formula student germany

presented by VDI

Formula Student Germany

International Design Competition

Programme 2008

Hockenheim
August 6th – 10th 2008

Creating a future for engineers

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A special thanks goes to the numerous volunteers who contributed
significantly in the realisation of the third Formula Student Germany

Greetings

It was only five years ago that some former Formula Student participants and the Verein Deutscher Ingenieure e.V. (VDI) met to plan the realization of an international engineering competition in Germany following in the footsteps of an established formula. We discussed concept, rules, claim and venue and agreed on the name for the project:
Formula Student Germany!

The decision was then made:
We designed a student engineering competition with the highest priority on the principles of safety, transparency and fairness. A competition where the student competitors profit from hands-on experience and direct feedback from active and former participants, as well as top automotive engineering talent brought in from around the world. A competition which continuously develops and improves with age. The Formula Student Germany is not only a high quality competition – we provide a vitally important contact link for young engineers and businesses. And we create a memorable experience for not only the students and spectators, but also for all the volunteers and support staff, who continue to come back year after year!

One of the most important rules that we adopted is not a rule at all. But it is really at the heart of Formula Student Germany, the essence of what we are about, is our motto: “For the Students”.

Within three years the event has grown to more than twice its size. The first Forumla Student Germany got off to a remarkable start in 2006 with 40 teams and more than 600 students. For 2008 we had 89 teams apply for the 64 available starting grids. Amazed and delighted we moved heaven and earth and increased the number of starting grids. Now, in 2008 we welcome 78 teams with over 1700 students from 19 nations to the third Formula Student Germany!

We are looking forward to an exciting and fair competition. We would like to thank all our sponsors and supporters as well as the numerous volunteers. We wish all teams success and most of all a fun and unique experience you cannot get anywhere else. All the visitors in attendance we welcome you as well, to an exciting insight into the world of motivated, young engineers.

Dr. Ludwig Vollrath (VDI e.V.)
and the Formula Student Germany Team

Grußwort

Gerade mal fünf Jahre ist es her, da setzten sich ehemalige Formula Student Aktive und der Verein Deutscher Ingenieure e.V. (VDI) zusammen, um die Einführung eines internationalen Konstruktionswettbewerbes für Ingenieursstudenten nach bewährtem Rezept in Deutschland konkret zu planen. Gemeinsam diskutierten wir Konzept, Regeln, Anspruch und Ort und einigten uns auf den Namen: Formula Student Germany!

*Unser Vorhaben war beschlossen:
Wir machen einen Wettbewerb, bei dem die Grundsätze Sicherheit, Transparenz und Fairness oberste Priorität haben. Einen Wettbewerb, der von den Erfahrungen und Rückmeldungen der aktiven und ehemaligen Teilnehmer lebt und sich so kontinuierlich weiter entwickelt. Und sogar noch mehr als einen hochwertigen Wettbewerb – wir bieten Unternehmen und Nachwuchsingenieuren ein Kontaktforum und gestalten ein Erlebnis für Studenten, Zuschauer und Helfer.*

Eine unserer wichtigsten Regeln ist nicht wirklich eine Regel. Aber wir tragen sie in unserem Formula Student Germany Herzen als Devise: "Für die Studenten".

Innerhalb von drei Jahren ist der Event auf mehr als die doppelte Größe gewachsen. Nach einem mutigen Start mit bereits 40 Teams und über 600 Studenten im Jahr 2006 bewarben sich dieses Jahr stolze 89 Teams um die 64 Startplätze. Erstaunt und erfreut setzten wir alles in Bewegung und erhöhten die Teilnehmerzahl. Zur dritten Formula Student Germany begrüßen wir 2008 nun 78 Teams mit 1700 Studenten aus 19 Nationen!

Wir freuen uns auf einen spannenden und fairen Wettbewerb und danken unseren Sponsoren und Förderern sowie den zahlreichen freiwilligen Helfern. Wir wünschen den Teilnehmern gutes Gelingen und wertvolle Erfahrungen und den Besuchern einen spannenden Blick in die Welt motivierter, junger Ingenieure aus der ganzen Welt.

