim

ENGINE Modified Honda CBR600F4i

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM DTA S80Pro ECU, Walbro GSL 393 Fuel Pump, Sequential fuel injection,190 CC/min Denso injectors

FUEL 98 octane

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE Chain #520

DIFFERENTIAL Quaife limited slip differential

COOLING One side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, with front rotors 240mm Brembo P32G, rear 220mm Wilwood PS1, adj brake balance

ELECTRONICS Race Technology DL1 Data Logger, Steering wheel mounted display, Gear Shift Ignition Cut system

MUMBAI

K. J. Somaiya College of Engineering

Car 27 Pit 16

India

In 2006, a bunch of amateur yet ambitious engineering students from K. J. Somaiya College of Engineering, looking to break the shackles of an orthodox education system rolled up their sleeves and took to the workshop with passion in their hearts, tools in their hands and a battered auto rickshaw engine. Six years down the line, team Orion Racing India has grown significantly in size, improved its organization & structure and gained a lot of experience through international exposure. This year the project timeline was revised in order to reduce the time spent on design & manufacturing and increase the time spent on vehicle testing. The increased focus on testing is aimed at ensuring reliability and improving performance. The ORI-12 boasts several new features such as an indigenously designed PU foam steering wheel, a paddle shifter and a pull-rod actuated front suspension system. The team is excited to be back at FSG and looks forward to an exciting and successful run this year.

FRAME CONSTRUCTION Tubular Spaceframe

MATERIAL ASTM A179 and DIN 2391 st 52

OVERALL L / W / H (mm) 2800 / 1417 / 1162

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1220 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 141 / 172

SUSPENSION Double unequal length A-arm. Pull rod(front) and push rod(rear) actuated spring and damper system.

TYRES (Fr / Rr) 205x510 R13 ,Continental / 21.0x6.5 - 13, Hoosier

WHEELS (Fr / Rr) 7x13, 22mm offset, 1 pc Al Rim

ENGINE Honda CBR 600 F4i

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Electronic Fuel Injection, sequential, controlled with MoTeC M400 ECU

FUEL 98 Octane Gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE Chain Drive

DIFFERENTIAL Drexler clutch pack Limited Slip differential

COOLING Chassis mounted, side pod enclosed single radiator with electric waterpump and fan

BRAKE SYSTEM 4-disk system, 4-piston Wilwood calipers and AP Racing spherical bearing mounted master cylinders

ELECTRONICS Self designed data logger and telemetry system, Paddle-shifting, MoTeC M400 ECU

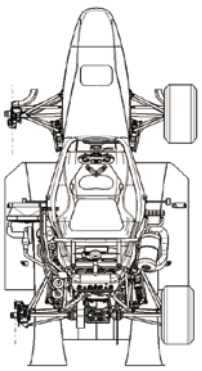
MÜNCHEN

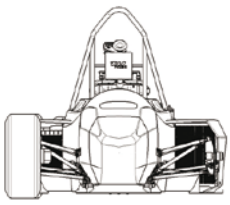
Technische Universität München

Car 2 Pit 42

Germany

In 2002 TUfast Racing team was founded, therefore we are celebrating ten years of TUfast and our ninth formula student race car with combustion engine, the nb012. Its predecessor showed that reliability and maintainability are two key factors for a successful formula student car. So the challenge was to build which reliable and well engineered. We came up with the nb012, it has a hybrid chassis, the well known Kawasaki 4-cylinder engine, lots of awesome parts, a well balance package and for the first time on a TUfast car 10" wheels. If you want to learn more about TUfast and the nb012, just come and visit us in our pit or on the campground and have a chat about our favorite theme. And don't forget to have a look at TUfast e-Technology and the eb012.





FRAME CONSTRUCTION CFRP Monocoque with aluminium sandwich with tubular steel rear space frame bolted to monoc

MATERIAL CFRP, aluminium honeycomb / 1.4462 stainless steel tube

OVERALL L / W / H (mm) 2802 / 1375 / 1039

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1160 / 1120

WEIGHT WITH 68kg DRIVER (Fr / Rr) 114 / 134

SUSPENSION unequal length A-Arms. Pull rod actuated Through Rod spring/damper units

TYRES (Fr / Rr) 6x18-10 Hoosier LC0 / 6x18-10 Hoosier LC0

WHEELS (Fr / Rr) 6x10 11,25 mm offset, hybrid cfrp/al / 6x10 15 mm offset hybrid cfrp/al

ENGINE Modified Kawasaki ZX600P ZX -6 R

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,3:1

FUEL SYSTEM Student designed fuel injection system using MoTec M800, 4 injectors close to inlet valves

FUEL 98 octane unleaded

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain 520

DIFFERENTIAL Drexler Torque sensitive limited slip differential with internal preload adjustment

COOLING Student designed radiator mounted in sidepod, electrical water pump and electrical fan

BRAKE SYSTEM 4-Disk system, self developed rotors, brake balance adjustable

ELECTRONICS several Driver aids, multifunctional steering wheel, elctropneumatic shifting

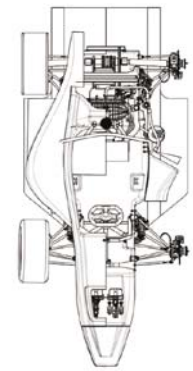
MÜNCHEN

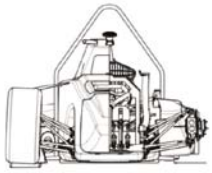
University of Applied Sciences München

municHMotorsport 1 team – 2 cars2012 is year number 7 for the municHMotorsport team from the UAS Munich competing in Formula Student and the third year entering the FSG with two cars. This season our overall slogan is "2 cars - 1 team" which outlines the strong connection of the combustion and electric team. The 2012 FSC car, our PW7.12 again focuses on massive weight reduction combined with more stiffness and better driver orientation. Therefore we use a carbon fibre monocoque combined with our well developed suspension and a Honda CBR 600 RR engine with a new developed dry sump system. A strong focus on data acquisition allows us to prepare the PW7.12 for every single event. Thanks to our university and the numerous sponsors and supporters this season we are looking forward to the FSG competition in August and are keen on meeting all our friends from other teams again. Passion is what makes the Formula Student so special. This is why our cars are named PassionWorks!

Car 26 Pit 14

Germany





FRAME CONSTRUCTION single part CFRP monocoque, tubular steel main hoop, square aluminum tube front hoop

MATERIAL SGL fabric and UD prepreg, ROHACELL foam core material

OVERALL L / W / H (mm) 2944 / 1414 / 1323

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1540 / 1224 / 1168

WEIGHT WITH 68kg DRIVER (Fr / Rr) 124 / 150

SUSPENSION Double unequal length A-Arms, Pull rod actuated, horizontally oriented spring and damper

TYRES (Fr / Rr) 20.5x7.0-13 R25B Hoosier/20.5x7.5-13 R25B Hoosier

WHEELS (Fr / Rr) 7 inch wide, 3 pc Al Rim, +18mm offset

ENGINE modified Honda CBR600RR PC40

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,4:1

FUEL SYSTEM self designed and built, cylinder selective fuel injection, 2 injectors/cylinder,

FUEL ROZ98

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE Chaindrive 428# Chain

DIFFERENTIAL Drexler Limited Slip differential

COOLING one side mounted self designed radiator with ECU controlled electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 220mm OD, adjustable brake balance, AP Racing calipers

ELECTRONICS multifunctional steering wheel, electric shifting system, servo actuated clutch system

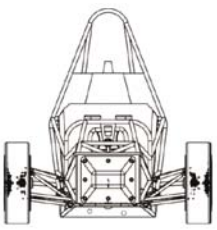
NAVI MUMBAI

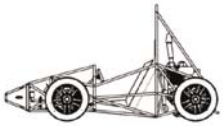
Bharati Vidyapeeth College of Engineering

Triumphant Racers from the Bharati Vidyapeeth College of Engineering, Navi Mumbai, India entering into their first year of competition, intend to gain valuable competition experience and apply in the future cars to come. The first car from the Triumphant Racers stable is named QuassR de12 and is supposed to be simple yet reliable, robust as well as cost and fuel efficient. Numerous hours of research as well as decision-making have gone into it. Pull-rod actuated coil-overs for lower center of gravity, bias bar adjustable disc brakes, space-frame chassis, student built rack and pinion, glass fiber re-inforced plastic bodywork panels describe our car.

Car 34 Pit 77

India





FRAME CONSTRUCTION tubular space frame ST52 AISI4130

MATERIAL ST52, AISI4130

OVERALL L / W / H (mm) 2600 / 1377 / 1390

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 145 / 218

SUSPENSION Unequal length A-arms, pull rod actuated horizontal oriented spring and damper (Coil over)

TYRES (Fr / Rr) R13 20.5x7 Hoosier R25B / R13 20.5x7 R13 Hoosier R25B

WHEELS (Fr / Rr) 6x13 32mm offset aluminium alloy

ENGINE Royal Enfield Classic 500

BORE / STROKE / CYLINDERS / DISPLACEMENT mm / mm / cylinders / cc

COMPRESSION RATIO

FUEL SYSTEM

FUEL

MAX POWER DESIGN (rpm)

MAX TORQUE DESIGN (rpm)

DRIVE TYPE

DIFFERENTIAL

COOLING

BRAKE SYSTEM

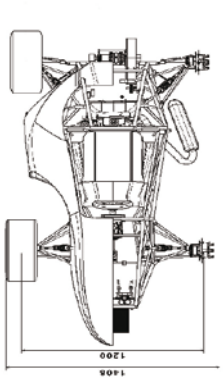
ELECTRONICS

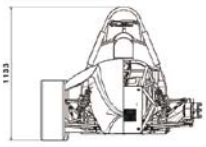
NEVERS

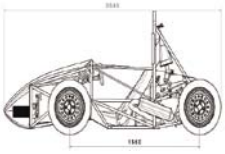
Institute of Automotive and Transport Engineering

Car 115 Pit 37

France







FRAME CONSTRUCTION Tubular Frame

MATERIAL TU37B

OVERALL L / W / H (mm) 2585 / 1408 / 1158

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1135

WEIGHT WITH 68kg DRIVER (Fr / Rr) 131 / 166

SUSPENSION Double unequal length A-Arms. Pull rod actuated spring/damper units

TYRES (Fr / Rr) 20x7-13 R25B Hoosier

WHEELS (Fr / Rr) 20x7-13 R25B Hoosier

ENGINE Yamaha XJ6

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Sequential injection managed by Bosch Motorsport MS4 Sport ECU

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE chain drive, 520

DIFFERENTIAL Drexler limited slip

COOLING Radiator with electric fan

BRAKE SYSTEM Student designed disk, laser cut from 1040 steel, hub mounted, 200mm dia. with Beringer caliper

ELECTRONICS DDU 7 Bosch Motorsport display, electric solenoid shifter

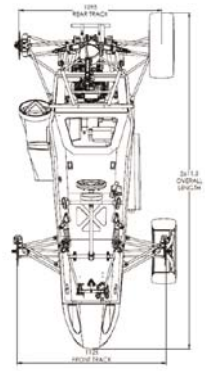
ISAT Formula Student team was created in 2003, and is composed of 17 students in first year. The whole team is renewed each year and team members work on this project in parallel with attending mechanical engineering courses. The main purpose of this project is to enable students to discover how to design and build an entire car and how to work in an autonomous way. This year is very important for us because we change our data acquisition system for a bosch Motorsport via a DDU 7 display. We also tried to work hard on weight reduction. We thank all of our sponsors and will be doing our best to embrace the best results we can this summer.

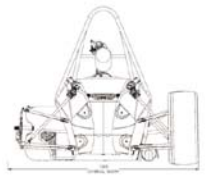
OXFORD

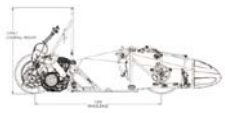
Oxford Brookes University

Car 92 Pit 35

United Kingdom







FRAME CONSTRUCTION ¾ Aluminium monocoque, tubular spaceframe rear ¼

MATERIAL Alloy steel, aluminium sandwich panel

OVERALL L / W / H (mm) 2611 / 1325 / 1096

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1125 / 1095

WEIGHT WITH 68kg DRIVER (Fr / Rr) 111 / 120

SUSPENSION Double unequal length a-arm / push rod actuated springs and dampers, Adjustable T-bar Anti-roll bar

TYRES (Fr / Rr) 20x6.2-13 Avon FITO 9241 / 20x6.2-13 Avon FITO 9242

WHEELS (Fr / Rr) 3 piece rim; CFRP wheel shell with aluminium centre

ENGINE 2008 KTM 530 EXC Single

BORE / STROKE / CYLINDERS / DISPLACEMENT 95.0mm / 72.0mm / 1 cylinders / 510cc

COMPRESSION RATIO 11.9:1

FUEL SYSTEM Student designed and built fuel injection

FUEL 100 octane

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 5500

DRIVE TYPE 520 steel chain from engine to diff moun

DIFFERENTIAL Drexler chain driven limited slip differential

COOLING Sidepod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM Cast iron rotors / AP Racing master cylinder & rear calipers / ISR front calipers

ELECTRONICS MoTeC M800 ECU

Oxford Brookes Racing has worked tirelessly to develop and manufacture the evolution of our ISISXI chassis into our new ISISXII „Miss Piggy“ for the 2012 Formula Student Germany competition. We have further improved our aluminium sandwich panel chassis, for increased focus on both weight saving for performance, and also reduced manufacturing time for cost. We are actually the only European team that competes in the FSAE competition in Michigan in a new car, showing the impressive manufacturing speed of the simple, yet effective design. At Oxford Brookes Racing we believe that you do not have to rely on expensive and costly materials to be able to produce a fast car, and we proved that with our sixth position overall in Autocross & win in the skid pad event this year at FSAE. Oxford Brookes Racing are therefore aiming to be one of the top contenders at Formula Student Germany this year. For more information join the Oxford Brookes Racing fan page on Facebook.

PADERBORN
University of Paderborn

Car 53 Pit 75

Germany

The UPBracing Team e.V. was founded in 2006 by seven students of the University of Paderborn. After one year the team took part in the first racing event at Hockenheim with their first car, the PX207. Since the foundation the team has registered a steady increase of team members. Today the team exists of about 160 members of whom about 50 students are involved in the development and organization. The team has many different activity areas, which are described in the following: More than 60 % of the team work for the main area, the mechanical engineering. Mostly they work with CAE programs to develop and optimize the various components of the car. The deadline for the construction of the car is in spring. After that the manufacturing phase begins. Another important area is the electrical engineering, as the whole car needs to be supervised and regulated including for example the equipment of a data bus of system and the construction of the cable harness.

FRAME CONSTRUCTION Business Plan Executive Summary, CFK reinforcements on the side

MATERIAL 1.7734.5 steel (15 CDV6) , 25CrMo4

OVERALL L / W / H (mm) 2820 / 1439 / 1125

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 154

SUSPENSION Doppel Querlenker (double wishbones)

TYRES (Fr / Rr) 43162 Hoosier,

WHEELS (Fr / Rr) 20.5 x 7.0-13 inch, CFK, 20.0 x 7.5-13 inch, CFK

ENGINE Suzuki GSR600 K6, modified for E85

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mmmm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 14:1

FUEL SYSTEM Student designed/built fuel sequential injection system

FUEL E85

MAX POWER DESIGN (rpm) 11200

MAX TORQUE DESIGN (rpm) 9100

DRIVE TYPE PCC8MGT-896-30

DIFFERENTIAL Drexler FormulaStudent Differential

COOLING one side pod mounted radiator with thermostatic controlled electric fans

BRAKE SYSTEM AP Racing CP4227 Piston dia. 1.00

ELECTRONICS self-designed Shifter Control Board, Traction control, 64 Can channel, Highspeed CAN 2.0 B

PADOVA
University of Padova

Car 85 Pit 47

Italy

RaceUP Team from University of Padua is at its 7th participation in Formula Student events. This year's car is developed from 2011 one, thus allowing a deeper analysis and study of components and performances. It resulted in a stiffer frame and a more ergonomic car. The overall drivability is enhanced thanks to new housing of the clutch, behind the steering wheel, and the lighter paddles.

FRAME CONSTRUCTION Tubular Space Frame

MATERIAL 25CrMo4 Steel

OVERALL L / W / H (mm) 2736 / 1446 / 1027

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1260 / 1230

WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 147

SUSPENSION Double unequal length A-Arm. Pull rod actuated longitudinal oriented spring and damper

TYRES (Fr / Rr) 20.5x6 - 13" Hoosier/ 20.5x7 - 13" Hoosier

WHEELS (Fr / Rr) 6.0x13" Al-Mg/7.0x13" Al-Mg

ENGINE Modified Honda CBR 600RR

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 14,5:1

FUEL SYSTEM MOTEC Sequential Fuel Injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE Chain 520

DIFFERENTIAL Clutch pack lsd 0 Nm preload

COOLING One pod mounted radiator with electrical fan

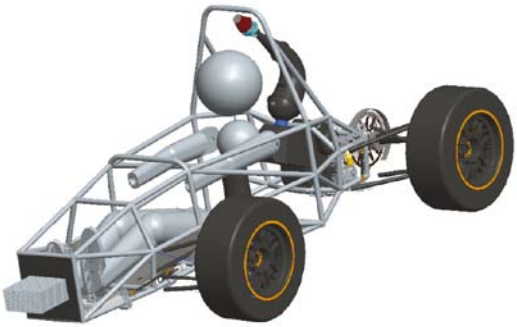
BRAKE SYSTEM 4-Disk system, floating, 220 mm diameter, brembo calipers

ELECTRONICS Traction control, Launch control, Pneumatic gear shift electronically controlled

PFORZHEIM
Pforzheim University

Car 68 Pit 62

Germany



This year the Rennschmiede Pforzheim (RSP) celebrates its Formula Student racing-premiere. Founded in 2009 we started building our team and began to develop the car-concept. Pforzheim, located between Stuttgart and Karlsruhe, is known as the centre of the German jewellery industy. At UAS Pforzheim different courses in engineering, economics, law and design are offered. 30 students of all faculties work together in our team. The car, called RSP-12 „Zabrina", follows a light-weight concept, with a total weight less than 190kg. For our first car we focussed on reliable solutions following our slogan: „By Quality a Nose Ahead". Polystyrol, combined with textile inlays form the body shell. This offers easy access to all mechanical parts of the car combined with breathtaking design. Furthermore a Head-Up-Display showing the engine speed and a gearshift signal is another outstanding feature of the RSP-12. Especially the HUD supports the driver by increased ergonomics. See you on track!