*Dr. Ludwig Vollrath (VDI e.V.)
und das Formula Student Germany Team*

Contents

Inhalt

Formula Student Germany – an introduction

Concept

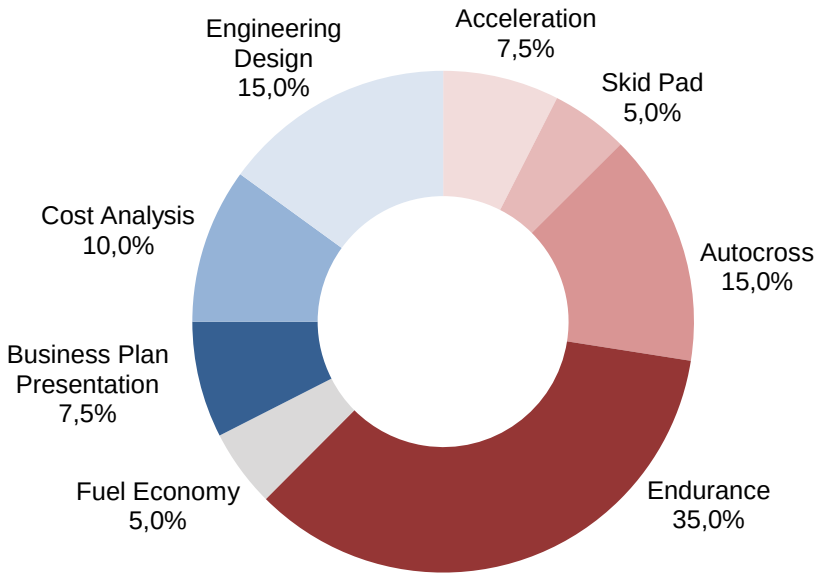
Students build a single seat formula racecar with which they can compete against teams from all over the world. The competition is not simply won by the team with the fastest car, but rather by the team with the best overall package of construction, performance, and financial and sales planning. To succeed interdisciplinary teamwork and an efficient team structure are very important.

Requirements

Formula Student extends the education of the students by incorporating intensive experience in designing and manufacturing as well as considering the economic aspects of the automotive industry. Teams take on the assumption that they are a manufacturer developing a prototype to be evaluated for production. The target audience is the non-professional weekend-racer, for which the racecar must offer very good driving characteristics regarding to acceleration, braking and handling. It should be offered at a very reasonable price and be reliable and dependable. Additionally, the car‘s market value increases due to other factors such as aesthetics, ergonomics and the use of readily 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 figure out the best car a jury of experts from the motorsport, automotive and supplier industries judges every team‘s car and sales plan based on construction, cost planning and business plan presentation. The rest of the decision will be done out on the track, where the students demonstrate in a number of performance tests how well their self-built racecars stand the test in their true environment.



With different disciplines the competition reflects all aspects which have to be kept in mind while 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.

Formula Student Germany – eine Einführung

Das Konzept

Studenten bauen in Teamarbeit einen einsitzigen Formelrennwagen, um damit bei einem Wettbewerb gegen Teams aus der ganzen Welt anzutreten. Bei der Formula Student gewinnt aber nicht einfach das schnellste Auto, sondern das Team mit dem besten Gesamtpaket aus Konstruktion und Rennperformance, Finanzplanung und Verkaufsargumenten. Dazu sind interdisziplinäres Teamwork und eine effiziente Teamstruktur von besonderer Bedeutung.

Die Anforderungen

Die Formula Student ergänzt das Studium um intensive Erfahrungen mit Konstruktion und Fertigung sowie mit den wirtschaftlichen Aspekten des Automobilbaus. Im Sinne dieser Zielsetzung sollen die Studenten annehmen, eine Produktionsfirma habe sie engagiert, um einen Prototypen zur Evaluation herzustellen. Zielgruppe ist der nicht-professionelle Wochenendrennfahrer. Dazu muss der Rennwagen beispielsweise sehr gute Fahreigenschaften hinsichtlich Beschleunigung, Bremskraft und Handling aufweisen. Der Monoposto soll wenig kosten, zuverlässig und einfach zu betreiben sein. Zusätzlich wird sein Marktwert durch andere Faktoren wie Ästhetik, Ergonomie und den Einsatz üblicher Serienteile gesteigert.

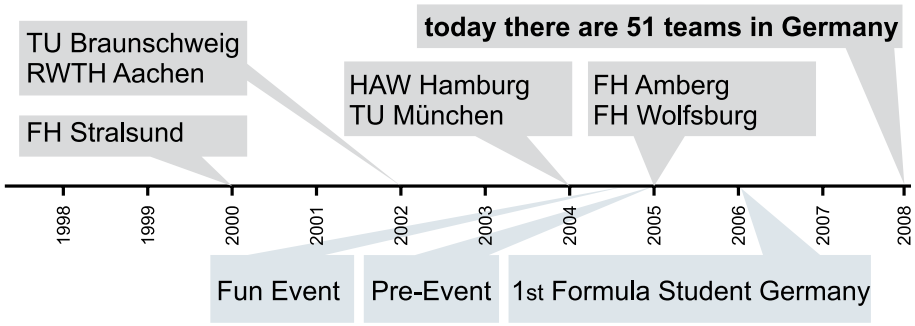
Der Wettbewerb

Die Herausforderung für die Teams besteht darin, einen Prototypen zu konstruieren und zu bauen, der diesen Anforderungen am besten entspricht. Zur Ermittlung des besten Fahrzeugs bewertet zum einen eine Jury aus Experten der Motorsport-, Automobil- und Zulieferindustrie jede Konstruktion, jeden Kostenplan und jede Verkaufspräsentation im Vergleich zu den konkurrierenden Teams. Zum anderen beweisen die Studenten auf der Rennstrecke in verschiedenen Disziplinen, wie sich ihre selbstgebauten Boliden in der Praxis bewähren.