FRAME CONSTRUCTION tubular steel frame

MATERIAL

OVERALL L / W / H (mm) 2700 / 1400 / 1000

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1610 / 1220 / 1140

WEIGHT WITH 68kg DRIVER (Fr / Rr) /

SUSPENSION

TYRES (Fr / Rr)

WHEELS (Fr / Rr)

ENGINE Modified Husaberg FE570

BORE / STROKE / CYLINDERS / DISPLACEMENT
mm / mm / 1 cylinders / 570cc

COMPRESSION RATIO 13,5:1

FUEL SYSTEM

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm)

MAX TORQUE DESIGN (rpm)

DRIVE TYPE

DIFFERENTIAL

COOLING

BRAKE SYSTEM

ELECTRONICS

PISA
University of Pisa

Car 39 Pit 34

Italy

The E-Team Squadra Corse is the Formula Student team of the University of Pisa. It was established in 2007 and, currently, it has 25 members. Its fifth car, the „ET5", is designed and assembled with great attention to ergonomics, but always achieving reliability, safety, lightweight and, of course, great performances. ET5 is powered by an Aprilia SXV 5.5 twin cylinder engine and it is equipped with magnesium wheels, carbon fiber suspension arms and axle shafts. The car has an advanced electronic system for gear shifting, data acquisition and telemetry.

FRAME CONSTRUCTION Tubular space frame, TIG/MIG welded

MATERIAL AISI 4130 steel round tubing, 3/4

OVERALL L / W / H (mm) 2650 / 1388 / 1020

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1640 / 1220 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 131

SUSPENSION Double unequal length A-Arm. Push rod actuated laterally oriented spring-dampers; tors.anti-roll bar

TYRES (Fr / Rr) 20.5x7.0-13, Hoosier R25B

WHEELS (Fr / Rr) 7

ENGINE 2010 Aprilia 550 SX, 77° V twin

BORE / STROKE / CYLINDERS / DISPLACEMENT
80.0mm / 55.0mm / 2 cylinders / 549cc

COMPRESSION RATIO 12:1

FUEL SYSTEM GET-Athena Engine Management System, port injection by two coaxial Delphi injectors

FUEL 98 Octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Adj. ratio chain drive

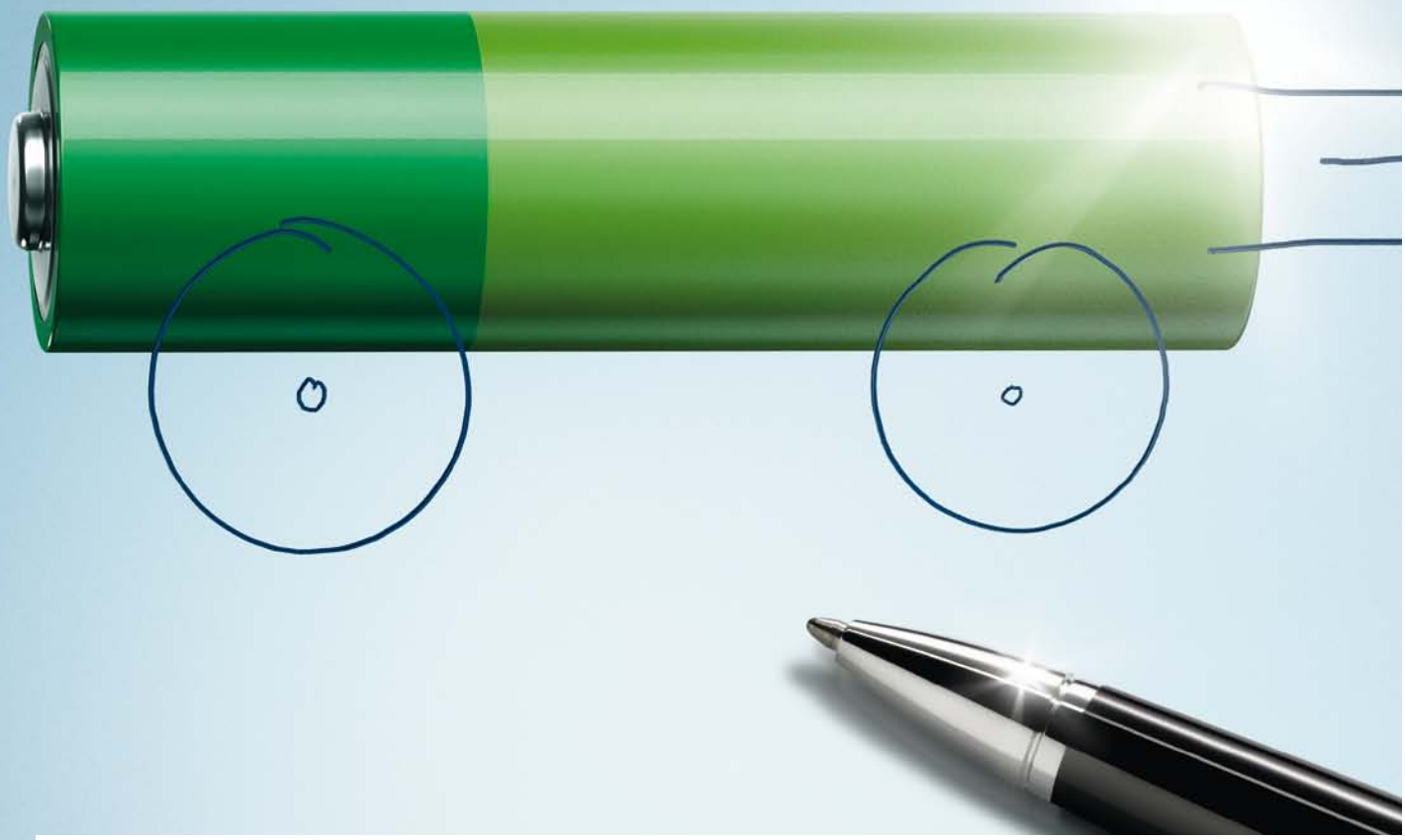
DIFFERENTIAL Drexler, clutch pack limited slip

COOLING Double side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4-Disk system, cast iron hub-mounted rotors, adjustable brake balance, motorcycle-derived calipers

ELECTRONICS Multifunctional Steering Wheel, Electropneumatic Shifting w/ Clutch-By-Wire, Bidirectional Telemetry

www.career.daimler.mobi



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DAIMLER

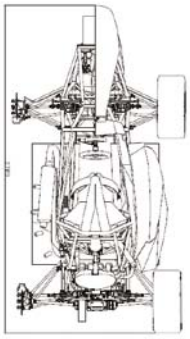
PRAGUE

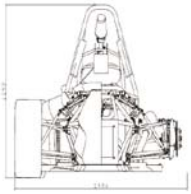
Czech Technical University in Prague

Car 33 Pit 8

Czech Republic

The CTU CarTech Formula Student Combustion Team was founded in 2008 at the Czech Technical University in Prague. After the most successful year in CTU CarTech history, the team of 20 young and motivated students started to prepare its fourth formula car for this season under the designation FS.04. Conceptually, the car is based on its predecessors, with all the efforts primarily aiming at further mass reduction and tweaking of individual subassemblies to form a better organized and higher performing package. The main goal was to finish the car as fast as possible and to have enough time for the testing. The long period testing will make our car more competitive and help us to increase reliability. Looking forward to meeting the international competition, the team is excited for the Formula Student Germany event 2012.





FRAME CONSTRUCTION Welded tubular steel space frame with bonded sandwich floor under the driver

MATERIAL 15CDV6 Alloy Steel

OVERALL L / W / H (mm) 2730 / 1502 / 1160

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1610 / 1280 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 128 / 161

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper (coil-over).

TYRES (Fr / Rr) 20,5x7-13 Hoosier R25B

WHEELS (Fr / Rr) OZ Racing 7x13

ENGINE Yamaha/YZF R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.1:1

FUEL SYSTEM Student des/manufactured fuel tank, electric fuel pump with single injector for each cylinder

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12500

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE #520 Chain Drive

DIFFERENTIAL Limited Slip Drexler

COOLING custom made single radiator, mounted in left sidepod, thermostatic controlled fan

BRAKE SYSTEM Self made 4 dis system, adjustable brake balance

ELECTRONICS Self made wiring harness, live telemetry system, Electropneumatic Shifting System

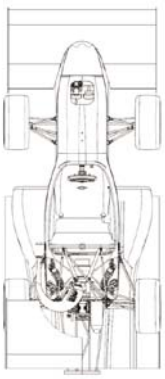
RAVENSBURG

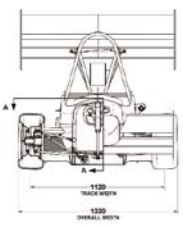
Baden-Württemberg Cooperative State University Ravensburg

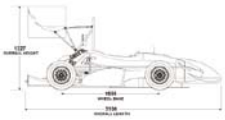
Car 1 Pit 19

Germany

Global Formula Racing is an internationally collaborative team of students from the Duale Hochschule Baden-Württemberg Ravensburg and Oregon State University. Each year the team designs two cars, a combustion car assembled at OSU and an electric car assembled at the DHBW-R. Students from both universities design, manufacture, test and compete with both cars.







FRAME CONSTRUCTION Full carbon monocoque, steel roll hoops

MATERIAL Toray T800H-6K PW/3900 Plain Weave, Hexcel nomex honeycomb, DOM 1020 mild steel

OVERALL L / W / H (mm) 3100 / 1300 / 1327

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1555 / 1145 / 1168

WEIGHT WITH 68kg DRIVER (Fr / Rr) 105 / 119

SUSPENSION Double unequal length a-arm pullrod/pushrod actuated spring and damper. Adj. anti roll bar

TYRES (Fr / Rr) 18.0 x 7.5-10 R25B Hoosier

WHEELS (Fr / Rr) 10" Keizer shells, 3/4 offset, custom aluminum center

ENGINE Honda CRF450X

BORE / STROKE / CYLINDERS / DISPLACEMENT 96mm / 62.2mm / 1 cylinders / 449cc

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Honda pump in tank, Bosch fuel injector, custom rail, full sequential

FUEL 92 (R+M)/2 octane

MAX POWER DESIGN (rpm) 9100

MAX TORQUE DESIGN (rpm) 9100

DRIVE TYPE 520 chain drive

DIFFERENTIAL Drexler clutch pack limited slip, custom end caps

COOLING Sidepod mounted oil and water coolers, electric fan

BRAKE SYSTEM Brembo P32g front, AP CP4226 rear. Tilton 77 series master cylinder and balance bar. Custom rotors

ELECTRONICS MoTeC engine management and DAQ. Strain gauges, accel, GPS, more.

REGENSBURG

University of Applied Sciences Regensburg

Dynamics: „(…) the effects of forces on the motions of bodies". There are many reasons why in December 2006 this became the name of our FS team. We, the Dynamics e.V., are a group of racing enthusiasts, who form a strong team, eager to work hard to constantly move forward and achieve our goal: building a competitive vehicle from scratch during the period of an academic year. Therefore students from the various fields of studies offered at the University of Applied Sciences in Regensburg, Germany put their effort, growing know-how gained during lectures, and physical hard work into all the stages of constructing, operating and promoting their race car, which is this season's RP12. The numerous competitions are the highlights of each season, where teams from all over the world participate. They are yet another motivation that everybody is looking forward to because in the performance of the self-made vehicle all the hard work of the previous months finally pays off.

Car 62 Pit 71

Germany

FRAME CONSTRUCTION tubular space frame

MATERIAL S355 round tubing with various diameter and wall thickness

OVERALL L / W / H (mm) 2740 / 1450 / 1055

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1250 / 1250

WEIGHT WITH 68kg DRIVER (Fr / Rr) 143 / 167

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 205x510 R13 Continental / 205x51 R13 Continental

WHEELS (Fr / Rr) 6.0x13, 1 pc Al Rim, 22mm neg offset / 6.0x13, 1 pc Al Rim, 22mm neg offset

ENGINE Honda CBR 600 RR (PC37)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,5:1

FUEL SYSTEM Mass Air, Manifold Pressure, Throttle Pos, Crank Pos

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE chain drive, standard honda gearbox

DIFFERENTIAL clutch pack limitied slip

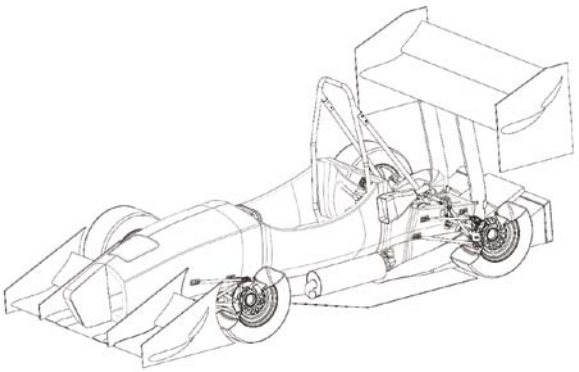
COOLING in sidepod mounted AL radiator with thermostatically controlled variable speed fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 245mm diameter, adjustable brake balance

ELECTRONICS wiring harness sealed to IP67, Electropneumatic Shifting System

ROCHESTER

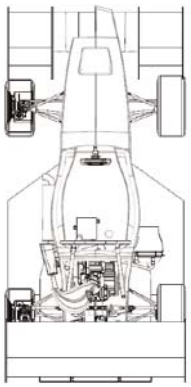
Rochester Institute of Technology

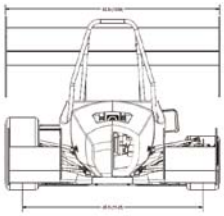


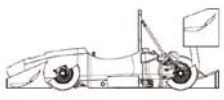
The RIT Formula SAE Racing Team has competed in thirty-eight Formula SAE and Formula Student competitions on three different continents. In twenty years, RIT has been awarded numerous accolades, including overall titles in the US, England, and Australia. In the 2011 competition season RIT placed 5th at Formula Student Germany with strong performances in individual events including a victory in Acceleration, 3rd place in Autocross, and 4th place in Skidpad. The goal of the RIT Formula SAE Racing Team is to produce a winning car for the FSAE competitions. To achieve that, the racecar must be fast, reliable, easy to drive, and efficient. An extensive simulation effort guided the design process. Physical testing was performed using both destructive and non-destructive methods. Dynamometers were used to properly tune the engine, dampers, and brakes. An efficient testing plan was designed in order to best utilize the spring season to validate critical design aspects of the vehicle.

Car 5 Pit 48

United States







FRAME CONSTRUCTION Carbon Fiber Composite Monocoque

MATERIAL

OVERALL L / W / H (mm) 2837 / 1359 / 1092

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1143 / 1143

WEIGHT WITH 68kg DRIVER (Fr / Rr) 106 / 115

SUSPENSION Double unequal length A-Arm. Front pull rod, rear push rod actuated spring and damper.

TYRES (Fr / Rr) 18x6-10 Hoosier LCO

WHEELS (Fr / Rr) 18x6-10 Hoosier LCO

ENGINE Yamaha WR450

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 63,4mm / 1 cylinders / 450cc

COMPRESSION RATIO 13,75:1

FUEL SYSTEM RIT designed/built, sequential injection, Motec ECU engine management

FUEL 98 Octane

MAX POWER DESIGN (rpm) 8000

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE Sequential Transmission, chain drive

DIFFERENTIAL Torvec Isotorque

COOLING Single Pass Radiator, Mounted to right side of chassis via structural shroud

BRAKE SYSTEM Custom 4-Disk system. Front rotor: 190mm, rear 168mm.

ELECTRONICS Pneumatic shifting, auto upshift, launch and traction control, steering wheel indicator lights

ROLLA

Missouri University of Science and Technology

We build the equivalent of a big American muscle car with a huge wing and we love it.

Car 45 Pit 55

United States

FRAME CONSTRUCTION Tubular space frame with bonded carbon shear panel floor

MATERIAL Weldment, 4130 sheet, heat treated

OVERALL L / W / H (mm) 3200 / 1400 / 1150

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1220 / 1170

WEIGHT WITH 68kg DRIVER (Fr / Rr) 118 / 145

SUSPENSION Double unequal length A-arm, adjustable roll centers, pull rods on all the way around

TYRES (Fr / Rr) Goodyear D2704 20.0x7.0-13 R110

WHEELS (Fr / Rr) custom Al centers with keizer wheels halfs

ENGINE 1999-2002 Yamaha YZF-R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 600cc

COMPRESSION RATIO 15.0:1

FUEL SYSTEM custom fuel injection

FUEL 100 octane

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 10700

DRIVE TYPE 520 x-ring chain drive

DIFFERENTIAL Limited Slip Drexler

COOLING rear mounted radiator fan cooled

BRAKE SYSTEM Simi inbourd free flouted grey cast iron routers, ISR mono block calipers

ELECTRONICS custom tefzel wiring harness, with in house designed power distribution board

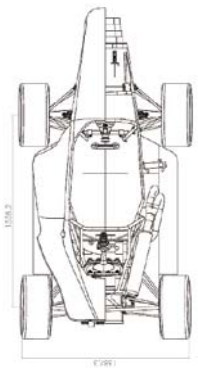
ROMA

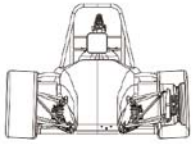
Sapienza University of Rome

Sapienza Corse racing team is the FStudent team of the University of Rome, established in 2008, participating at FSG since 2009. After the first year of experience, in the last two years our team followed a positive trend that let us reach the 17th place overall in FSG2011 and the 8th overall at FSAE Italy2011 and lead us to the top 60 in the world ranking. The 2012 team, composed by 30 students from mechanical and aeronautics engineering, has worked hard to design and build a top level car, following ambitious technical goals. During winter, several tests have been done, working on the 2011 car to set the electronics and sample different solutions for the 2012 prototype. The result of this work is „Gajarda2012“, our fifth car, build around a CFRP monocoque main frame and provided with electronic differential, carbon fiber rims and continuous variable length runners in the airbox. Sapienza Corse's definitely ready for FSG2012... what about you?

Car 19 Pit 33

Italy





FRAME CONSTRUCTION Monocoque front chassis with tubular rear frame

MATERIAL Carbon fiber lay-up with aluminum honeycomb core. Steel round tubes 25mm

OVERALL L / W / H (mm) 2600 / 1414 / 1030

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1560 / 1182 / 1162

WEIGHT WITH 68kg DRIVER (Fr / Rr) 135 / 135

SUSPENSION Double A-arm, pull rod actuated. Adjustable Antiroll bar and camber

TYRES (Fr / Rr) Hoosier 20x7.5 R25B

WHEELS (Fr / Rr) 7,5x13, 25 mm offset, Carbon Fiber Rim

ENGINE Modified Honda CBR 600F

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.5mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,5:1

FUEL SYSTEM Electronic Injection Mectronik MKE6

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE 4/8

DIFFERENTIAL Electronic differential. Open internals with electronic slip management

COOLING Twin parallel radiators, electtric pump, electronic flow controller, controlled fan

BRAKE SYSTEM Disk System, Floating,Steel, 240 mm diam. front hub mounted/190 mm diam. rear diff housing mounted

ELECTRONICS Mectronik MKE6 ECU, Electronic Shifting System, Electronic Differential Control

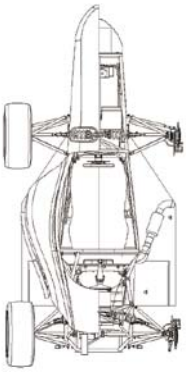
SANKT AUGUSTIN

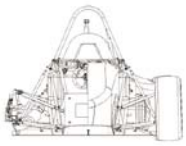
University of Applied Sciences Bonn-Rhein-Sieg

Car 44 Pit 43

Germany

The Team BRS Motorsport was founded in 2007 and we have been participating with our cars since 2009. Our Team consists of 40 students from all faculties from the University of Applied Science Bonn-Rhein-Sieg. We are proud to be part of the Formula Student Germany event in Hockenheim for the third time. For our Car The [dzi:] 12, we developed some very nice parts. In order to reduce the unsprung mass we developed carbon fiber a-arms, wheel hubs made from titanium, and forged aluminum rims made form Otto Fuchs KG with a weight of only 2.4 kg. We optimized our frame to be stiffer, lighter, safer and to integrate all mountings into the structure to get a better force flow and to make the fabrication process easier. We also advanced our engine and drive train package. We modified our air intake system, the cylinder head, all bearings inside the engine and the drive train to get the maximum power to the wheels and to the ground.





FRAME CONSTRUCTION Tubular steel space frame

MATERIAL E355 steel TIG-welded

OVERALL L / W / H (mm) 2700 / 1425 / 1050

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1545 / 1250 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 128

SUSPENSION Double unequal A-Arm, Pushrod acctuated, ZF -Sachs MDS Dampers (fully adjustabl), H&R Springs

TYRES (Fr / Rr) Hoosier R25B, 20,5x7 R13 / Hoosier 20,0x7,5 R13

WHEELS (Fr / Rr) 7x13

ENGINE Modified Yamaha RJ05, 599cm³

BORE / STROKE / CYLINDERS / DISPLACEMENT 65,5mm / 44,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,5:1

FUEL SYSTEM modified fuel system, injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12500

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE Chain drive

DIFFERENTIAL GKN-self-locking differential, housed in an aluminium case reinforced with titanium

COOLING Student-designed cooler with fan

BRAKE SYSTEM 4-disk, AP-Racing mono-block calipers, adjustable via balance bar

ELECTRONICS Touchscreen-display, shift indicator, Data transmission

SCHWEINFURT

University of Applied Sciences Würzburg-Schweinfurt

Car 97 Pit 60

Germany

Founded in 2006, the Mainfranken Racing e.V. has built a Formula Student car the fifth time by a small but effective team of about twenty members. We can look back by our standards to an amazing and successful history. Forced by passion we want to draw on that. With much blood, sweat and tears the almost new team with no event experience set up a racecar with a reasonable design in all manners. The compromise between performance and reliability, availability, maintainability and serviceability that is reached is in the end the best available total package. The born MFFive is hiding a lot of highly sophisticated technical solutions. It comes with carbon fibre rims and an innovative intake manifold. Other highlights are the steering-wheel with entirely self-developed hard- and software and a multifunctional display. Singularly the participation with a properly functioning car is already an upright success. But we want to take the road to more… Let's see in Hockenheim!

FRAME CONSTRUCTION Tubular Space Frame

MATERIAL S355/S235, Round tubing

OVERALL L / W / H (mm) 2839 / 1382 / 1052

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1210 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 147 / 159

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally spring and damper

TYRES (Fr / Rr) 200x65 R13, Good Year D2704. Front and rear

WHEELS (Fr / Rr) Self developed. 7.0x13, 22mm offset, 2pc carbon fiber rims. Front and rear

ENGINE Modified 2003 Yamaha YZF-R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 65,5mm / 44,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,4:1

FUEL SYSTEM Bosch injection valves and ignition coils, sequential injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Original transmission (Gears: N-1-2-3-4)

DIFFERENTIAL Limited slip differential (Formula Student specific differential from Drexler)

COOLING Self developed radiator in left side pod and 210 mm electric fan

BRAKE SYSTEM 4-Disk system. Floating, self developed brake rotors. Adjustable brake balance. Calipers:dual piston

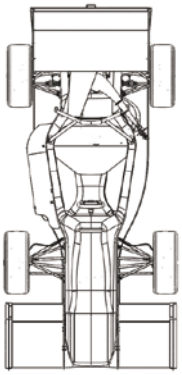
ELECTRONICS Wiring harness, battery measurement system, electical shifting system,multifunctional steering wheel

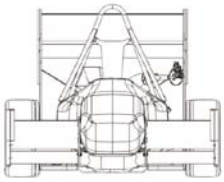
SEATTLE
University of Washington

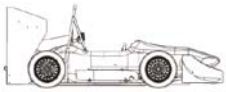
With a very new car for 2012, the UWashington Formula Motorsport team is excited to show off our best car yet. Building off of 23 years of innovation, our car runs a new single cylinder motor, has a full unidirectional carbon fiber chassis, integrated CV/hubs, a full aero package, pneumatic paddle shifter, and tightly packaged drivetrain. Relying heavily on physical test validated analysis, a great deal of care and attention to detail went into every part on the car. With one of the earliest assembly completions in recent team history, ample time has been spent testing and tuning the car for ultimate speed, reliability, and overall success. After Formula SAE Lincoln, the team will compete outside the US for the first time every at Formula Student Germany.

Car 70 Pit 24

United States







FRAME CONSTRUCTION Full Composite Monocoque

MATERIAL Toray T700 Unidirectional Fiber

OVERALL L / W / H (mm) 3010 / 1415 / 1144

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1537 / 1219 / 1168

WEIGHT WITH 68kg DRIVER (Fr / Rr) 108 / 133

SUSPENSION Double Unequal Length A-Arm. Pull Rod Actuated Horizontally Oriented Spring and Damper

TYRES (Fr / Rr) Hoosier R25B

WHEELS (Fr / Rr) 7.0x13 3 pc Al Rim

ENGINE Yamaha WR450F

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 63.4mm / 1 cylinders / 449cc

COMPRESSION RATIO 12.3

FUEL SYSTEM EngineLab ECU, Student Designed Fuel Injection

FUEL 95 Octane Unleaded

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 7500

DRIVE TYPE 520 Chain Drive

DIFFERENTIAL Drexler Limited Slip

COOLING Single Center Mounted Radiator, Thermatic Speed Controlled Fan

BRAKE SYSTEM Student Designed 4 Disk, Driver Adjustable Brake Bias

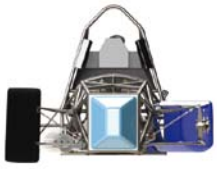
ELECTRONICS Motec ADL and EngineLab ECU, Student Designed Pneumatic Shift Syste, Dash, and Integrated Wheel

STRALSUND
University of Applied Sciences Stralsund

Founded in 1999, Baltic Racing (formerly known as „Student-Racing Team“) became Germany's very first student team to compete in the Formula Student & FSAE. Despite its location far away from the German automotive industry, the UAS Stralsund has been a pioneer of the German Formula Student movement for many years. Today, after 13 years of successful racecar building and the graduation of over 200 highly motivated and top qualified Formula Student alumni, we are very proud to continue this history with our 13th racecar: the TY2012! We would like to thank all our supporters, including our sponsors, the UAS Stralsund & its staff, our alumni & close friends as well as our beloved families, for making this project possible year after year. Without your efforts & sacrifices, our student lives wouldn't be half as educational, imprinting & enjoyable as they are right now! We cordially invite all visitors to join us in the pits & learn more about the team & our new car, the TY2012.

Car 42 Pit 36

Germany



FRAME CONSTRUCTION tubular space frame

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2810 / 1414 / 1052

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1620 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 140

SUSPENSION double unequal length A-arm. Pull- & pushrod actuated ZF Sachs RD-0 damper; driver adj. ARB's

TYRES (Fr / Rr) Continental FS 2012 205/510 R13 / Continental FS 2012 205/510 R13

WHEELS (Fr / Rr) BBS 3pc Al-Mg 7x13 / BBS 3pc Al-Mg 7x13; 12.5mm offset

ENGINE Honda CBR600 F4i PC35

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM selfdesigned fuel injection system using Walbro ECU, full sequential injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE Chain drive

DIFFERENTIAL Quaife torque sensitive Torsen B; adj. preload, self-designed 7075 T6 hard-anodized housing

COOLING left side mounted aluminium radiator, electronic fan integrated in nozzle of cooling duct

BRAKE SYSTEM 4 disc system; 220 mm front discs, 190 mm rear discs; ISR brake calipers, APRacing Master Cylinders

ELECTRONICS multifunctional display, LED´s at steering wheel; CAN; selfdesigned Live-Telemetry System

STUTTGART
University of Stuttgart

Car 3 Pit 31

Germany

Existing since 2005 Rennteam Uni Stuttgart is proud to present its 7th car in 2012. Most of the active team members spend almost all their time in building and testing the car to prepare for competitions and achieve the goal to win. The concept is a light-weight 10" wheeled car with a powerful 4 Cylinder Honda engine. The Team is known for its very special and lightweight uprights, like one can see on this years car. Various Highlights show the quality and competitiveness of the car.

FRAME CONSTRUCTION CFRP monocoque with tubular steel spaceframe rear

MATERIAL carbon fibre prepregs and aluminum hoeycomb sandwich panel; 25CrMo4 tubes

OVERALL L / W / H (mm) 2651 / 1357 / 1059

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1620 / 1170 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 116 / 126

SUSPENSION unequal length A-Arms. Pull rod (Fr) Push rod (Rr) actuated F3 through rod dampers

TYRES (Fr / Rr) 18x6-10 LCO Hoosier

WHEELS (Fr / Rr) 7 inch wide, 1 pc Al Rim,1 pc carbon, 35mm neg. offset

ENGINE Honda CBR 600 RR Pc 37

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,3:1

FUEL SYSTEM student built; 5 bar pressure; double injection

FUEL E85

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 7500

DRIVE TYPE chain drive

DIFFERENTIAL Drexler limitited slip differential TBR adjustable in drive and caster

COOLING mounted in left side pod, separated cooling cycles, electric water pump, electric fan

BRAKE SYSTEM Floating, Aluminium floaters, fixed mounted brake calipers, 195mm/182mm dia. punched

ELECTRONICS self made wiring harness, multifunctional steering wheel, live telemetry system, using CAN bus

TAMPERE
University of Applied Sciences Tampere

Car 111 Pit 44

Finland

This year we are proud to present our newest racecar FS012 which is our 5th Formula Student-class racing car. Compared to our previous car, significant changes have been made to truly challenge other teams in Europe. Over 20 students have worked with this project in development, material testing and various other manufacturing tasks. With the help of our sponsors we have been able to build a car with some of the finest components out there, resulting in a package high on quality and performance. The combination of great technical solutions with a practical and cool appearance, make this car worth looking for.

FRAME CONSTRUCTION Tubular space frame

MATERIAL Ruukki Form 500 high strength steel

OVERALL L / W / H (mm) 2510 / 1520 / 1150

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1560 / 1260 / 1240

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 140

SUSPENSION Double unequal length A-Arm. Pull rod actuated spring and damper

TYRES (Fr / Rr) Hoosier R25B 20,5x7 R13 / Hoosier R25B 20,5x7 R13

WHEELS (Fr / Rr) Keizer 7x13 31 mm offset, 3 pc Keizer CL-1 Al Rim

ENGINE Modified Yamaha Yfz450-r

BORE / STROKE / CYLINDERS / DISPLACEMENT 97mm / 60mm / 1 cylinders / 443cc

COMPRESSION RATIO 13.0:1

FUEL SYSTEM Tatech T32 engine management system with sequential fuel injection and direct fire

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 5500

DRIVE TYPE 520 Chain

DIFFERENTIAL Drexler FSAE Limited Slip Differential, STM slipper clutch

COOLING Cooling radiator mounted in sidepod, electric waterpump, electric fan

BRAKE SYSTEM 4-disc system, floating rotors with 240/220mm diameter, AP Racing calipers and main cylinders

ELECTRONICS Tatech T32 fully adjustable engine management system, Race Technology data acquisition, telemetry

THESSALONIKI

Aristotle University of Thessaloniki

Car 12 Pit 63

Greece

Aristotle Racing Team (ART) was formed in 2006 by a group of mechanical engineering students at the Aristotle University of Thessaloniki, Greece. Since its creation ART has managed to develop two racing vehicles which competed in several European FSAE events. Having gathered knowledge and experience over the past years, ART has set forth on designing its third project. The current team consists of 26 members and aims at developing a competitive single-seater for the racing track of Hockenheimring in Germany. The team's design philosophy is centered around a lightweight and reliable construction. The latest vehicle features a chromo-moly tubular frame and redesigned suspension geometry. The frame houses a HONDA CBR engine accompanied by a team-built dry sump lubrication system. It is the ambition of the team to succeed in its first FSG appearance by achieving a good overall position.

FRAME CONSTRUCTION Tubular space frame with rear aluminum plate

MATERIAL 25CrMo4 steel round tubing 14mm to 30mm and 7075 T651 aluminum plate

OVERALL L / W / H (mm) 2691 / 1387 / 1082

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1230 / 1180

WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 162

SUSPENSION Double unequal length A-Arm. Pull(Fr)-Push(Rr) rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 6.2x20 R13 Avon A45 / 7.2x20 R13 Avon A45

WHEELS (Fr / Rr) 6.0x13, +18mm offset, 2 pc Alloy Rim / 8.0x13, +31mm offset, 2 pc Alloy Rim

ENGINE Modified Honda CBR 600 RR(2007) 4 cylinder (PC40)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Student des/built, fuel injection, sequential injection

FUEL ethanol

MAX POWER DESIGN (rpm) 10400

MAX TORQUE DESIGN (rpm) 7600

DRIVE TYPE chain #525

DIFFERENTIAL Drexler Limited Speed Formula Student 2010

COOLING 1 radiator with electric water pump and 1 fan both thermostatic controlled

BRAKE SYSTEM 4-Disk system self designed rotors with 240(Fr)-220(Rr)mm outer diameter,adjustable brake balance

ELECTRONICS Student design/built Dashboard ECM,Traction-Launch control,Electromagnetic Shifting System,MOTEC ECU

TORONTO

University of Toronto

Car 11 Pit 12

Canada

The University of Toronto presents UT12 for the 2012 Formula Student Germany competition. The past 15 years of experience have culminated into this design; focused on reliable high performance. UT12 is Toronto's first 10" wheel vehicle featuring newly designed welded aluminum uprights and 6061-T6 hubs. 2012 is the fourth installment of the Honda TRX450 motor modified to increase volumetric efficiency by 7.5% while increasing broad range torque output over UT11. Design features include a high compression piston, reduced transmission gears and thermal coated stepped exhaust header. Focus was placed on creating a robust fuel /ignition map to ensure reliable operation during the testing and competition seasons. The UT12 chassis has evolved from the successful 2011 spaceframe. Chassis weight has been reduced to 24kg and represents Toronto's highest stiffness to weight ratio. We look to build off our successes in 2011 and fight for the championship in Hockenheim.

FRAME CONSTRUCTION Steel tube spaceframe

MATERIAL 1020 & 4130 steel

OVERALL L / W / H (mm) 2254 / 1391 / 1166

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1537 / 1194 / 1168

WEIGHT WITH 68kg DRIVER (Fr / Rr) 91 / 136

SUSPENSION Double unequal length A-Arm. Push rod actuated

TYRES (Fr / Rr) 18x6-10 LCO Hoosier

WHEELS (Fr / Rr) 6 inch wide,1pc Al Braid, 3 inch offset

ENGINE Honda TRX450ER

BORE / STROKE / CYLINDERS / DISPLACEMENT 96mmmm / 62mmmm / 1 cylinders / 450cc

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Student designed, EFI controlled 420cc/min injector

FUEL 100 octane gasoline

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE 4 speed sequential

DIFFERENTIAL Locked Spool

COOLING Single side-mounted radiator with sealed shroud, ECU controlled fan for target temp. of 90°C

BRAKE SYSTEM 4-Disc, ISR 4-piston calipers

ELECTRONICS student designed data logger with driver display

TRONDHEIM

Norwegian University of Science and Technology

Car 67 Pit 20

Norway

Revolve NTNU was established in autumn 2010, to give students at the Norwegian University of Science and Technology(NTNU) an opportunity to apply theory in practice. The team is divided into administration and six technical groups: Engine & drivetrain, Electronics, Driver environment & safety, Frame & bodywork, Suspension & brakes and R&D. Kongsberg Automotive supported us from the very beginning. Cooperating with Petter Solberg, a World Rally Champion, has been a great resource and inspiration for the team. Our University, with long traditions in technology and engineering, has also been a major collaborator throughout the whole project, based on traditions dating back to 1910. The car features a highly advanced, self-developed Data Acquisition System, incorporating more than 20 sensors. Using a two-stage variable intake, we achieve a high amount of torque from low RPM. Norway's participation is long-awaited, and we are glad to attend the FSG, representing Norway for the first time.

FRAME CONSTRUCTION Steel tube frame

MATERIAL Steel

OVERALL L / W / H (mm) 2900 / 1380 / 1100

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1202 / 1168

WEIGHT WITH 68kg DRIVER (Fr / Rr) 146 / 172

SUSPENSION Double unequal length A-Arm, Pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 20.5

WHEELS (Fr / Rr) 13

ENGINE 2006 / Suzuki GSX-R600 four stroke in line four

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13,3:1

FUEL SYSTEM Link G4 Xtreme, sequential fuel injection, stock injectors(upper rail only)

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE Chain drive, original gearbox

DIFFERENTIAL Torque sensitive limited slip bevel gear differential with internal preload adjustment

COOLING left side 5000cc cooling system with 280 mm electric fan

BRAKE SYSTEM Floating, Iron drilled disks, Hub mounted, dual piston front, mono piston rear

ELECTRONICS IP67, multifunctional Steering Wheel, Selfdesigned DAS and Telemetry, electric gear shift

ULM

University of Applied Sciences Ulm

Car 20 Pit 66

Germany

The very first ancestor of the race car was the Al'06. It competed at Hockenheim at its first event. Now, the Einstein Motorsport team returns with its sixth car, the Al'12. The name Einstein Motorsport was chosen because of Ulm's famous child, Albert Einstein. A goal for the team is and was to be innovative like Einstein was it. Therefore every car has been an evolution step. By the aid of sponsors it develops components which are fabricated in alternative production processes like precision casting, laser sintering of plastics and steel or lamination of carbon fiber. At the University of Applied Sciences nearly every faculty is involved, the main parts are undertaken by the faculties "mechanical and automotive engineering" and "electro technology." In 2012 the team involves the audience a step further.