Competition in the automobile nation of Germany

Since 2006 the Verein Deutscher Ingenieure (VDI) is holding the „Formula Student Germany“ competition. Students from all over the world will meet every August for five days at Hockenheim to measure their designs and performance with each other in a Formula 1 atmosphere and to demonstrate their capabilities to industry.

By participating, students find numerous opportunities for new friendships and valuable contacts within their field. The accompanying events along with the open camping atmosphere encourage participation and team spirit among all present.

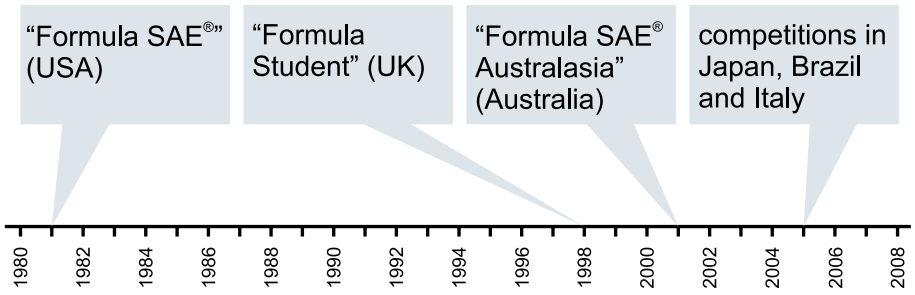


Timeline of the development of the Formula Student Germany: dates of the first participations in competitions of German teams and first competitions of the Formula Student Germany

Zeitleiste zur Entstehung der Formula Student Germany: Daten der ersten Wettkampfstarts deutscher Teams und erste Wettbewerbe der Formula Student Germany

History of the competition

In 1981, the Society of Automotive Engineers (SAE) in the USA began the „Formula SAE®“ competition, in which around 140 student teams from all over the world compete every year. Since 1998, SAE and IMechE (Institution of Mechanical Engineers) have been holding the annual „Formula Student“ competition in the UK, normally with around 70 international teams participating. In 2007 Australia held the 7th „Formula SAE® Australasia“ with about 30 teams. Now there are teams of young engineers also competing with each other in Italy, Japan and Brasil. The competitions are conducted under nearly all the same rules and regulations, allowing the teams to participate in several different competitions with little or no modifications to their work.



Timeline with the first events of engineering competitions worldwide

Zeitleiste mit den ersten Austragungen der Konstruktionswettbewerbe weltweit

Wettbewerb in der Automobilnation Deutschland

Seit 2006 richtet der Verein Deutscher Ingenieure (VDI) die Formula Student Germany aus. Jedes Jahr im Spätsommer treffen sich Studenten aus aller Welt für fünf Tage am Hockenheimring, um in Formel 1-Atmosphäre ihre Konstruktionen miteinander zu messen.

Den teilnehmenden Studenten bieten sich im Umfeld des Wettbewerbs zahlreiche Gelegenheiten für neue Kontakte. Begleitende Veranstaltungen und die gemeinsame Unterbringung auf dem benachbarten Zeltplatz fördern den kontinuierlichen Austausch.

Geschichte der „Formula Student“-Wettbewerbe

In den USA rief die „Society of Automotive Engineers“ (SAE) 1981 die „Formula SAE®“ ins Leben, an der jedes Jahr rund 140 Studententeams aus der ganzen Welt teilnehmen. Seit 1998 veranstalten SAE und IMechE (Institution of Mechanical Engineers) in England die „Formula Student“, zu der jährlich etwa siebzig Teams anreisen. In Australien kamen 2007 rund dreißig Teams zur siebten „Formula SAE® Australasia“ zusammen. Auch in Italien, Japan und Brasilien treten heute junge Ingenieure gegeneinander an. Die Wettbewerbe werden bis auf wenige Modifikationen nach denselben Regeln ausgetragen, so dass Teams mit ihren Rennwagen an mehreren Veranstaltungen teilnehmen können.

Warum Studenten Rennwagen bauen sollten

Erfahrungen mit Teamwork, Zeit- und Projektmanagement im Allgemeinen und mit Konstruktion, Fertigung und den wirtschaftlichen Aspekten des Automobilbaus im Speziellen verbessern die Qualifikation junger Ingenieure. Englisch als Wettbewerbssprache fördert zudem die fachsprachlichen Kompetenzen. Die Formula Student Germany verstärkt die Sichtbarkeit dieses Engagements bei deutschen Firmen und Universitäten und steigert damit die Berufschancen teilnehmender Studenten. Sowohl zu den Förderern des

Why students are building racecars

Experiences with teamwork, time and project management in general along with construction, manufacturing and the economical aspects of automotive engineering in particular greatly improve the qualifications of young engineers. In addition, English as the language for the competition enhances the foreign language skills. Formula Student Germany brings the participants out into the open for German automotive companies to see, thereby increasing job placement opportunities. Sponsors of the competition and of the individual teams are able to build valuable contacts with potential employees, and the employers are able to gain detailed impressions of the competitors throughout the events.

The motivation of the students to build a race car is strong enough to let hundreds of them travel to one-day workshops voluntarily. There they can also have a closer look to the car of the hosting team. Photos: Formula Student Germany workshop 2007 in Stuttgart.

Die Motivation der Studenten, einen Rennwagen zu bauen, ist so groß, dass sie zu Hunderten freiwillig zu eintägigen Workshops anreisen. Dort können sie auch einen genaueren Blick auf das Fahrzeug des gastgebenden Teams werfen. Fotos: Formula Student Germany Workshop 2007 in Stuttgart.

How businesses and sponsors benefit from the competition

Motorsports, automotive and supplier industries companies need qualified young engineers to preserve their quality standards. Formula Student Germany offers a clear indication of the quality of the students' education and provides a basis for contacts. Funding, awards and judging activities create opportunities for these companies to get convinced by knowledges and skills of future employees.

Why universities should support their constructing engineers

Acknowledging Formula Student activities by industry evokes positive effects also at the universities. Excellent graduates increase the reputation of the universities which hence are interested in supporting the students with contents and money. Having an encouragement by the universities new teams will be founded what promotes a positive image of engineering. Thus, Formula Student Germany also enhances the attractiveness of engineering studies.

Wettbewerbs als auch zu den Förderern des eigenen Teams entstehen wertvolle Kontakte für den Berufseinstieg.

Warum Unternehmen davon profitieren

Unternehmen der Motorsport-, Automobil- und Zulieferindustrie benötigen zur Erhaltung ihrer Standards qualifizierten Nachwuchs. Die Formula Student Germany fungiert zum einen als Indikator für die Ausbildungsqualität von Ingenieuren und zum anderen als ausgezeichnetes Kontaktforum. Sponsoring, Awards und entsandte Jurymitglieder ermöglichen den Firmen, sich von Wissen und Fertigkeiten potentieller Mitarbeiter zu überzeugen.

Warum Hochschulen ihre Konstrukteure fördern sollten

Die Anerkennung von Formula Student-Aktivitäten als Zusatzqualifikation durch die Wirtschaft hat auch positive Effekte an den Hochschulen. Exzellente Absolventen steigern auch das Renommee der Hochschulen, die daher auch ein Interesse an einer fachlichen und finanziellen Unterstützung der Studenten haben. Mit dem Rückhalt der Universitäten werden schließlich auch Teamneugründungen gefördert, die sich positiv auf das Ingenieurwesen allgemein auswirken. Die Formula Student steigert so auch die Attraktivität des Ingenieurstudiums.

Photos: University of Stuttgart

Faszinier t von allem, was sich bewegt?

Kommen Sie zur Schaeffler Gruppe.

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Gemeinsam bewegen wir die Welt

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Sie haben den Blick für Innovationen? Ihr Horizont an Ideen ist grenzenlos? Und Sie brennen darauf, technische Entwicklungen ins Rollen zu bringen, die die Welt bewegen? Dann bewerben Sie sich bei uns. Als Praktikant/in, Diplomand/in oder Berufseinsteiger/in. Beweisen Sie Ihr Können in einem starken Team der Schaeffler Gruppe.

Die Schaeffler Gruppe ist ein führender Anbieter in der Wälzlagerindustrie und gefragter Partner im internationalen Automobilbau. Sie ist bekannt für Innovationskraft und internationalen Erfolg, ihre starken Marken LuK, INA und FAG für Präzision und höchste Qualität.

Im Geschäftsjahr 2007 erwirtschafteten rund 66.000 Mitarbeiter einen Umsatz von 8,9 Mrd. Euro – an über 180 Standorten.

LuK INA FAG

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The disciplines at a glance

Die Disziplinen im Überblick

Static disciplines

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

At the competition Cost and Design Judges take a closer look at the prototype and discuss with the students about the solutions. Both events are based on written reports.

Beim Wettbewerb betrachten die Cost und die Design Juroren die Prototypen genau und diskutieren die Lösungen mit den Studenten. Beide Events setzen auf schriftlichen Berichten als Basis auf.

Cost Analysis: Costs are an important factor for building a race car. Hence, the students deal with cost estimations, 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 – from wheels to process labour costs for special tools. The judging comprises the organisation of the Cost Report, the comprehension of manufacturing processes and the price. In Germany the teams additionally perform a real case task for reducing costs.