FRAME CONSTRUCTION Integral monocoque,vertical seperation in 2 parts

MATERIAL Lay-up with carbon fiber and Evonik Rohacell foam

OVERALL L / W / H (mm) 2605 / 1445 / 1200

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1215 / 1190

WEIGHT WITH 68kg DRIVER (Fr / Rr) 100 / 120

SUSPENSION Double unequal length A-Arm. Pull rod actuated spring / damper. Adjustable roll bar.

TYRES (Fr / Rr) 20.5x7-13 Hoosier R25B, 20.5x7-13 Hoosier R25B

WHEELS (Fr / Rr) 7.0x13, 20mm neg offset, 1 pc carbon fiber, Rim / 7.0x13, 20mm neg offset, 1 pc carbon fib

ENGINE Modified Husaberg FE 570 ,10

BORE / STROKE / CYLINDERS / DISPLACEMENT 100mm / 72mm / 1 cylinders / 566cc

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Bosch, sequential fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE gear box, 6 gears

DIFFERENTIAL Drexler limited slip differential with internal preload adjustment

COOLING Differential mounted AL radiator with thermostatically controlled variable speed fan, integrated WP

BRAKE SYSTEM 4-disk system, adjustable brake balance, self developed rotor

ELECTRONICS Self developed control units for the shifter, aerotar, dash board

UXBRIDGE
Brunel University

Car 43 Pit 5

United Kingdom

Brunel Racing is having its hardest year for many years with minimal workshop access for the majority of the year and reduced support from the University. However the strength of the team has really shone through with dedicated team members and helpful sponsors really pulling the project back on track. This will be Brunel Racing's 13th year of competing in Formula Student and the hopes are as high as ever. BR13 is the fourth iteration of the hybrid aluminum honeycomb monocoque/rear space frame chassis, which this year incorporates a closed back to further increase chassis stiffness. Brunel Racing would like to thank all our sponsors without whom this year would really not have been possible.

FRAME CONSTRUCTION Aluminium/Aluminium Honeycomb sandwich panel – Steel Spaceframe Hybrid

MATERIAL 0.8mm 6061-T6 Al/23.4mm 3003 Core (Sandwich Panel)/ BS4T45 Round Steel Tube (Spaceframe)

OVERALL L / W / H (mm) 2736 / 1460 / 1050

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1200 / 1175

WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 141

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally orientated spring damper

TYRES (Fr / Rr) 20.0x7.5-13 R25B Hoosier

WHEELS (Fr / Rr) 20.0x7.5-13 R25B Hoosier

ENGINE Modified 2007MY Yamaha YZF-R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.6:1

FUEL SYSTEM Common Rail Port Fuel Injection, Sequential, 180cc Injectors. Integrated Fuel Delivery Module

FUEL 99RON Petrol

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 7500

DRIVE TYPE 520 Chain and 2 Sprockets

DIFFERENTIAL Drexler Limited Slip Differential, clutch type, Torque Bias Ratio of 1.704

COOLING Single Sidepod Mounted Radiator with Thermostatic Fan Integrated in to Sidepod

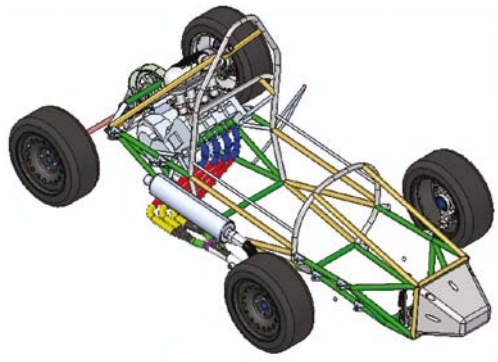
BRAKE SYSTEM 4-Disk system with 220mm Dia drilled rotors and adjustable brake balance

ELECTRONICS Electronic Gear shift, Bosch MS4 ECU

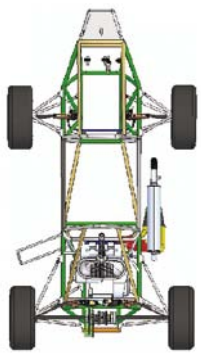
VITERBO
Tuscia University

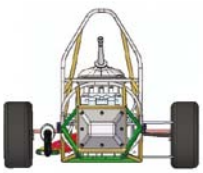
Car 119 Pit 3

Italy



TUSCIA Reparto Corse has been participating in Formula SAE since 2009. The team took part in European official events in 2010 and 2011 with encouraging results. Year after year, the team has gained higher standing as regards its debut season. The philosophy behind the 2012 project involves the design and implementation of a reliable, light, powerful, easy to drive car with a low cost of construction and maintenance. In developing the project, extensive use of CAE software was made, for the mechanical design and for the tuning of the powertrain. The main specifications in 2012 of the TUSCIA RC car consist of: optimized steel tube chassis, Honda CBR F Sport engine, intake manifolds in Polyamide nylon and exhaust manifolds in titanium, aluminum wheel group, lighter shafts with tri-pod joints, limited slip differential, data logging system with sensors for vehicle dynamics, carbon fiber bodywork for an overall car weight of 220 kg, 60 kW @ 11.500 rpm and 58 Nm @ 8.000 rpm.





FRAME CONSTRUCTION Front and rear tubular space frame with Aluminium and CFRP panels

MATERIAL 4130 steel round tubing 1.000

OVERALL L / W / H (mm) 2702 / 1423 / 1206

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1240 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 143 / 155

SUSPENSION Double unequal length A-Arm. Push rod actuated spring / damper. Adj. Roll bar

TYRES (Fr / Rr) 20x7.2-13 A45 Avon

WHEELS (Fr / Rr) 20x7.2-13 A45 Avon or 20x8.2-13 A45 Avon

ENGINE Honda CBR F Sport year 2002 4 cylinder

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 13:1

FUEL SYSTEM GET HPUH sequential injection and spark ignition, 3-D map, 74 deg BTDC ma

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE DID 520 steel chain

DIFFERENTIAL Drexler limited slip differential, Pre load: 20-25 Nm on delivery, 10 Nm after initial run in

COOLING left side pod mounted radiator with ECU controlled electric fan

BRAKE SYSTEM 4-disk, floating, Cast Iron, hub mounted, 220mm dia. X 4mm, drilled, with phonic wheel function

ELECTRONICS wiring harness sealed to IP67, GET MD3 datalogger, can bus, GPS, Gyro, traction and lunch controls

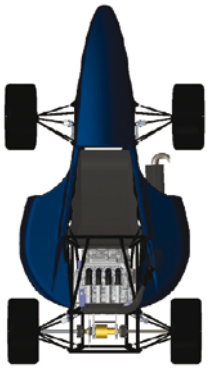
WEINGARTEN

University of Applied Sciences
Ravensburg-Weingarten

The Formula Student Team Weingarten, racing team of the UAS Ravensburg-Weingarten was founded in 2008. This year we built our 4th race car, the „Stinger 12“. We are participating at FSG for the 3rd time. Our Team consists of more than 40 motivated students, more than ever before. The experience and knowledge of the last years came along with a lot of commitment of each team member for the new vehicle. Our target was to build a race car which is easy to handle, reliable, powerful and able to have a great performance. The concept remained almost the same, a high-performance 4-cylinder engine with a steel space frame, standing on 13“ wheels. But a lot of systems have been developed during the whole year and integrated in the Stinger 12, for example a new throttle body, a traction control system and a telemetry system. Thanks to all our sponsors for their support and we are looking forward to a great season and successful competition in Hockenheim.

Car 60 Pit 10

Germany



FRAME CONSTRUCTION Steel tubular space frame

MATERIAL Steel E355

OVERALL L / W / H (mm) 2742 / 1514 / 995

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1560 / 1290 / 1250

WEIGHT WITH 68kg DRIVER (Fr / Rr) 144 / 163

SUSPENSION Double unequal length A-Arm. Pull rod actuated vertically oriented spring and damper

TYRES (Fr / Rr) 178x36 R13 Hoosier R25B racing slicks/178x36 R13 Hoosier R25B racing slicks

WHEELS (Fr / Rr) 7 inch wide, 1pc. Aluminium O.Z./7 inch wide, 1pc. Aluminium O.Z

ENGINE Honda CBR 600RR PC40

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO .

FUEL SYSTEM Bosch Motorsport ECU with sequential injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE XW-Ring Chain

DIFFERENTIAL Drexler Formula Student 2010 V.3 limited slip differential

COOLING Custommade single radiator, mounted on the left side-box with electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 220mm diameter,adjustable brake balance

ELECTRONICS Multifunctional Steering Wheel, Electropneumatic automatic Shifting System

WIEN

Vienna University of Technology

New car, new design, more horse power, less CFRP (thank you for rule 4.2). We are sticking to our supercharged single cylinder engine, modification of our air intake has made our air flow smoother. We've put our core strengths in making this car strong and built to last. We've taken the good technology from the last cars and made it even better. See you on the track and greetings from Vienna.

Car 41 Pit 73

Austria

FRAME CONSTRUCTION Tubular Steel Frame with Carbon Fibre Shear Panels

MATERIAL Mild Steel

OVERALL L / W / H (mm) 2680 / 1360 / 940

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1210 / 1170

WEIGHT WITH 68kg DRIVER (Fr / Rr) 115 / 140

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally mounted dampers.

TYRES (Fr / Rr) Continental 205x13“ & 225x13“

WHEELS (Fr / Rr) 7x13 CFRP

ENGINE Modified KTM LC4 with Supercharger and Intercooler

BORE / STROKE / CYLINDERS / DISPLACEMENT 102mm / 74.6mm / 1 cylinders / 609cc

COMPRESSION RATIO 11,1

FUEL SYSTEM Bosch MS4 Turbo

FUEL E85

MAX POWER DESIGN (rpm) 8000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain Drive

DIFFERENTIAL Drexler Formula Student LSD with modified housing

COOLING Radiator mounted in sidepod

BRAKE SYSTEM 4-Disk system, self developed rotors, adjustable brake balance, AP-Racing calipers

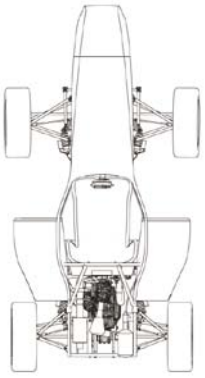
ELECTRONICS Multifunctional steering wheel, Electropneumatic Shifting System, CAN-based data logging

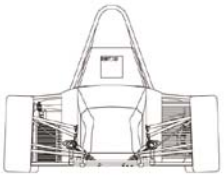
WROCŁAW
Wrocław University of Technology

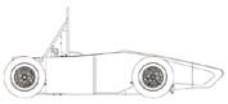
Car 13 Pit 21

Poland

PWR Racing Team is proud to present RT03 – third car of the team. This build was a great breakthrough for the team. Main area of interest was weight reduction and new materials. For the first time steel frame was replaced with monocoque. Honda CBR600RR engine was dropped in favor of KTM 450SX, which is half as heavy. Turbocharger introduction, together with E85 fuel, provides competitive amount of torque and power. Further weight optimization was done on all elements. These new technologies were challenging but helped to reduce vehicle weight below 180kg. The team consists of 30 students from several faculties at Wroclaw University of Technology and a designer from Academy of Art and Design. Divided into technical and marketing/financial teams, PWR Racing Team members have worked hard to design and build a competitive race car. Group of curious and open-minded people from different backgrounds again, have proven that competitive race cars can be built in Poland.







FRAME CONSTRUCTION Monocoque

MATERIAL Carbon fibre with aluminum honeycomb

OVERALL L / W / H (mm) 2750 / 1470 / 1140

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1610 / 1230 / 1130

WEIGHT WITH 68kg DRIVER (Fr / Rr) 112 / 136

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 508 x 182-330 A45 Avon

WHEELS (Fr / Rr) 13x6, 3 pc Al Rim

ENGINE KTM 450SX

BORE / STROKE / CYLINDERS / DISPLACEMENT 97mm / 60.8mm / 1 cylinders / 449cc

COMPRESSION RATIO 10:1

FUEL SYSTEM Student design fuel injections (two injectors)

FUEL E85

MAX POWER DESIGN (rpm) 45kW

MAX TORQUE DESIGN (rpm) 48 Nm

DRIVE TYPE Single 520 chain

DIFFERENTIAL Drexler Differential

COOLING Side mounted, 1000cc motorcycle radiator

BRAKE SYSTEM Cast Iron, hub mounted, 200 mm dia. Drilled

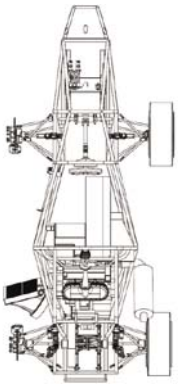
ELECTRONICS wiring harness, Multifunctional Steering Wheel, Electropneumatic Shifting System,

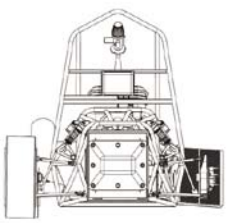
WUPPERTAL
University of Wuppertal

Car 61 Pit 2

Germany

Formula Student Germany 2012 is the first event at which the newly founded team of the University of Wuppertal participates. Formed in 2010, the Green Lion Racing Team has been designing and working on the current car for over two years. The name Green Lion Racing comes from the „green" location of the university and also from the lion as the heraldic animal of the University of Wuppertal. As a newcomer, our goal is to gain as much experience as possible, to set up a base for future cars from our team. To achieve this goal, we created a car which is reliable, good to handle and fast, of course. How fast it is, in comparison with the cars of the established teams, the upcoming event will show – We are looking forward to it! We invite you all to visit our pit for further information. Finally, we would like to thank all our supporters and sponsors. None of this would be possible without them.





FRAME CONSTRUCTION Tubular steel space frame

MATERIAL E355 Steel, 25mm diameter, 1.5-2.5mm wall thickness

OVERALL L / W / H (mm) 2945 / 1381 / 1272

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 169

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) Avon 7.0/20.0 R13, A50 FS

WHEELS (Fr / Rr) Braid Formrace 7.0x13.0, -8mm offset

ENGINE 2004 Suzuki GSX-R 600

BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Student built, sequential fuel injection system using MoTec

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Chain #520

DIFFERENTIAL Torque sensitive limited slip differential with adjustable TBR

COOLING Single side pod mounted radiator with ECU controlled electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 260mm diameter, adjustable brake balance from cockpit

ELECTRONICS Mutlifunctional cockpit display, CAN-based data logging

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AUGSBURG

University of Applied Sciences Augsburg

The 2012 Formula Student Germany competition is the first appearance of StarkStrom Augsburg, the racing team of the University of Applied Sciences Augsburg. We spend the last 20 months with not only building up our first car but also with organizing everything for a Formula Student team from the beginning. As a rookie we planned to build a rugged race car with nice features. Therefore we build a compact car with a steel space frame and two three-phase synchronous machines. Our low center of gravity leads to low inertia and yawing moment around the vertical axis. With the bodywork we wanted to create a modern redesign of the famous race cars from the 1930's. At the end we can say that we are all proud of our first race car – ASRAEL. Nevertheless we want to say "Thank You" to all of our sponsors for supporting us in the last 20 months.

Car E17 Pit E8

Germany

FRAME CONSTRUCTION Tubular steel space frame

MATERIAL S355

OVERALL L / W / H (mm) 2724 / 1365 / 1200

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1140 / 1165

WEIGHT WITH 68kg DRIVER (Fr / Rr) 160 / 240

SUSPENSION Self designed, push rod actuated, spring and damper, adjustable in compression and in rebound range

TYRES (Fr / Rr) 205/510 R13 Continental

WHEELS (Fr / Rr) 7.0x13, 22 mm offset

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 34kW, 34kW

MOTOR TYPE Siemens 1FE1082-6WS10-1BD2

MAX MOTOR RPM RR,RL: 8.500

MOTOR CONTROLLER Infineon Hybrid Kit

MAX SYSTEM VOLTAGE 532V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPO / 7,992kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:5,2 / none

DRIVE TYPE Selfdesigned planetary drive

DIFFERENTIAL none

COOLING Two rear mounted, one electric fan

BRAKE SYSTEM 4-Disk-system, self developed rotors with 250mm diameter front, and diameter 220mm rear.

ELECTRONICS D-Space autobox. Two CAN-Bus systems, with student designed datalogger function and live telemetry.

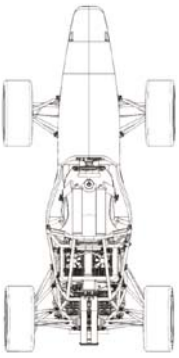
BARCELONA

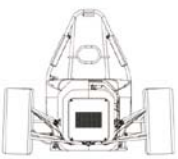
PT University of Catalonia - Engineering School of Barcelona

We ETSEIB E-Motorsport Barcelona introduce you to the CAT 05e! Our mind-blowing electric Formula Race car. ETSEIB E-Motorsport Barcelona was founded in 2007. After 4 years with combustion cars and improving the results each and every year with a really small budget we decided to go electric and adapt to the trends of the automotive industry. The CAT 05e is the first electric car from our team. We are 25 devoted students that have faced the electric car's challenge with illusion. A lot of work has been put into this year's project and even with the change of combustion to electric we expect to reduce 20 kg. The tractive system is composed of two independent powertrains to develop a traction and stability control with huge opportunities. We are really looking forward to FSE2012, #seeyouathockenheim

Car E54 Pit E9

Spain





FRAME CONSTRUCTION CFRP Monocoque front. Rear steel tubular space frame

MATERIAL MT49 200 gr. with Nomex core front. 18 to 25 diameter tube ST-52 rear

OVERALL L / W / H (mm) 2683 / 1320 / 1121

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1092 / 1063

WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 164

SUSPENSION Double unequal length A-Arm. Pull wire actuated longitudinal oriented spring and damper

TYRES (Fr / Rr) Hoosier R25B 20.5x7.0-13

WHEELS (Fr / Rr) 7.0x13 1pc Al rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 35 kW, 35 kW

MOTOR TYPE Mavilor MA55 modified

MAX MOTOR RPM 6169

MOTOR CONTROLLER Infranor CD1-k Modified

MAX SYSTEM VOLTAGE 591V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 4,17kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:5,68 / n/a

DRIVE TYPE Twin pulley-belt transmission

DIFFERENTIAL No differential. Independently controlled rear wheels

COOLING waterpump and 2 fans for motor cooling, 2 fans for motor controller cooling

BRAKE SYSTEM 4-Disk system, self developed rotors with Fr:211mm Rr:170mm dia. 4 opposing piston 24mm calipers

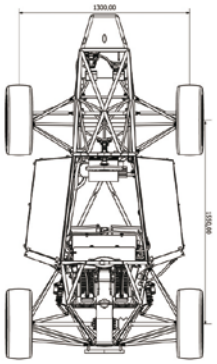
ELECTRONICS Self designed traction control and stability control, data logging, cockpit interface

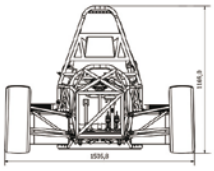
BAYREUTH
University of Bayreuth

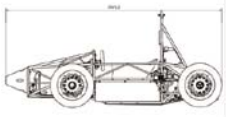
In spring 2004 a small group of engineering students at University of Bayreuth's then youngest faculty founded Elefant Racing. The name is derived from the Faculty of Applied Sciences' abreviation FAN which shares its letter string with the clever and powerful animal. Starting into season 2010/11 we decided to brake with our tradition of building monocoque combustion cars. With the FR12 Vilja the follower of the FR11, we hold on to this strategy and developed our second high performance racing car completely electric powered. Based on the special characteristics of electric engines – especially a thrilling high torque through the whole rpm range - the FR12 offers an absolute new racing experience compared to conventional combustion engines. Up to 30 minutes enthralling racing experience are provided by 950 LiFePO4 accumulator cells with a capacity of 7.6 kWh.

Car E20 Pit E21

Germany







FRAME CONSTRUCTION Tubular steel space frame, monocoque type side impact structure

MATERIAL E235

OVERALL L / W / H (mm) 2619 / 1506 / 1169

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1300 / 1300

WEIGHT WITH 68kg DRIVER (Fr / Rr) 197 / 197

SUSPENSION Double unequal length A-Arm. Pull rod actuated in plane oriented spring and damper

TYRES (Fr / Rr) 205x70 R13, Hoosier R25B / 205x70 R13, Hoosier R25B

WHEELS (Fr / Rr) 7x13, 22mm offset, 1 pc Al Rim / 7x13, 22mm offset, 1 pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 60 kW

MOTOR TYPE Perm Motor PMS156 W

MAX MOTOR RPM 6500

MOTOR CONTROLLER Infineon Hybrid Kit II

MAX SYSTEM VOLTAGE 432

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 7.6 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:4.3 / 1:4,3

DRIVE TYPE Electric

DIFFERENTIAL Electrical Differential

COOLING Water cooling

BRAKE SYSTEM 4-Disk system, self developed rotors with 219mm diam., adjust. brake balance, dual piston calipers

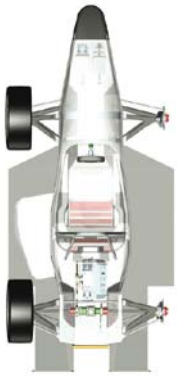
ELECTRONICS selfdesigned Live-Telemetry and Data Analyser

DARMSTADT
Technische Universität Darmstadt

DART-Racing is now participating at the Formula Student Germany for the seventh time. Over 35 highly motivated students from various fields of study are working on this year's car, the eta2012. We set our focus on the electric powertrain with all its components, beginning with new cells up to the powertrain itself with keeping compromises to a minimum. We choose new materials to maintain our dedication to sustainability and reducing the carbon footprint, so we are able to stay focused on our concept without neglecting the static disciplines. As in the years before DART-Racing does stand for innovative and progressive design: developing a new undertray with a rear diffuser we open the aerodynamic chapter at DART-Racing. Through simulation and validation drives we are able to improve our car's performance with least possible weight gain. DART-Racing is looking forward to an interesting and hopefully successful Formula Student Germany competition.

Car E25 Pit E16

Germany



FRAME CONSTRUCTION Full moncoque

MATERIAL CFRP, aluminium honeycomb sandwich

OVERALL L / W / H (mm) 2815 / 1415 / 990

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1220 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 141 / 172

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper.

TYRES (Fr / Rr) 185x40 R15, Pirelli Spec. X / 185x40 R15, Pirelli Spec. X

WHEELS (Fr / Rr) 7.0x15, 10mm offset, 1 pc Al Rim / 7.0x15, 10mm offset, 1 pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Rear center / 85 (limited)

MOTOR TYPE YASA-750

MAX MOTOR RPM 2400

MOTOR CONTROLLER Sevcon Gen4Size8

MAX SYSTEM VOLTAGE 405

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 5,25

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:1,6 /

DRIVE TYPE 520 chain drive

DIFFERENTIAL limited slip differential

COOLING sidepod mounted AKG radiator

BRAKE SYSTEM Floating, X46Cr13, hub mounted, 200mm outer dia, adjustable brake balance, ISR calipers, ABS

ELECTRONICS telemetry over WLAN, multifunctional steering wheel, CAN interface

DEGGENDORF

University of Applied Sciences
Deggendorf

FastForest represents the UAS Deggendorf in Formula Student events. Founded in June 2008, our fourth season's team consists of 45 active team members. 2012 is the first year with the team building an electric Formula Student car only and not a combustion car in addition like the years before. With the FF04e we decided to design a entirely new car. The construction consists of a monocoque front and a steel tube rear frame in order to save weight. In addition, the drivetrain was changed completely. The power unit consists of two independent 32kW asynchronous motors which are controlled by an electronical differential and a two stage planetary gearbox. The power is lead to the wheels mounted on a double wishbone suspension with a pullrod-actuated damping system. With those and many other changes made with the experience over the last seasons FF04e will be even more competitive and ready to race in Hockenheim! Moreover we want to thank our sponsors for the great cooperation.

Car E14 Pit E19

Germany

FRAME CONSTRUCTION Hybrid construction: monocoque front and steel tube rear frame

MATERIAL Carbon fiber and honeycomb sandwich, E355 steel tube frame

OVERALL L / W / H (mm) 2596 / 1403 / 1301

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1210 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 155 / 168

SUSPENSION Unequal length double wishbone suspension; pull rod actuated spring and damper

TYRES (Fr / Rr) Braid Formrace 16, 13x7J ET 18, Al Rim (one piece)

WHEELS (Fr / Rr) Braid Formrace 16, 13x7J ET 18, Al Rim (one piece)

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 38.8 kW, 38.8 kW

MOTOR TYPE Continental, asynchronous motors

MAX MOTOR RPM 17000

MOTOR CONTROLLER Continental

MAX SYSTEM VOLTAGE 403V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 5.2 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:14,31 / n/a

DRIVE TYPE Planetary drive, student designed

DIFFERENTIAL Virtual electronic diff with torque vectoring, yaw rate sensitive

COOLING Left frame mounted radiator (300mm x 400mm)

BRAKE SYSTEM 4-Disk system, self developed rotors, adjustable brake balance, front ISR and rear AP calipers

ELECTRONICS Torque vectoring, anti-slip control, CAN-Bus Data logging, selfdesigned Live-Telemetry System

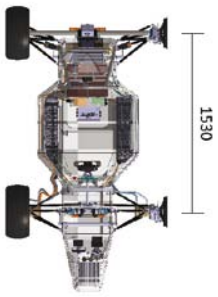
DELFT

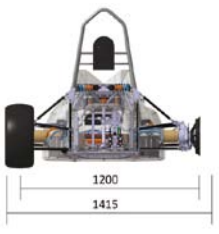
Delft University of Technology

The Delft University of Technology (DUT) Racing Team consists of sixty students from different faculties of the TU Delft, in the Netherlands. The team is unique in its systematic approach in design and project management. Nine full-time managers, together with fifty-one part-timers, dedicate their whole year on designing and building the second generation electric car, by Delft. The end product is the DUT12. The DUT12 is the first four wheel driven car ever made by the DUT Racing Team. The team started thinking about how the ultimate electric car should look like and found their ways in the focus on lightweight in combination with one motor per wheel. This will take care of an optimal dynamic performance and maximum regenerative braking capabilities, resulting in a fast and more energy efficient car. This is in our opinion the best fulfillment of the Delft Concept: Lightweight, efficient and fast!

Car E1 Pit E12

Netherlands





FRAME CONSTRUCTION Full composite monocoque with integral aluminum front hoop

MATERIAL Spread tow prepregs with AX-5201S Epoxy, Corecell M60 and Rohacell IG51 core.

OVERALL L / W / H (mm) 2445 / 1415 / 1104

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 105 / 108

SUSPENSION Double unequal length A-Arms. Front push rod & rear pull rod actuated SDS, adjustable U-type ARB

TYRES (Fr / Rr) 18x6 R10 Hoosier LC0, 6x10, 68.5mm offset, 2 pc Al-CFRP rim

WHEELS (Fr / Rr) 18x6 R10 Hoosier LC0, 6x10, -108.9mm offset, 2 pc Al-CFRP rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / fr: in-wheel, r: onboard / 28kW (per motor)

MOTOR TYPE modified AMK DT5-12

MAX MOTOR RPM 20000

MOTOR CONTROLLER AMK KW20

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 4.3kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) f 1:7.5 / r 1:13

DRIVE TYPE Front planetary gears Rear 2 stage spur

DIFFERENTIAL n/a

COOLING Radiator mounted behind the driver

BRAKE SYSTEM 4 floating rotors, front 192x2.8mm, rear 182x1.9mm, dual piston calipers,adjustable brake bias

ELECTRONICS Self developed ECU with data acquisition, slip ratio and yaw rate control, LCD and LEDs as interface

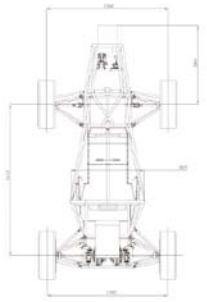
DIEPHOLZ

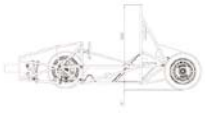
University of Applied Sciences
Diepholz/Oldenburg/Vechta

Deefholt goes dynamic isn't just a slogan, it's an attitude! Starting the 5th time for the competition and the 3rd time with an electric car, we are proud of our achievements, but not willing to relax. Our team in 2012 consists of 32 students bringing in all their competences from mechanical, electrical, industrial engineering and mechatronics. The aim: Another weight reduction. In comparison to the former frame we achieved a reduction of 4.5 kilograms. In addition, the BMS is 5 kilograms lighter, although we even added new functions. Every year we create something new. In 2012 we will start with a self-developed drive control unit, which isn't just smaller and lighter, but fulfills all the functions we need. It will control the two new DC motors with an actual power output of 18 kW per motor and a nominal torque of 42 Nm. Two planetary gears transmit the power directly to our new rims with self-developed wheel hub and central locking. We are looking forward to the event!

Car E69 Pit E2

Germany





FRAME CONSTRUCTION tubular space frame

MATERIAL 15CDV6 (1.7734)

OVERALL L / W / H (mm) 2760 / 1458 / 1162

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1610 / 1300 / 1280

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 193

SUSPENSION Double unequal length A-Arm. Pull/Push rod actuated vertically/horizontally oriented spring + damper

TYRES (Fr / Rr) 20.5x6.0 R13, Hoosier R25B / 20.5x7.0 R13, Hoosier R25B

WHEELS (Fr / Rr) 6.0x13, 2.2 mm offset, 3pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 36kW per motor

MOTOR TYPE L.M.C. D135 RAGS

MAX MOTOR RPM 4400

MOTOR CONTROLLER KDH12501A

MAX SYSTEM VOLTAGE 136V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPO / 5.27kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:4.588 /

DRIVE TYPE single-stage planetary gear

DIFFERENTIAL electronic differential

COOLING Air cooling

BRAKE SYSTEM 4-Disk System, self developed rotors with 200mm diameter, adjustable brake balance

ELECTRONICS Self-developed control system for motors, wireless telemetric system

DRESDEN

Technische Universität Dresden

Elbflorace e.V. is the fascination of Formula Student in Dresden, Saxony. The team Elbflorace was founded in 2006. After three combustion cars we have now manufactured our second full electric Formula Student race car. For the new creation we used all information gained from last year's vehicle and manufactured a smaller and lighter race car. The "Murph-E" consists of a two-parted CFRP-monocoque with a hatch at the rear for better maintainability. Our self-developed single-stage double spur gear is situated in the new self-constructed motor housing. Each gear connects one high-speed spindle motor with the drive shaft on the rear axle of the car. The wishbone inserts of the new vehicle are optimized to make sure that the adhesive is covering every surface which is needed. New sensory has been added and the car's low voltage system communicates only via CAN in 2012. Our team is excited to compete with all teams at Formula Student in Germany. ELBFLORACE – electrifying people

Car E44 Pit E18

Germany

FRAME CONSTRUCTION Multi-Parted CFRP Monocoque, assembled via structural bonding

MATERIAL IMS65 & STS40 fibres, epoxy resin, Rohacell Rist, Wood, Nomex EADS EFW

OVERALL L / W / H (mm) 2696 / 1405 / 1048

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 164 / 164

SUSPENSION Double unequal length A-arm. Pull rod actuated lateral, horizontally oriented spring and damper

TYRES (Fr / Rr) 205x510 R13, Continental

WHEELS (Fr / Rr) 6.5x13, 35mm offset, 3 pc Al/ Mg Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear, right and left / 2x 32kW

MOTOR TYPE Siemens 1FE1064-6WN11

MAX MOTOR RPM 8500

MOTOR CONTROLLER Siemens Sinamic S120

MAX SYSTEM VOLTAGE 450

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY Lithium Polymer / 5,2kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:4,84 / -

DRIVE TYPE single-stage double spur gear

DIFFERENTIAL electrical

COOLING Left and right side pod mounted radiators with thermostatic controled fans

BRAKE SYSTEM 4-Disk system, self developed rotors, 230f/220r mm diameter, adjustable brake balance

ELECTRONICS Multifunctional steering wheel, Traction control, Highspeed CAN

EINDHOVEN
Eindhoven University of Technology

Car E40 Pit E26

Netherlands

University Racing Eindhoven (URE) was founded in 2004 and had built 8 cars ever since. The team of 50 students from the smartest region in the world built URE's third electric car: the URE07. The main improvement in the URE07 is an all-new powertrain, focusing on reliability and efficiency. With a single 100 kW electric motor with an in-line planetary gear set and differential, the car will prove to get the most out of the tires. Whilst the focus was on the powertrain, the development of custom tires continued. With a self developed rain tire profile, the car will prove to be competitive in rainy conditions. By close cooperation with partners, reliable components have been produced whilst reducing the overall URE07 weight significantly. Let's race!

FRAME CONSTRUCTION Front monocoque / Rear tubular space frame

MATERIAL Front CFRP tub / Rear steel

OVERALL L / W / H (mm) 2739 / 1400 / 991

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1535 / 1180 / 1139

WEIGHT WITH 68kg DRIVER (Fr / Rr) 141 / 159

SUSPENSION Multi-link suspension, Pull rod actuated spring/ damper. Adj. Roll bar.

TYRES (Fr / Rr) 195/40R15 Vredestein / 195/40R15 Vredestein

WHEELS (Fr / Rr) 15

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Inline with rear axle / 100 kW

MOTOR TYPE YASA-750

MAX MOTOR RPM 2000

MOTOR CONTROLLER Prodrive Custom Developed

MAX SYSTEM VOLTAGE 385V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 6,5kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:1.6 /

DRIVE TYPE Planetary Gearset

DIFFERENTIAL Drexler Limited-slip differential

COOLING Motor and inverter Opticool oil cooled, self developed raditor with fans

BRAKE SYSTEM Rotors student designed, hub mounted, Front 232mm / Rear 195mm dia.

ELECTRONICS ADL3 dash logger, e816 expander, self-developed wireless tire temp. data, self-developed BMS

FREIBERG
TU Bergakademie Freiberg

Car E76 Pit E23

Germany

After developing five combustion race cars, consequently following the motto "Where there's a team there's a way", this year's Racetech Racing Team took off in the new direction of electrical racing. Studying at a University of Mining and Technology, one focus set on material science, 51 students walked the extra mile to collect the additional knowledge to realise the project. As in previous seasons our team concentrated on the use of advanced materials and manufacturing methods. A prominent demonstration of this attitude is both, our hybrid body shell made of magnesium and NFK as well as our impressive casted components such as the gearbox housing and multifunctional motor mounting. We furthermore kept the ambition to fabricate as many parts as possible on our own. A great Thanks to our sponsors, families and alumni. We are proud to participate with our first electrical race car in this year's competition and wish all teams a successful and unforgettable event season 2012.

FRAME CONSTRUCTION tubular space frame

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2732 / 1404 / 1088

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 181 / 184

SUSPENSION Double unequal length A-Arms. Pull rod actuated spring & damper

TYRES (Fr / Rr) 205/ 510 R13 Continental

WHEELS (Fr / Rr) 205/ 510 R13 Continental

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 65kW, 65kW

MOTOR TYPE RR, RL: Bosch SMG 180/120

MAX MOTOR RPM 5000

MOTOR CONTROLLER INVCON2.2

MAX SYSTEM VOLTAGE 403V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY Lithiumpolymer / 7.1 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:1.35 / 1:2.30

DRIVE TYPE Bevel gears; Spur gears

DIFFERENTIAL yaw and slip control

COOLING side mounted 340cm² radiator, PWM controlled pump and fans

BRAKE SYSTEM 4-Disk system, self developed rotors, adjustable brake balance, 4 piston ISR calipers

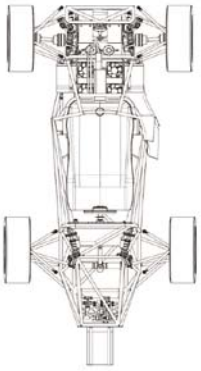
ELECTRONICS self made Tricore Board, BMS, IMU and Data Acquisition, 3 HS-CAN Systems, 3D harness, display, GPS

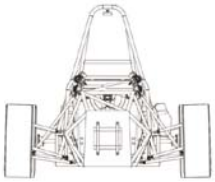
HAMBURG
Hamburg University of Technology

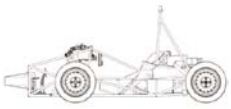
Car E23 Pit E10

Germany

The EGN 12 will be the debuting car of the Hamburg University Of Technology. The newly established team has been founded in May 2011 and managed to develop and assemble its electric vehicle within a single year. The car itself weighs about 290kg and contains different key technologies for example torque vectoring, an innovative on-board communication system, which enables easy communication with smart phones and the option of using e-call in case of an emergency. For parts of the body shell the superficial structure of a shark's skin will be applied to optimize the air flow. Two 35kW EMRAX-Motors, which were originally designed for gliding airplanes are used on the rear axles to power the back wheels via a gear of 2:1. The motors can turn up to 3000rpm with a maximum torque of 220nm – and all at 12kg each. Even though the season 2012 is the team's first Formula Student season the team managed to build a technologically developed car, it can accelerate from 0-100km/h in about 4s.