Business Plan Presentation: The teams present their business plan for the built prototype to an assumed manufacturer – represented by the judges. With this business plan they want to convince them that their car meets the demands of the target group of the nonprofessional weekend autocross racer best and that it can be produced and marketed profitably. The teams give a talk for ten minutes. Afterwards, the students answer the questions of the judges for five minutes. Content, structure, organisation and performance of the talk are judged as well as the answers the students give.

The students present their business plan and answer the questions of the judges.

Die Studenten präsentieren ihren Geschäftsplan und beantworten die Fragen der Juroren.

Statische Disziplinen

Engineering Design: *Im Design Report halten die studentischen Konstrukteure ihre konstruktiven Lösungen und deren Vorteile fest. Acht Seiten Text und Fahrzeugzeichnungen 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 relevanter Faktor. Beim Cost Event beschäftigen sich die Studenten daher 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 und der Preis. In Deutschland lösen die Teams zudem eine Real Case-Aufgabe zur Kostenreduktion.*

Business Plan Presentation: *Die Teams stellen einer fiktiven Herstellerfirma – vertreten durch die Juroren – ihren Geschäftsplan für den gebauten Prototypen vor. Damit wollen sie sie davon überzeugen, dass ihr Fahrzeug am besten die Anforderungen der Zielgruppe des nicht-professionellen Wochenendrennfahrers trifft und entsprechend gewinnbringend produziert und vermarktet werden kann. Die Teams tragen zehn Minuten vor und stellen sich anschließend fünf Minuten den Fragen der Juroren. Bewertet werden Inhalt, Aufbau, Aufbereitung und Darbietung des Vortrags sowie die Antworten des Teams auf Fragen.*

Dynamic disciplines

In the dynamic disciplines the cars have to prove the road capability of the students' constructions on the race track. The disciplines demand different qualities. In each discipline two drivers have two runs (except in the endurance). The best run will be counted as the optimum the car can achieve.


Acceleration

Acceleration: The race cars prove their accelerating abilities over a distance of 75 meters. The fastest need less than 4 seconds.


Skid Pad

Skid Pad: The self-built cars drive on a parcours in shape of an 8. There are two consecutive laps on each circle with the second laps being timed. The cars demonstrate with a fast lap time how much lateral acceleration they can generate (up to 1.4g).


Autocross

Autocross: The monoposti drive on a course of perhaps one kilometer through straights and curves. The lap time serves as indicator for driving dynamics and handling qualities. The results of the Autocross discipline determine the starting order of the Endurance.

Endurance: Providing the highest number of points, the Endurance is the main discipline. Over a distance of 22 kilometers the cars have to prove their durability under long-term conditions. Acceleration, speed, handling, dynamics, fuel economy, reliability – the cars have to prove it all. The Endurance also demands handling skills of the driver because there can be up to four cars on the track at the same time. Each team has only one attempt, the drivers change after 11 kilometers. Additionally, the fuel consumption is measured in the Endurance.


Endurance

Dynamische Disziplinen

In den dynamischen Disziplinen müssen die Fahrzeuge die Praxistauglichkeit der studentischen Konstruktionen auf der Rennstrecke unter Beweis stellen. Die Disziplinen erfordern dabei unterschiedliche Eigenschaften. Bei jeder Disziplin starten zwei Fahrer mit je zwei Versuchen (bis auf den Endurance). Gewertet wird der beste Versuch als das Optimum, das 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 unter vier Sekunden.*

***Skid Pad:** Die selbstgebauten Rennwagen durchfahren einen Parcours in Form einer Acht. Jeder Kreis wird zweimal nacheinander umrundet, gestoppt wird jeweils die zweite Runde. Eine gute Rundenzeit zeigt, welche Querbeschleunigung das Fahrzeug erreichen kann. Diese kann bis zu 1,4 g betragen.*

***Autocross:** Über eine etwa ein Kilometer lange Runde fahren die Monoposti durch Geraden, Kurven und Schikanen. Eine schnelle Rundenzeit ist Indikator für eine gute Fahrdynamik, gute Handling- und Beschleunigungseigenschaften. Die Platzierung im Autocross entscheidet zudem über die Startreihenfolge im Endurance.*

***Endurance:** Der Endurance 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. Der Endurance erfordert auch Renngeschick des Fahrers, da bis zu vier Fahrzeuge gleichzeitig auf der Strecke sind. Jedes Team hat einen einzigen Versuch, die Fahrer wechseln nach 11 Kilometern. Beim Endurance wird zudem der Kraftstoffverbrauch gemessen.*

„Made by Bosch“ steht für erstklassige Qualität eines Global Players. Profitieren Sie in einem international ausgerichteten Unternehmen von vielfältigen attraktiven Karrierechancen. Die Bosch Engineering GmbH ist eine international tätige Tochtergesellschaft der Robert Bosch GmbH, die als innovatives Ingenieurdienstleistungsunternehmen komplexe Entwicklungsaufgaben für Fahrzeug- und Motorenhersteller im In- und Ausland, speziell für Nischenkunden, realisiert. Unsere Geschäftsfelder umfassen die Gebiete Motorsteuerung für Otto- und Dieselmotoren, Fahrdynamik- und Rückhaltesysteme, Energiemanagement, Gesamtsystemlösungen für elektronische Regelsysteme, Prozessberatung und den Motorsport. An unserem neuen Entwicklungszentrum in Abstatt, rund 40 km nördlich von Stuttgart, befindet sich der Hauptsitz der Bosch Engineering GmbH. Zur Unterstützung unserer Teams suchen wir für unsere Standorte im Inland (Abstatt, Markgröningen, Ingolstadt) und Ausland (u. a. Wien/Österreich, Farmington Hills/USA oder Yokohama/Japan) engagierte Verstärkung.

Applikationsingenieure w|m

Ihre Aufgabe: ► Anpassung von Motorsteuerungssystemen für Diesel- oder Ottomotoren sowie für den Bereich Bosch Motorsport und von Bremsregel- und Chassissystemen ► Klärung technischer Anforderungen mit unseren Kunden ► Systeminbetriebnahme im Labor und im Fahrzeug ► Entwicklung und Parametrierung neuer Funktionen im Fahrzeug und in der Simulation ► Optimierung von Emissionen und Fahrverhalten ► Validierung und Verifikation im Fahrzeug **Ihr Profil:** ► Studium Maschinenbau, Fahrzeugtechnik, Mechatronik, Elektrotechnik, Physik, Naturwissenschaften ► Erfahrung im Bereich Fahrzeug- oder Motorentechnik ist von Vorteil ► Teamfähigkeit ► Eigeninitiative, selbständige Arbeitsweise, analytisches Denkvermögen sowie systematische Vorgehensweise ► Interesse am Umgang mit Kunden ► Bereitschaft für gelegentliche Auslandseinsätze bei Kundenbesprechungen und Erprobungen ► Englische Sprachkenntnisse

Funktions-, Software- und Systementwickler w|m

Ihre Aufgabe: ► Funktions-, Software- und Systementwicklung für die Bereiche Ottomotoren/Dieselmotoren/Bremsregelungssysteme/Motorsport/Bussysteme/Energiebordnetze ► Klärung technischer Anforderungen mit unseren Kunden ► Entwurf, Simulation und FMEA neuer Funktionalitäten ► Planung und Durchführung von Reviews und Tests ► Integration und Inbetriebnahme von Software-Ständen im Fahrzeug ► Abnahme der Ergebnisse beim Kunden **Ihr Profil:** ► Studium Mechatronik, Informatik, Technische Informatik, Nachrichtentechnik, Elektrotechnik, Maschinenbau, Physik, Naturwissenschaften ► Kenntnisse in Mikrocontrollerprogrammierung, C oder einer vergleichbaren Programmiersprache ► Echtzeitprogrammierung ► Begeisterung für Verknüpfung elektronischer Steuerungssysteme, Motor- bzw. Fahrzeugtechnik ► Kenntnisse in Unix, Testmethodik, Requirements- und Changemanagement ► Flexibilität ► Effiziente Arbeitsweise ► Kundenorientierung ► Englische Sprachkenntnisse

Praktikanten, Diplomanden w|m

Ihre Aufgabe: ► Mitarbeit in der Funktions-, Software- und Systementwicklung oder Unterstützung eines Projektteams bei der Anpassung von Funktionen (Applikation) für die Bereiche Ottomotoren/Dieselmotoren/Bremsregelungssysteme/Motorsport/Bussysteme/Energiebordnetze ► Unterstützung bei Prüfstandsarbeiten und Applikationsfahrten ► Entwicklung von Tools zur Auswertung und Analyse von Messergebnissen und Dokumentation **Ihr Profil:** ► Studium Maschinenbau, Fahrzeugtechnik, Mechatronik, Elektrotechnik, Informatik, Nachrichtentechnik ► Begeisterung für Verknüpfung elektronischer Steuerungssysteme, Motor- bzw. Fahrzeugtechnik ► Fähigkeit, neue und komplexe Sachthemen schnell aufzuarbeiten ► Sie erkennen das Wesentliche und können es prägnant darstellen ► Engagement und Selbständigkeit ► Flexibilität ► Effiziente Arbeitsweise ► Freude an der Zusammenarbeit im Team ► Englische Sprachkenntnisse