FRAME CONSTRUCTION Tubular space frame chassis

MATERIAL S355 steel round tubing / cold seamless drawn / 22mm to 25mm dia

OVERALL L / W / H (mm) 2854 / 1475 / 1209

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1625 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 147 / 221

SUSPENSION Double unequal length A-Arm. Pull rod actuated spring / damper

TYRES (Fr / Rr) 7.0/20.0x13, Avon A50 / 7.0/20.0x13, Avon A50

WHEELS (Fr / Rr) 7x13, 1pc Steel Rim / 7x13, 1pc Steel Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear left/right / 60kW, 60kW

MOTOR TYPE RR, RL: EMRAX motor from Enstroj

MAX MOTOR RPM 3000, 3000

MOTOR CONTROLLER Bamocar D3 400, Bamocar D3 400

MAX SYSTEM VOLTAGE 345V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePo4 / 6.2kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:2 / -

DRIVE TYPE student designed gearbox

DIFFERENTIAL electrically realised

COOLING water cooling system, two radiators mounted behind the driver's shoulders

BRAKE SYSTEM 4-Disk system by AP-Racing,

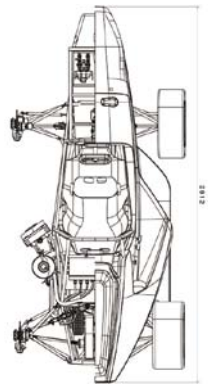
ELECTRONICS High Speed CAN 2.0B,Traction Control System, Torque Vectoring, Telebox Mini, dataconnection via GPRS

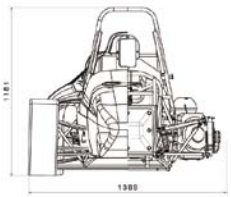
INGOLSTADT
University of Applied Sciences Ingolstadt

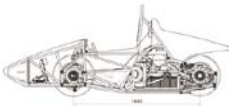
Car E34 Pit E17

Germany

Schanzer Racing Electric of UAS Ingolstadt was founded in March 2011 with the goal of offering enthusiastic students opportunity to apply their knowledge in an exciting design competition. Today the team consists of 70 students from 7 different nationalities representing a wide variety of highly accredited study programs of the university. The goal for this year's car "SRe12" was to design a dynamically well balanced car, which can be manufactured cost efficiently and run reliably in the chosen events of the season. The mechanical design consists of steel construction frame, carbon fiber A-arms and CFD-analyzed bodywork. The electrical powertrain utilizes two separately controlled external rotor electrical motors and Lithium Polymer energy storage. Come visit us at our pits, we are happy to tell you more and eCellerate your enthusiasm!







FRAME CONSTRUCTION Tubular Space Frame

MATERIAL Structural Steel

OVERALL L / W / H (mm) 2912 / 1389 / 1181

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1640 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 173 / 175

SUSPENSION Double unequal length A-Arm. Pull rod actuated vertically oriented spring and damper

TYRES (Fr / Rr) 20.5x7.0 R13, Hoosier R25B / 20.0x7.5 R13,HoosierR25B

WHEELS (Fr / Rr) 6x13, 22mm offset, 1pc Al Rim / 7x13, 22mm offset, 1pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear / 40 kW

MOTOR TYPE Permanent Motors

MAX MOTOR RPM 4500

MOTOR CONTROLLER Infinion Hyprid Kit 2 per motor

MAX SYSTEM VOLTAGE 378V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiMnNiCo2 - carbon / 7.99 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:3 / n.a.

DRIVE TYPE 2 Belt Drive 62mm width

DIFFERENTIAL virtual differential

COOLING one side pod mounted radiator with electric controlled electric fans

BRAKE SYSTEM 4-Disk system, adjustable brake balance, Brembo calipers

ELECTRONICS 3 axis acceleration sensor, cluster (HMI), powerbox

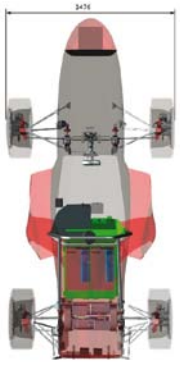
KAISERSLAUTERN

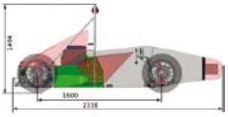
Kaiserslautern University of Technology

Car E64 Pit E31

Germany

The Kaiserslautern Racing Team was founded in 2007 as the team of the Technical University. Since the beginning of 2010 we are also officially working together with the UAS Kaiserslautern. After building four combustion cars we now develop our first electric car for this year's competition. Our concept uses two motors that drive the rear wheels which are controlled by inverters that have been programmed to realize an electric differential.





FRAME CONSTRUCTION One piece monocoque

MATERIAL CFRP prepregs, foam Rohacell 51 IG - F

OVERALL L / W / H (mm) 2338 / 1476 / 1404

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 152 / 228

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 20.0x7-13 Avon / 20.0x7-13 Avon

WHEELS (Fr / Rr) 7x13, ET 15, Aluminium / 7x13, ET 22, Aluminium

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear / 39 kW each

MOTOR TYPE VUES AFW509G

MAX MOTOR RPM 7.500 both

MOTOR CONTROLLER Stöber SDS 5450A

MAX SYSTEM VOLTAGE 510V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 7kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:5 / none

DRIVE TYPE Gear drive

DIFFERENTIAL Electronic differential programmed in inverter control software

COOLING liquid cooled motors, air cooled inverters

BRAKE SYSTEM high temp. Res. Steel., 220 mm outer dia., 172 mm inner dia., hub mounted

ELECTRONICS selfdesigned telemetry system

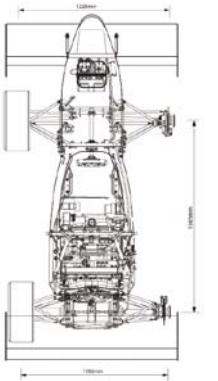
KARLSRUHE

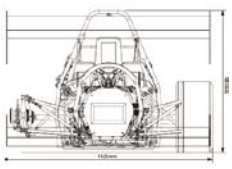
Karlsruhe Institute of Technology

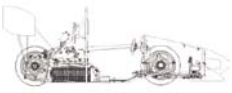
Car E21 Pit E15

Germany

Being a team of about 60 students, KA-RaceIng builds two cars every year: one with an electric drivetrain and one with a combustion engine. Starting in autumn with conception and design, we set a tight production schedule to present our new cars in April. The KIT12e is our 3rd electric car and combines the best of new ideas and tested concepts. As we are building two cars, we develop several parts which meet the requirements of both cars and improve testing time and manufacturing effort. The KIT12e is a significant improvement which is based on the knowledge earned from overall 9 vehicles developed over the last years. We refined many of the established concepts of the KIT11e and thus achieved a well designed vehicle which should support us in accomplishing our aim to score as many points as possible and reach a top ranking overall. We would like to thank all supporters and are looking forward to an exciting event in Hockenheim.







FRAME CONSTRUCTION CFRP sandwich monocoque, rear mounted drive unit with supporting tubular frame

MATERIAL Rohacell core

OVERALL L / W / H (mm) 2830 / 1425 / 983

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1565 / 1220 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 117 / 161

SUSPENSION Double unequal length CFRP A-Arms, Pull-/ Pushrod (F/R) actuated KAZ damper with coil springs

TYRES (Fr / Rr) Continental C11 205/510 R13

WHEELS (Fr / Rr) CFRP rim 7x13

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 32,1

MOTOR TYPE

MAX MOTOR RPM 18.000

MOTOR CONTROLLER

MAX SYSTEM VOLTAGE 426

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 7,28kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 13,5:1 / n/a

DRIVE TYPE coaxial planetary gear-stage

DIFFERENTIAL independent driven rear wheels

COOLING custom made low height radiator

BRAKE SYSTEM floating carbon-steel rotors, OD 230mm/220mm (F/R), ISR four/two (F/R) piston caliper

ELECTRONICS self developed live telemetry & remote parametrization, wireless data acquistion on rotating rim

KÖLN

University of Applied Sciences Köln

Car E12 Pit E24

Germany

Get ready – get green. eMotorsports Cologne is proud to present its new electric car, the eMC12. We work with tomorrow's technology to contribute to environmentally friendly mobility in the future. The team consists of more than 40 dedicated students from different subject areas. Within the project not only professional competencies enhance, also soft skills are being developed. The vehicle will be equipped with a high developed vehicle dynamics system including torque vectoring and e-diff. Further highlights of the eMC12 are extraordinary carbon driveshafts, the newest prismatic LiFePo4 cell technology and a self- designed planetary gearbox. Our Monocoque is FEM and weight optimized. On the safety side a self-developed ABS System is included. On the one hand this guaranties unique performance and on the other hand safe handling for differently skilled drivers. Thanks to all our sponsors and supporters.

FRAME CONSTRUCTION Monocoque front, rear tubular space frame

MATERIAL 25CrMo4 steel Aluminium Honeycomb 18mm, 10mm 2x2 Twill, 245gr, basic structure: outher skin 5 layer

OVERALL L / W / H (mm) 2697 / 1418 / 1070

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1220 / 1204

WEIGHT WITH 68kg DRIVER (Fr / Rr) 141 / 167

SUSPENSION Double A-Arm. Push rod actuated on the FA, Pull rod actuated on the RA. Adjustable damper

TYRES (Fr / Rr) 7.0"x13 Hoosier R25B / 7.5"x13 Hoosier R25B

WHEELS (Fr / Rr) 6.0x13, Self developed 3pc Hybrid rims, Carbon fibre inner rim, Al-7075 wheel center

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right / Rear Left / 2 X 36 kW

MOTOR TYPE LMC LEM 200 D135RAGS

MAX MOTOR RPM 4400

MOTOR CONTROLLER Student Build

MAX SYSTEM VOLTAGE 182

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePo4 / 6,47kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:4,63 / ---

DRIVE TYPE Planetary Gearbox, 3 planets

DIFFERENTIAL E-Diff with Torque Vecotring possibility

COOLING Active air cooling with ebmpapst S-Force fans and special developed Freudenberg air-filtration

BRAKE SYSTEM 4-Disk system, self developed rotors with 220mm diameter, AP Racing calipers, Self developed ABSsys

ELECTRONICS Mulifuncitonal steering wheel, Live Telemetry, Rapid Protoyping ECU with self developed Vehicle Dyn.

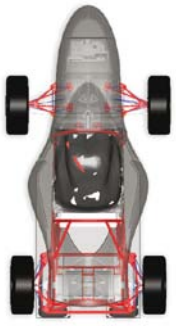
LANDSHUT

University of Applied Sciences Landshut

Car E97 Pit E27

Germany

At the 2011 event we started in the FSE with our first car ever. This year our first goal was to reduce the weight of our car. We gained a lot of experience with our first car and so we try to improve the car in all components. Our „eR12" has two permanent excited water cooled synchronous motors. The housing of the motors and the planetary gear box is self-developed. Each motor has a maximum torque of 60 Nm and continuous power of 12 kW. The accumulator has an overall capacity of 6.0 kWh and a nominal voltage of 530 V. In this car we will use torque vectoring and a racing ABS to improve the handling of the car.



FRAME CONSTRUCTION Fronthoop to rear tubular spaceframe/ Fronthoop to Bulkhead Monocoque

MATERIAL S355 round tubing 20-30mm diameter/ 1,5-2mm thickness/cfk,aramid honeycomb sandw

OVERALL L / W / H (mm) 2795 / 1460 / 1160

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 171 / 209

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally spring / damper. Adj. Roll bar.

TYRES (Fr / Rr) 20.5x7.0-13, Hoosier R25B / 20.5x7.0-13, Hoosier R25B

WHEELS (Fr / Rr) 7Jx13 H2 ET 22, 1 pc Al Rim / 7Jx13 H2 ET 22, 1 pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 80kW

MOTOR TYPE maccon RMF ACI3

MAX MOTOR RPM 10000

MOTOR CONTROLLER UNITEK-BAMOCAR D3

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPO / 6.0

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:8 / n/a

DRIVE TYPE planetary gear

DIFFERENTIAL torque vectoring

COOLING 4 side mounted 120mm fan, 2 side mounted mini radiator

BRAKE SYSTEM 4-Disk system, self developed rotors with 250mm diameter

ELECTRONICS wiring harness sealed to IP 65, Multifunctional Steering Wheel, racing ABS,

LEUVEN

Group T International University College

Formula Group T was founded in the summer of 2011 and consists of 16 Master students in Engineering. In the car, which is called Areion, the team has implemented three innovative technologies. The first one is the use of state-of-the-art thermoplastic biocomposites. Within an European Research project, the team developed a biocomposite race seat for Areion. This seat will be the demonstrator of this project. Throughout our car, you will notice an intensive use of additive manufacturing for the fabrication of complex, functional and lightweight components, in both plastic and metals. Formula Group T has used this technology for producing the body and several parts of the suspension. Thirdly, the electric drivetrain is a technological masterpiece. Beside the use of a powerful motor we developed a contactor mechanism that can change between "wye-delta" in less than 1/10th of a second while driving. In this way, both maximum performance and optimal efficiency are possible.

Car E58 Pit E32

Belgium

FRAME CONSTRUCTION Steel tubular spaceframe

MATERIAL E235 and E355 steel round tubing with diameter 25mm and wall thicknessess from 0,8 to 2,5 mm

OVERALL L / W / H (mm) 2890 / 1410 / 1250

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1200 / 1150

WEIGHT WITH 68kg DRIVER (Fr / Rr) 157 / 191

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper. Adj. Rollbar

TYRES (Fr / Rr) Hoosier 20.5 x 7.0-13 R25B

WHEELS (Fr / Rr) 7 inch wide, Keizer 7x13 Mag Rim, 2 inch neg. offset

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Rear left / 167.5kW

MOTOR TYPE EVO Electric AFM-140-3 PM Syn. Axial Flux

MAX MOTOR RPM 5000

MOTOR CONTROLLER SKAI 45

MAX SYSTEM VOLTAGE 498V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY Li(NiCoMn)O2 / 8.76kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 3.4 / n/a

DRIVE TYPE Chain drive, 520 type, 66 links

DIFFERENTIAL Drexler Limited slip differential Version 1

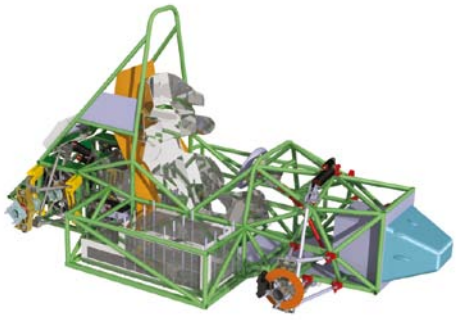
COOLING Liquid cooled motor and drive/ radiator located in sidepod

BRAKE SYSTEM Solid rotor, Cast Iron, hub mounted, 240mm dia. vented; Dual piston 30mm dia., fixed mtg

ELECTRONICS Dash mounted torque, batterie status, wheel speed, temperatures, acceleration; Main ECU: Compact RIO

MONTRÉAL

École Polytechnique de Montréal



The Formule Électrique de Polytechnique Montréal is a new small (±8 members) team founded in 2009. We chose the FSG 2012 to be our first competition ever because of the high concentration of heavily qualified judges and organizers, the presence of the world's best teams, for the incredible presence of sponsors, for the red shirts (!) and because amazing atmosphere on and around of the Hockenheimring. We are apparently the first American (read North + South American) team trying to compete in an Formula SAE/Student Electric outside the Americas! Ouf! We believe in the learning experience of the electric vehicles design and of its world's impact. We decided to give away the totality of our designs to the community through opensource licences in order to allow a maximum of collaboration and to extend the learning experience. Our goal: to reduce GHGs. Our lever: the transportation electrification education. „Well done is better than well said" - B. Franklin

Car E85 Pit E11

Canada

FRAME CONSTRUCTION Steel space-frame with round and square tubes

MATERIAL Steel AISI 4130 (Chrome-moly)

OVERALL L / W / H (mm) 2725 / 1704 / 1331

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1625 / 1270 / 1220

WEIGHT WITH 68kg DRIVER (Fr / Rr) 178 / 246

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper (coil-over).

TYRES (Fr / Rr) 177.8x76.2 R13, Goodyear Eagle D2696 / 177.8x76.2 R13, Goodyear Eagle D2696

WHEELS (Fr / Rr) 6.5x13, 57.15 mm offset, 3 pc Al Rim / 6.5x13, 31.75 mm offset, 3pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / rear, both sides of axis / 45 kW x 2

MOTOR TYPE AMK DP7-60-10-POW

MAX MOTOR RPM 7172

MOTOR CONTROLLER AMK KW 60

MAX SYSTEM VOLTAGE 420V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY Lithium NMC - graphite / 11,47 kW

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:2.7 /

DRIVE TYPE Chain

DIFFERENTIAL Electronic differential with constant torque request

COOLING Rear mounted go-kart radiator system with 2 x CPU fans

BRAKE SYSTEM 4-Disk system with 203.2x4.55 (f) / 196.9x6.35 (r) mm slotted rotors

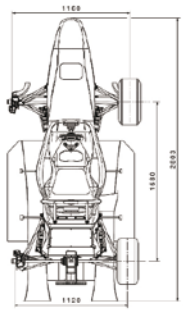
ELECTRONICS selfdesigned: BMSafe BMS, traction control, high voltage distribution system, TSAL, DCDC interface

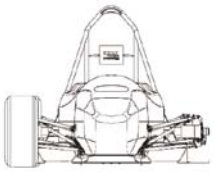
MÜNCHEN
Technische Universität München

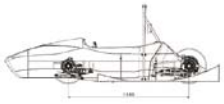
Car E4 Pit E5

Germany

In 2002 TUfast was founded and in 2010 TUfast e-Technology, therefore we are celebrating ten years of TUfast and our second formula student race car with electric engine, the eb012. Its predecessor was very successful and the overall car concept was well balanced but the car was quite heavy. The eb012 is about 60kg lighter then its predecessor, this was possible by using new lighter electric motors, self developed motor controllers, a smaller accumulator, a new lighter monocoque and for the first time on a TUfast car 10" wheels. If want to learn more about TUfast and the eb012, just come and visit us in our pit or on the campground and have a chat about our favorite theme. And don't forget to have a look at TUfast Racing Team and the nb012.







FRAME CONSTRUCTION CFRP Monocoque

MATERIAL cfrp, aluminium honeycomp

OVERALL L / W / H (mm) 2802 / 1375 / 1039

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1580 / 1160 / 1120

WEIGHT WITH 68kg DRIVER (Fr / Rr) 121 / 127

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 18x6-10 Hoosier LC0 / 18x6-10 Hoosier LC0

WHEELS (Fr / Rr) 6x10, 11,25mm offset, hybrid cfrp/alu. /6x10, 15 mm offset, hybrid cfrp/alu.

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / rear right / rear left / 60

MOTOR TYPE Enstroj EMRAX

MAX MOTOR RPM 3000

MOTOR CONTROLLER Infineon Hybrid Kit II

MAX SYSTEM VOLTAGE 404

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 5,3 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:1,85 / -

DRIVE TYPE spur gear

DIFFERENTIAL -

COOLING side pod mounted, electic fan and coolant pump

BRAKE SYSTEM 4-Disk system, self developed rotors, adjustable brake balance

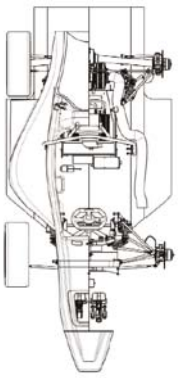
ELECTRONICS self developed Steering Wheel and Display Electronic, Telemetry System, sophisticated DAQ System

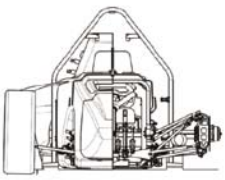
MÜNCHEN
University of Applied Sciences München

Car E32 Pit E14

Germany

municHMotorsport 1 team – 2 cars. 2012 is year number 7 for the municHMotorsport team from the UAS Munich and year 3 competing in Formula Student Electric as well as in Formula Student Combustion. This season our overall slogan is "1 team – 2 cars" which outlines the strong connection of the combustion and the electric team. The 2012 FSE car, our PWe3.12 focuses on a massive weight reduction compared to the 2011 vehicle. Therefore we use a carbon fibre monocoque combined with our well developed suspension and two light weight DC motors - one for each rear wheel. Thanks to our university and the numerous sponsors and supporters this season we are looking forward to the FSG competition in August and are keen on meeting all our friends from other teams again. Passion is what makes the Formula Student so special. This is why our cars are named PassionWorks!





FRAME CONSTRUCTION Hand laminated single part monocoque including rear car section

MATERIAL Prepreg CE-8201-200-45S woven (200g/m²), CE-1222-255-37-HM high modulus UD (255g/m²)

OVERALL L / W / H (mm) 2944 / 1414 / 1323

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1540 / 1224 / 1168

WEIGHT WITH 68kg DRIVER (Fr / Rr) 127 / 151

SUSPENSION Double unequal length A-Arms. Pull rod actuated, horizontally oriented spring and damper

TYRES (Fr / Rr) 20.5x7.0-13 R25B Hoosier / 20.5x7.5-13 R25B Hoosier

WHEELS (Fr / Rr) 7 inch wide, 3 pc Al Rim, +18mm offset

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Left / Right / 2x 36kW

MOTOR TYPE Lynch D135RAG

MAX MOTOR RPM 6000 rpm

MOTOR CONTROLLER Kelly KDH14601E

MAX SYSTEM VOLTAGE 170V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiMnO2 - graphite / 6,85

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:4,67 / n/a

DRIVE TYPE spur gear

DIFFERENTIAL Active Electrical Differential, controlled by a Microautobox

COOLING Aircooling system with two 80mm fans

BRAKE SYSTEM 4-Disk system, self developed rotors with 220mm diameter, adjustable brake balance

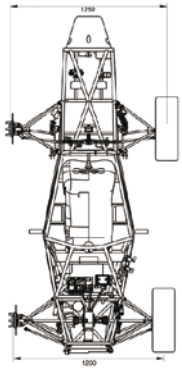
ELECTRONICS dSpace Microautobox, Self-designed analog to CAN converter

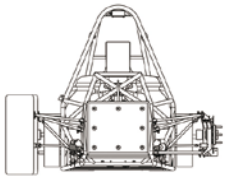
ODENSE
University of Southern Denmark

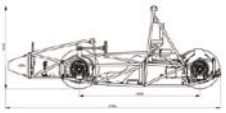
Car E31 Pit E13

Denmark

This year's car is the 5th generation of Viking cars. Up until now the team has been using combustion engines, but this year an electric car has been constructed. The new drivetrain meant that a lot of the practices and technologies used in earlier cars could not be used. That is why this years project called for a whole new level of innovation. SDU Vikings has always been very keen to develop its own solutions and avoid plug and play solutions. The name SDU Vikings was originally chosen, to tie the team together. There have always been a large number of exchange students on the team. The vikings was some of the few things the foreign students knew about Denmark, so to define the identity of the team, the name SDU Vikings was chosen as a tribute to our northern ancestors. This keept the spirit high and the team set out to conquer the world… of racing! The fact that the Viking looked like an old viking ship with its bodywork of wood, was actually just a funny coincidence.







FRAME CONSTRUCTION One piece tubular spaceframe

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2775 / 1426 / 1073

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1535 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 148 / 180

SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) Hoosier 20.5 x 6.0 x 13 R25B C2500

WHEELS (Fr / Rr) Hoosier 20.5 x 6.0 x 13 R25B C2500

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Rear / 100kW

MOTOR TYPE Yasa-750

MAX MOTOR RPM 2500

MOTOR CONTROLLER Sevcon Gen4 Size 8

MAX SYSTEM VOLTAGE 365V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 6,47kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:1 /

DRIVE TYPE Direct drive

DIFFERENTIAL Drexler 2010 V1 Limited Slip Differential

COOLING Dielectric oil with 2 sidepod mounted radiators

BRAKE SYSTEM Full floating hub mounted Ø240mm custom discs, 4 piston calipers, adjustable brake balance

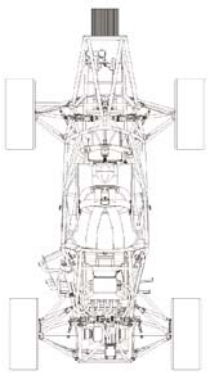
ELECTRONICS Student designed/built FPGA based Ethernet Powerlink network. Datalogging - 500 Hz, Live-Telemetry

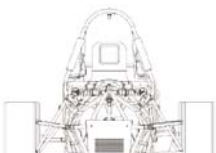
OSNABRÜCK
University of Applied Sciences Osnabrück

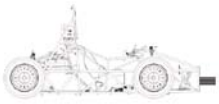
Car E67 Pit E4

Germany

The Green Emerald is the second full electric car from the Ignition Racing Team electric. With a team of about 40 enthusiastic students we use the opportunity to improve a lot since the forerunner of 2011. For this year's development the design goals of overriding importance were reliability and simplicity. Based on experiences of recent years we had the aim to build a sophisticated car with great capabilities of development. Therefore we reorganized the tractive system by reducing the number of components forcefully. Another important goal was a weight reduction of the vehicle. We strived for a mass reduction of 20% in comparison to the last year's car. This design goal could be undercut with a total mass of 242kg. In addition to the mass reduction we wanted to make the car much more compact. Hence we reduced the wheelbase and put the driver's seat more upright. Last but not least we would like to thank all supporters. We are looking forward to an exciting event in Hockenheim.







FRAME CONSTRUCTION Tubular Steel Space Frame

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2744 / 1455 / 1173

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1625 / 1250 / 1195

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 170

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 20.5x7 - 13; Hoosier R25B / 20.5x7 - 13; Hoosier R25B

WHEELS (Fr / Rr) 7.0x13; 10.0mm offset; 2 pc Al Rim / 7.0x13; 10.0mm offset; 2 pc Al Rim

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Rear Center / 85 kW*

MOTOR TYPE PMSM - YASA 750

MAX MOTOR RPM 2000

MOTOR CONTROLLER Sevcon Size4 Gen8

MAX SYSTEM VOLTAGE 403V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY Li-NMC / 6,25 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1 / 1

DRIVE TYPE Direct

DIFFERENTIAL Limited Slip Differential

COOLING Oil cooling system with side mounted radiator

BRAKE SYSTEM 4-Disk system; self developed rotors with 220mm diameter; adjustable brake balance

ELECTRONICS Traction Control; Wiring harness sealed to IP67; 2xCAN-Bus

RAVENSBURG

Baden-Württemberg Cooperative
State University Ravensburg

Global Formula Racing is the first international collaboration of its kind in the history of both, the US-based Formula SAE and the EU-based Formula Student programs. The former BA-Racing-Team from Duale Hochschule Baden-Württemberg (DHBW) and the Beaver Racing team from Oregon State University (OSU) have combined forces to compete as a single entity 2010. The two universities share physical and intellectual resources by using advanced communication-technology to create a highly competitive vehicle. Design, manufacturing, and testing occur simultaneously at both schools. The supply chain management is unique in Formula Student and, as well as the English language, the team language, very important for cross-border cooperation. The 2010 car laid down a foundation, that since, is being continuously improved. In 2012 we will, for the second time, build an combustion car at OSU and an electrical car at DHBW. In 2012, we will reconfirm our successful seasons from the past two years.

Car E11 Pit E22

Germany

FRAME CONSTRUCTION Full Monocoque / Steel Roll Hoops

MATERIAL Toray T800H-6k PW/3900 Plain Weave, Hexcel nomex honeycomb, 1020 DOM mild steel

OVERALL L / W / H (mm) 2474 / 1328 / 1160

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1555 / 1145 / 1145

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 160

SUSPENSION Double unequal length A-Arm. Pull and push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 7.5/18.0-10 R25B Hoosier

WHEELS (Fr / Rr) 7.5/18.0-10 R25B Hoosier

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 1 / Rear / 95

MOTOR TYPE Remy / HVH250

MAX MOTOR RPM 10.000

MOTOR CONTROLLER RMS PM100DX

MAX SYSTEM VOLTAGE 403

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiCoO2 - graphite / 5,33

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:3,3 / N/A

DRIVE TYPE 520 non-O-ring chain

DIFFERENTIAL Drexler clutch pack limited slip with custom end caps

COOLING Two passive air cooled radiators located in a scoop on the right

BRAKE SYSTEM 4-Disk system, custom floating rotors 168mm (FR), 163mm(RR), Brembo (FR) and AP (RR) calipers

ELECTRONICS Wiring Harness in Aerospace Std, Live-Telemetry System, Modular Battery Design, Self-designed CCU

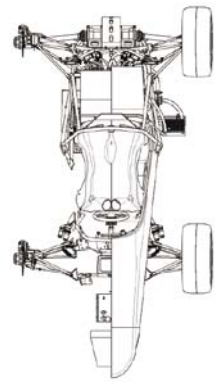
REGENSBURG

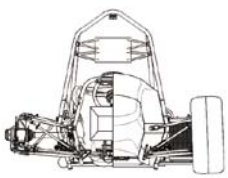
University of Applied Sciences
Regensburg

The regenics Formula Student Electric Team of the University of Applied Sciences (UAS) in Regensburg was founded in 2010 by the experienced team members out of the Formula Student Combustion Team at the UAS Regensburg. We are very proud to integrate over 50 members from nearly all faculties of the university in one team. Every team member is part of a subteam and has clearly defined tasks for which he is fully responsible. This season we will participate the second time in the competition and we have learned from the past difficulties. One technical highlight of our ‚RP12e' is the monocoque and the lithium polymer batteries which provide the lightness of our car. An additional advantage of the monocoque is an enhanced safety for the driver. Due to the two water-cooled, permanent exited synchronous motors we can gain a peak torque of more than 500 Nm per wheel controlled by a self-build ECU. We are looking forward to meet the other teams and to have a great competition!

Car E62 Pit E20

Germany





FRAME CONSTRUCTION Hybrid CFRP-Moncoque with tubular steel rear

MATERIAL HM UD and twill Prepreg, Aluminium Honeycomb and Rohacell core material

OVERALL L / W / H (mm) 2695 / 1500 / 1078

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1575 / 1458 / 1420

WEIGHT WITH 68kg DRIVER (Fr / Rr) 112 / 135

SUSPENSION Double unequal length A-Arms in front and rear; pullrod in front; pushrod in rear

TYRES (Fr / Rr) Continental C12

WHEELS (Fr / Rr) 7.0x13" O.Z. Racing wheels with self developped centerlock system

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right and Left / 63 kW, 63 kW

MOTOR TYPE Enstroj Emrax

MAX MOTOR RPM 3500

MOTOR CONTROLLER Infineon Hybrid Kit 1 Pin-Fin

MAX SYSTEM VOLTAGE 404V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiNiCoMnO2 / 7.1

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:2,65 / -

DRIVE TYPE Double belt drive

DIFFERENTIAL Electronic active differential (with torque vectoring)

COOLING Single side mounted radiator with temperature controlled waterpump

BRAKE SYSTEM 4-Disk System, self developed rotors, radial mounted rake calipers

ELECTRONICS Self-developed main ECU, telemetry via WLAN and radio frequency

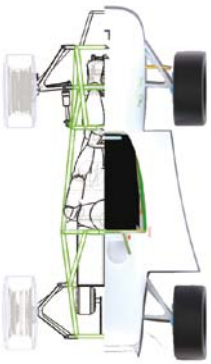
SAN SEBASTIÁN

TECNUN - University of Navarra

Car E41 Pit E30

Spain

Hello everybody!! Regards from Tecnun University's Seed Group Team. This is our first year in Formula Student Germany, and we are working very hard to meet the targets. We are very excited about the competition this year, as we expect a great performance from our team. We wish all the teams good luck with the final work and we hope to see everybody at Hockenheim. See you all!!



FRAME CONSTRUCTION Optimized tubular steel roll bars

MATERIAL Steel

OVERALL L / W / H (mm) 2500 / 1370 / 1700

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1650 / 1250 / 1259

WEIGHT WITH 68kg DRIVER (Fr / Rr) 126 / 189

SUSPENSION Double unequal A-Arm Pull rod operated horizontal dampers adjustable in bump and rebound

TYRES (Fr / Rr) Hoosier 20.

WHEELS (Fr / Rr) 2 PC Aluminum 13x7 ET-8

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / Front and rear wheels / 50KW

MOTOR TYPE BLDC HPM-10KW

MAX MOTOR RPM 6000

MOTOR CONTROLLER Kelly Controller KHB14401

MAX SYSTEM VOLTAGE 144V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 4.32

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:5 / na

DRIVE TYPE na

DIFFERENTIAL Electrically controlled vectorial differential

COOLING Auto-cooled rotor motor

BRAKE SYSTEM 4 Disk system

ELECTRONICS Self-developed central unit

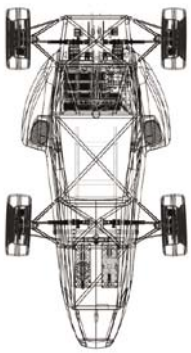
SINT-KATELIJNE-WAVER

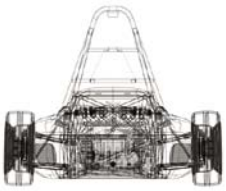
Lessius Mechelen University College - De Nayer

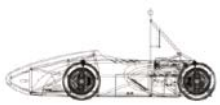
Car E37 Pit E28

Belgium

The Lessius Racing Team is the first Belgian Formula student team founded in 2009. The team is connected to UAS Lessius Mechelen - Campus de Nayer, situated in Sint-Katelijne-Waver, Belgium. For our second fully-built car we've decided to go electric. This choice was made because we believe electric drivetrains are the future and we want to make the students accustomed with this green technology. The team also managed to spread the bio-story over other components of the car. Full bio-composite bodypanels and floor-elements are used. The manufacturing process of the uprights is also more eco-friendly. The car is put together by about 20 students from the engineering department and about the same number of students from the technology department. They've worked hard since the ending of last school year to finish the design and fabrication on time to compete in Formula Student UK and Formula Student Germany. We'd like to thank all our sponsors for their financial and material support.







FRAME CONSTRUCTION One piece tubular spaceframe

MATERIAL cold formed metal tubing

OVERALL L / W / H (mm) 2860 / 1486 / 1282

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1543 / 1297 / 1297

WEIGHT WITH 68kg DRIVER (Fr / Rr) 105 / 195

SUSPENSION Double unequal length A-Arm. Pushrod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 205/510 R13 34M Continental

WHEELS (Fr / Rr) 13

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Left & Rear Right / 60kW, 60kW

MOTOR TYPE RL,RR: Enstroj Emrax LC Perm. Magnet AC

MAX MOTOR RPM RL,RR: 3.000

MOTOR CONTROLLER Unitek Bamocar D3

MAX SYSTEM VOLTAGE 403V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiFePO4 / 8kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:2.5 / 1:2.5

DRIVE TYPE Single 520 chain/motor

DIFFERENTIAL Electronic

COOLING Dual mini-radiator with 120mm fan, sidepod mounted

BRAKE SYSTEM Cast iron, drilled, hub mounted, 228.6mm diameter. Adjustable brake balance.

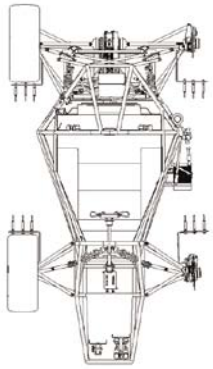
ELECTRONICS Self designed data-acquisition, integrated Torque Encoder, IP67 sealed wiring harness, IP67 sealed

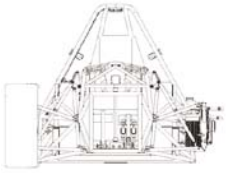
STOCKHOLM
KTH Royal Institute of Technology

This season KTH Racing, the FS-team of the Royal Institute of Technology Stockholm, designed and engineered its 9th car so far, the R9e. The highly motivated and multinational team from all levels of university education decided to completely start from scratch to set a sustainable basis for the next years. The design goals of the R9e were an agile and easy-to-drive racing car, which was achieved by a low inertia and a low centre of gravity. Contrary to the last year, the electric drivetrain is driven by two AC motors, that deliver 85kW peak power. The purchased build-in motors are integrated in a fully self-developed motor housing that is attached to a self-developed two stage gear box. The powertrain represents a fully integrated and lightweight unit delivering independent torques to each of the rear wheel, managed by a torque vectoring system. KTH Racing want to thank all sponsors and collaborators and is looking forward to having a successful competition on Hockenheim this summer.