Jeder Erfolg hat seinen Anfang. Bewerben Sie sich jetzt.
Bosch Engineering GmbH, Personalabteilung
Postfach 13 50, 74003 Heilbronn

www.bosch-engineering.de

Awards 2008

Preise 2008

Award	Team (note the result yourself)
Formula Student Germany Champion	
Formula Student Germany – 2nd place	
Formula Student Germany – 3rd place	
Engineering Design Award – 1st place	
Engineering Design Award – 2nd place	
Engineering Design Award – 3rd place	
Cost Analysis Award – 1st place	
Cost Analysis Award – 2nd place	
Cost Analysis Award – 3rd place	
Business Plan Presentation Award – 1st place	
Business Plan Presentation Award – 2nd place	
Business Plan Presentation Award – 3rd place	
Endurance Winner	
Acceleration Winner	
Skid Pad Winner	
Autocross Winner	
Most Fuel Efficient Car powered by Kautex Textron GmbH & Co.KG	
1st place Overall Dynamic Events powered by VDI e.V.	
Best Newcomer Award powered by Formula Student Germany Academy	
Formula Student Germany Sportsmanship Award powered by Formula Student Germany Steering Committee	
Style Award	
Most Innovative Use of Electronics Award powered by Bosch Engineering GmbH	
Best Drivetrain Award powered by BMW Group	
Best Suspension Design Award powered by ZF Friedrichshafen AG	
Best Lightweight Concept Award powered by AUDI AG	
Best Dynamometer Performance Award powered by Bosch Engineering GmbH	
Best Prepared Car for Scrutineering powered by DEKRA Automobil GmbH	

Aus Käufersicht ein schmuckes Auto. Aus Ingenieursicht nur das Drumherum!

Jedes Fahrzeug verliert seinen Glanz, wenn die Antriebs- und Fahrwerktechnik nicht nach dem Geschmack des Fahrers ist. Und die stammt bei vielen namhaften Marken von ZF, einem der weltweit größten Zulieferer der Branche. Was das für Sie als Ingenieur/-in bedeutet? Sie werden die neuesten Modelle unserer Kunden mit vorzüglichen Innovationen versüßen. Denn bei ZF bilden Sie mit 60.000 Kolleginnen und Kollegen ein Team, das als Innovationspartner und Problemlöser anspruchsvoller Kunden den Ruf eines Technologieführers genießt. Erleben Sie ein erfolgreiches Stiftungsunternehmen, das Ihre Leistung anerkennt und in dem interessante Aufgaben und Eigenverantwortung zum Tagesgeschäft gehören.

Welche Bonbons wir noch für Sie bereithalten, erfahren Sie auf:

www.zf.com/karriere

Antriebs- und Fahrwerktechnik

Schedule 2008

Zeitplan 2008

Wednesday, 6th of August 2008

13:00 – 21:00	Ticket Center & Team Registration	1 Ticket Center
15:00 – 19:00	Scrutineering	9 Scrutineering
20:00	Team Welcome	5 Marquee above pits

Thursday, 7th of August 2008

07:30 – 19:00	Ticket Center	1 Ticket Center
08:00 – 08:30	Team Briefing	5 Marquee above pits
08:30 – 19:00	Scrutineering	9 Scrutineering
09:00 – 18:00	Tilt table, Break test, Noise test	10 Tilt table 11 Brake test 12 Noise test
09:00 – 18:00	Style Event	3 FSG forum
12:00 – 13:00	Staging for Panoramic Photograph of teams and cars	18 Test track (9th / 10th of August)
20:00 – 21:00	Reception for Faculty Advisors, Team Captains & Judges powered by Robert Bosch GmbH	3 FSG forum

Friday, 8th of August 2008

07:30 – 19:00	Ticket Center	1 Ticket Center
08:00 – 08:30	Team Briefing	5 Marquee above pits
08:30 – 19:00	Scrutineering	9 Scrutineering
09:00 – 18:00	Tilt table, Break test, Noise test	10 Tilt table 11 Brake test 12 Noise test
09:00 – 18:00	Engineering Design Event, Cost Analysis Event, Business Plan Presentation Event	6 Engineering Design & Cost Analysis 7 Business Plan Presentation Event
09:00 – 18:00	Test tracks open	17 Test track (8th of August)
19:00	Business Plan Presentation Finals	5 Marquee above pits
20:00	Awards Ceremony – Part I	5 Marquee above pits