Car E71 Pit E3

Sweden





FRAME CONSTRUCTION Tubular steel space frame

MATERIAL 1020 steel round tubing 18 to 25mm dia

OVERALL L / W / H (mm) 2860 / 1380 / 1010

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1160 / 1140

WEIGHT WITH 68kg DRIVER (Fr / Rr) 125 / 153

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented Penske 7800 dampers

TYRES (Fr / Rr) Hoosier 205x55 R13 R25B

WHEELS (Fr / Rr) Hoosier 205x55 R13 R25B

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Center rear / 52kW per motor

MOTOR TYPE Siemens 1FE1082-6WP with self designed shafts

MAX MOTOR RPM 8000

MOTOR CONTROLLER Infineon hybrid kit 2

MAX SYSTEM VOLTAGE 420V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 5,33

TRANSMISSION RATIO (PRIMARY / SECONDARY) 5,76 / -

DRIVE TYPE Two stage spure gear box

DIFFERENTIAL Torque vectoring

COOLING Left side pod with electicly controlled water pump

BRAKE SYSTEM 4-disc system, ISR 4-pot front, 2-pot rear brake calipers, adjustable brake balance

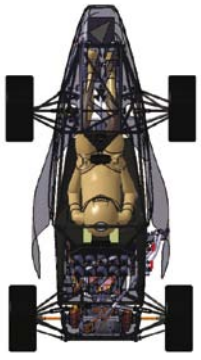
ELECTRONICS Multifunctional Steering Wheel, self designed torque vectoring

STUTTGART
Baden-Württemberg Cooperative State University Stuttgart

The DHBW Engineering Formula Student Team from the Cooperate State University Baden-Württemberg was founded in 2008 and already passed three successful seasons with a combustion car. The overall victory in Barcelona was a dignified ending of the combustion era and the development of the first electric car started in September 2011. Thanks to our sponsors we are now proud to present our eSleek12. The totally new electric drivetrain consists out of 2 synchronous machines with a 2-stage gearbox, very lightweight power electronics and a modular battery consisting of 400 single cells. Our tubular space frame and suspension were further optimized and a significant weight reduction of more than 10 kg could be reached. We are looking forward to an interesting season and wish all teams good luck.

Car E22 Pit E7

Germany



FRAME CONSTRUCTION optimized tubular steel frame

MATERIAL 25CrMo4

OVERALL L / W / H (mm) 2925 / 1460 / 1130

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1600 / 1250 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 146 / 159

SUSPENSION Double unequal length A-Arm. Push rod actuated spring / damper. Adj. Roll bar

TYRES (Fr / Rr) 20x7.0-13 R25B Hoosier

WHEELS (Fr / Rr) 7x13 inch wide, 1 pc Al Rim, 22mm neg. offset

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear / 35 kW each

MOTOR TYPE AMK

MAX MOTOR RPM 13000

MOTOR CONTROLLER Custom built by Emerge Engineering

MAX SYSTEM VOLTAGE 420V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 7,4 kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:9,55 / none

DRIVE TYPE two stage gearbox

DIFFERENTIAL fully adjustable electronic software differential

COOLING side mounted radiator without fan

BRAKE SYSTEM floater mounted 4-Disc system, balance beam for adjustable brake balance

ELECTRONICS Self designed current distribution unit, Traction control and Torque vectoring, Model-Driven SW

STUTTGART
University of Stuttgart

After two successful cars - EO711-1 and EO711-2 - the Green-Team has been dedicated to design a completly new electric racing car with a higher power to weight ratio and a more innovative concept. The new EO711-3 is characterized by a hybrid way of construction. The two most striking examples are the frame construction and the wheels. The forward section is a CFRP-monocoque with aluminum honeycomb in sandwich construction. The rear end is a tubular steel space frame. Especially the self-designed wheels: the rim well is made of CFRP, which is screwed with the aluminum rim star. With these methods we succeeded that the EO711-3 is 14 % (30 kg) lighter than the EO711-2. Now is the time that the EO711-3 puts his ability to the test at the Hockenheimring (Germany), at the Redbull-Racing-Ring (Austria) and at the Catalunya-Circuit (Spain).

Car E26 Pit E1

Germany

FRAME CONSTRUCTION Hybrid design: one piece CFRP-monocoque with space frame rear end

MATERIAL Carbonfiber prepegs for the Monocoque and 25CrMo4 steeltubes for the spaceframe rear end

OVERALL L / W / H (mm) 2700 / 1432 / 1102

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1610 / 1220 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 158

SUSPENSION double a-arms of CFRP with special Formula Student damper from ZF-Sachs actuated by push-rods

TYRES (Fr / Rr) 205x70 R13, Hoosier R25B / 200x75 R13, Hoosier R25B

WHEELS (Fr / Rr) self developed hybrid rims: Aluminium rim star and CFRP-rim well

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 52kW, 52kW

MOTOR TYPE AMK DT5-26-10-POW

MAX MOTOR RPM 16500, 16500

MOTOR CONTROLLER AMK KW 60

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY NMC (cathode), graphite (anode) / 6,9kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:3.2 / 1:3.13

DRIVE TYPE self designed gearbox made of aluminium

DIFFERENTIAL two-stage spur gear for each motor, electronically controlled Torque-Vectoring, traction control

COOLING Single radiator, mounted in the left side pod, thermostatic controlled

BRAKE SYSTEM 4-Disk system, self designed floating disk, balance bar, 2x ISR 21-014 master cylinder, Bosch ABS M4

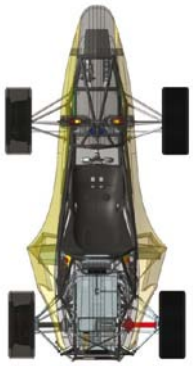
ELECTRONICS Integrated and concentrated ECU system, networking via Ethernet and CAN

WIESBADEN
University of Applied Sciences RheinMain

You have a Déjá-vu? Maybe it is because the Scuderia Mensa HS RheinMain Racing Team now participates for its fifth season at the FSG Events and grows in members and experiences every year. The mix of a rising competence in engineering design and marketing activities leads to more confidence from our supporters. After three seasons of gasoline powered cars you might remember the yellow flash from Ruesselsheim with the 65. Those days have been noisy! Since 2011 Racing became quite silent in the RheinMain area. An electric powertrain concept gave the opportunity to the students to learn today what will fulfill their future. With state of the art technique the SPR11E has been a bench to figure out how systems like those have to be engineered. This year's SPR12E will be more than 100 kg lighter, even more reliable, comfortable and better in performance with active differential (torque vectoring) and traction control. Most of these systems are primarily self-made designed by the team.

Car E65 Pit E29

Germany



FRAME CONSTRUCTION Tubed Frame

MATERIAL E 355 in different thicknesses

OVERALL L / W / H (mm) / /

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) / /

WEIGHT WITH 68kg DRIVER (Fr / Rr) /

SUSPENSION

TYRES (Fr / Rr)

WHEELS (Fr / Rr)

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Left & Rear Right / 100 kW

MOTOR TYPE YASA-750

MAX MOTOR RPM 2000

MOTOR CONTROLLER dSpace MABX II

MAX SYSTEM VOLTAGE 353V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY Li-Polymer / 7,5kW

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:1 / 1:1

DRIVE TYPE Direct Drive via CFK Drive Shafts

DIFFERENTIAL Active Differential controlled via steering sensor

COOLING Liquid oil cooling cicuit with

BRAKE SYSTEM self designed 4-Disk system with XY mm diameter, adjustable brake balance, brembo 4-calipers

ELECTRONICS self designed accumulator and BMS as well as HMI, wiring harness sealed to IP66 easily removable

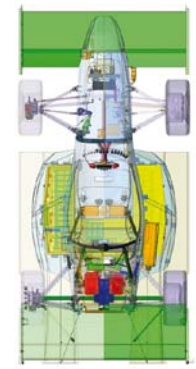
ZÜRICH

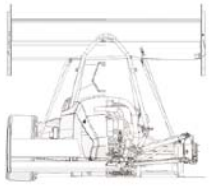
Swiss Federal Institute of Technology Zurich

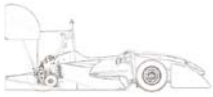
As founding member of the Formula Student Electric class, the AMZ has always been aiming to compete with the front-running combustion cars. After a successful season in 2011, the only Swiss team is trying to improve the whole car, screw by screw. The key features of umbrail, the 2012 car, are a very lightweight single-piece CFRP monocoque (14kg with the aluminum front roll hoop) and the self-developed engines (AMZ M2). The whole car shrunk about five centimetres in comparison to last year's car. The new suspension layout consists of 10inch hybrid rims (carbon shells, aluminum centers), a self-designed steering system and tailor made air springs and dampers. Additionally the car is fitted with a complete aerodynamic package to improve longitudinal and lateral acceleration. Nevertheless, the car weighs about 10kg less than its predecessor. A total of 175kg. We are looking forward to competing in FSE 2012 and want to improve last year's performance!

Car E33 Pit E6

Switzerland







FRAME CONSTRUCTION Single piece CFRP monocoque (prepreg)

MATERIAL 200 gsm prepreg carbon (twill and unidirectional) with various thickness aluminum honeycomb

OVERALL L / W / H (mm) 2890 / 1408 / 1236

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1550 / 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 111 / 127

SUSPENSION Double unequal length A-Arm. Pull rod/ Push rod actuated spring / damper. Adj. Roll bar.

TYRES (Fr / Rr) Hoosier 18.0 x 6.0-10

WHEELS (Fr / Rr) 6.5 inch wide, carbon shell, alu. center

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 2 / Rear Right, Rear Left / 40kW, 40kW

MOTOR TYPE AMZ M2

MAX MOTOR RPM 6800

MOTOR CONTROLLER Semikron SKAI 50 A2 MM20-W

MAX SYSTEM VOLTAGE 160V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiPo / 5,33kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) 1:2,143 / 1:2,266

DRIVE TYPE Two stage gear box

DIFFERENTIAL no mechanical differential

COOLING sidepod mounted, water fed radiator with air duct

BRAKE SYSTEM Floating, Steel, hub mounted, 190mm, 4 piston front / 180mm, 2 piston rear, Tilton 77 cylinder,

ELECTRONICS Self-programed VCU and Telemetry, adjustments and readouts on steering wheel and dashboard

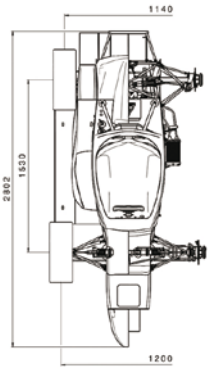
ZWICKAU

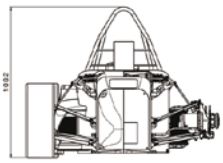
University of Applied Sciences Zwickau

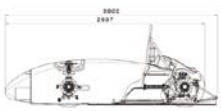
„Innovation meets Tradition" - if you look at Zwickau's automotive history you can easily find out why we picked out this slogan for our team. Zwickau is the birth place of Horch and Audi, and furthermore in the 1930s, it was the domicile of the Auto Union race cars which dominated the race tracks in Europe. Almost 70 years later our WHZ Racing Team was founded. Now in 2012, we bring our third full electric car to the tracks. The FP612e (code name: eMil) is a further development of last year's successful car, concentrating on less weight, less consumption. We created a fast and dynamic car with four independent motors and self-developed electronic components. Nowadays, our team consists of about 60 members from a variety of faculties of the UAS Zwickau. This team has worked hard and efficiently to upgrade its results for the season 2012. The FSE opens a door to a new dimension of racing - so let us all have fun and create the future together.

Car E96 Pit E25

Germany







FRAME CONSTRUCTION Front: CFRP two-piece monocoque; Rear: tubular steel space frame

MATERIAL Front: carbon fibre prepreg, sandwich construction with Al honeycomb;Rear: Chromoly 4130 steel tubes

OVERALL L / W / H (mm) 2808 / 1403 / 1082

WHEELBASE (mm) / TRACK (Fr / Rr) (mm) 1530 / 1200 / 1140

WEIGHT WITH 68kg DRIVER (Fr / Rr) 148 / 160

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented overhead spring/damper units.

TYRES (Fr / Rr) 20.5x7.0-13 R25B Hoosier

WHEELS (Fr / Rr) 7.0x13; CFRP rim bed, aluminium star

NUMBER OF MOTORS / LOCATION / MAX MOTOR POWER 4 / Hub motors;Central motors / 2 x 13 kW + 2 x 25 kW

MOTOR TYPE PMSM; Front: industial; Rear: ZRM3-V2

MAX MOTOR RPM FL, FR: 18.000; RL, RR: 6000

MOTOR CONTROLLER Industrial, adapted to the car

MAX SYSTEM VOLTAGE 600V

ELECTRODE MATERIALS / COMBINED ACCUMULATOR CAPACITY LiCoO2 / 6,18kWh

TRANSMISSION RATIO (PRIMARY / SECONDARY) F15R5,2 / n/a

DRIVE TYPE Front: planetary gear; Rear: spur gear

DIFFERENTIAL Electronic differential

COOLING Liquid cooled motors and inverters, two side pods mounted radiators, fanless

BRAKE SYSTEM 4 tungsten carbide coated Al discs, hub mounted, front 4-piston calipers, rear 2-piston calipers

ELECTRONICS Vehicle Dynamic Drive Control (VDDC), Central Electric Unit, CAN-Bus, 2D data logger, live-telemetry

GUIDED TOURS
FÜHRUNGEN

The simply staggering acceptance of the various guided tours as well as the throughout positive feedback of all tour participants confirmed the organizers of the FSG in enhancing the range of guided tours. Formula Student Germany 2012 wants to tie in with the success of last year's FSG with more than 300 guided visitors, representatives of the press and sponsors. For this purpose in 2012 again three different guided tours will be offered.

Formula Student Basic Tour

The 45-minute Formula Student Basic Tour offers a comprehensive insight into Formula Student Germany with its two vehicle classes, the Formula Student Combustion and the Formula Student Electric. In addition to the explanation of basic idea and competition history the interested visitor gets an overview of the different static and dynamic disciplines. While visiting the scrutineering and touring the pit lane, the participants get the chance to soak up the unique atmosphere of the competition and to discuss the characteristics of the different racecars. The focus towards electro or combustion racecars will be adjusted individually as requested by the tour group.
The Formula Student Basic Tour addresses all interested visitors who wish to gain a basic but still comprehensive insight into the Formula Student Germany competition.

Technical Deep Dive

A separate technical deep dive for racecars of the Formula Student Combustion as well as one for vehicles of the Formula Student Electric is offered. The goal of the technical deep dive is to provide a profound insight into the unique characteristics of each vehicle class and to give an in depth understanding to especially technically interested visitors, who want to get a technically profound and channeled insight into the area of electro or combustion powered racecars.
In the context of the Formula Student Electric a specialist and team alumni will focus on the challenges and specialties of electric propulsion.
The deep dive for racecars of the Formula Student Combustion will especially focus on last years' developments as well as dive into this year's special features.

Die überwältigende Annahme der verschiedenen Führungsangebote und die durchweg positive Resonanz aller Teilnehmer haben die Organisatoren der FSG in der Erweiterung ihres Führungsangebotes bestätigt. Auch bei der Formula Student Germany 2012 soll an den Erfolg von mehr als 300 geführten Besuchern, Pressevertretern und Sponsoren angeknüpft werden. Hierfür stehen Ihnen wieder drei verschiedene Führungsangebote zur Auswahl.

Formula Student Basic Tour

Während der 45-minütigen Formula Student Basic Tour erhalten die Führungsteilnehmer einen umfassenden Einblick in die Formula Student Germany mit ihren zwei Fahrzeugklassen, der Formula Student Combustion und der Formula Student Electric. Neben der Darstellung von Grundidee und Historie des Events, werden dem interessierten Besucher auch die verschiedenen dynamischen und statischen Disziplinen des Wettbewerbs erläutert. Beim Besuch der technischen Abnahme und dem Gang durch die Boxengasse bekommen die Teilnehmer die Möglichkeit die besondere Atmosphäre der Veranstaltung aufzusaugen und sich die Besonderheiten der einzelnen Boliden hautnah erläutern zu lassen. Ob der Fokus einer jeden Führung eher auf Verbrennungs- oder Elektrofahrzeugen gelegt werden soll, kann von der Besuchergruppe individuell entschieden werden.
Die Formula Student Basic Tour richtet sich an alle interessierten Besucher die einen grundlegenden und umfassenden Einblick in die Welt der Formula Student Germany wünschen.

Technical Deep Dive

Sowohl für die Fahrzeuge der Formula Student Combustion als auch für die Boliden der Formula Student Electric, wird bei der Formula Student Germany 2012 ein gesonderter Technical Deep Dive angeboten. Das Ziel dieser Führungsart ist es spezifische technische Alleinstellungsmerkmale der jeweiligen Fahrzeugklasse zu vertiefen und diese technisch interessierten Besuchern näherzubringen, die einen vertiefenden Einblick in den Bereich der Elektro- oder Verbrennungsmotorenfahrzeuge erhalten wollen. Der genaue Themenfokus kann auch hier individuell während der Führung durch die Besuchergruppe festgelegt werden.
Im Rahmen der Formula Student Electric Deep Dives wird ein Spezialist und ehemaliges Teammitglied den Fokus auf die speziellen Herausforderungen und Besonderheiten des elektrischen Antriebes legen.
Der Deep Dive für die Fahrzeugklasse der Verbrennungsmotoren, der Formula Student Combustion, wird insbesondere auf die Entwicklungen der letzten Jahre eingehen sowie die diesjährigen Besonderheiten diskutieren.

The starting point for each guided tour is the info counter inside the FSG Forum. There you will also find schedules with all times and dates for guided tours.
Der Startpunkt für die Führungen befindet sich am Infocounter im FSG Forum. Hier können auch die Startzeiten einer jeden Führung eingesehen werden.

For more information go to www.porsche.com/careers or visit www.facebook.com/porschekarriere

What's far more interesting than looking into the future?
Shaping it.

Porsche would like to wish success
to all the Formula Student teams.

PORSCHE

FORMULA STUDENT GERMANY 2012

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