Saturday, 9th of August 2008

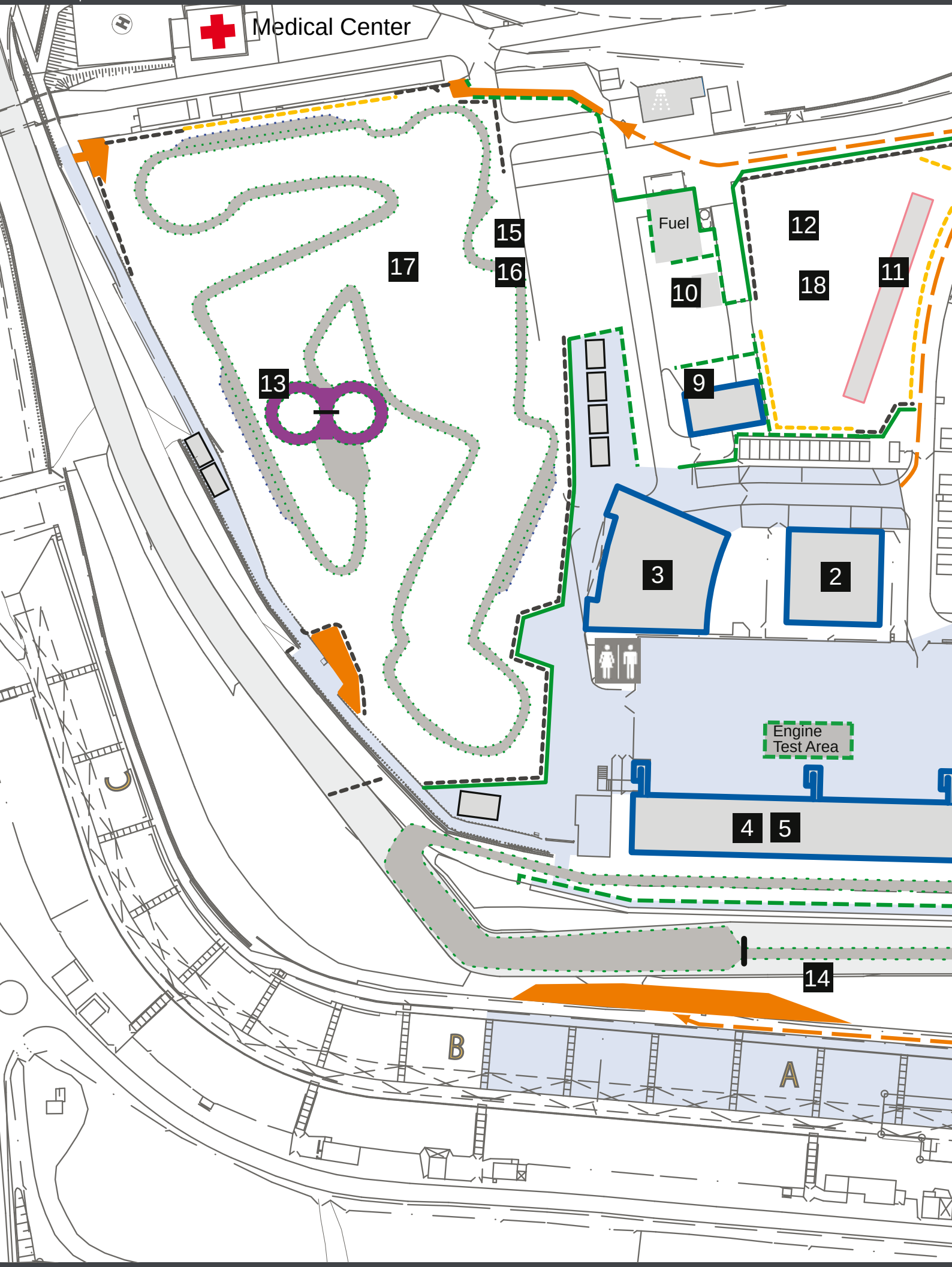
07:00 – 19:00	Ticket Center	1 Ticket Center
07:30 – 08:00	Team Briefing	5 Marquee above pits
09:30 – 13:00	Skid Pad and Acceleration	13 Skid Pad 14 Acceleration
08:30 – 18:00	Test tracks open	18 Test track (9th / 10th of August)
11:30 – 12:30	Press & VIP Reception with guided tour	8 FSG lounge
14:30 – 19:00	Autocross	15 Autocross
20:15 – 22:00	Engineering Design Finals (not public)	3 FSG forum

Sunday, 10th of August 2008

07:00 – 17:00	Ticket Center	1 Ticket Center
07:30 – 08:00	Team Briefing	5 Marquee above pits
08:30 – 18:00	Endurance	16 Endurance
08:30 – 18:00	Test track open	18 Test track (9th / 10th of August)
18:30 – 19:30	Design Review	3 FSG forum
20:00 – 21:00	Awards Ceremony – Part II	5 Marquee above pits
21:00 – 02:00	Party powered by Mahle International GmbH	5 Marquee above pits

Guided Tours will be offered from Friday to Sunday starting at the FSG forum. Information is available at the inquiry desk in the FSG forum.

Von Freitag bis Sonntag werden Führungen angeboten. Startpunkt ist das FSG forum. Informationen erhalten Sie am Info-Tresen im FSG forum.


Medical Center
Fuel
15
16
17
12
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9
3
2
Engine
Test Area
4
5
14
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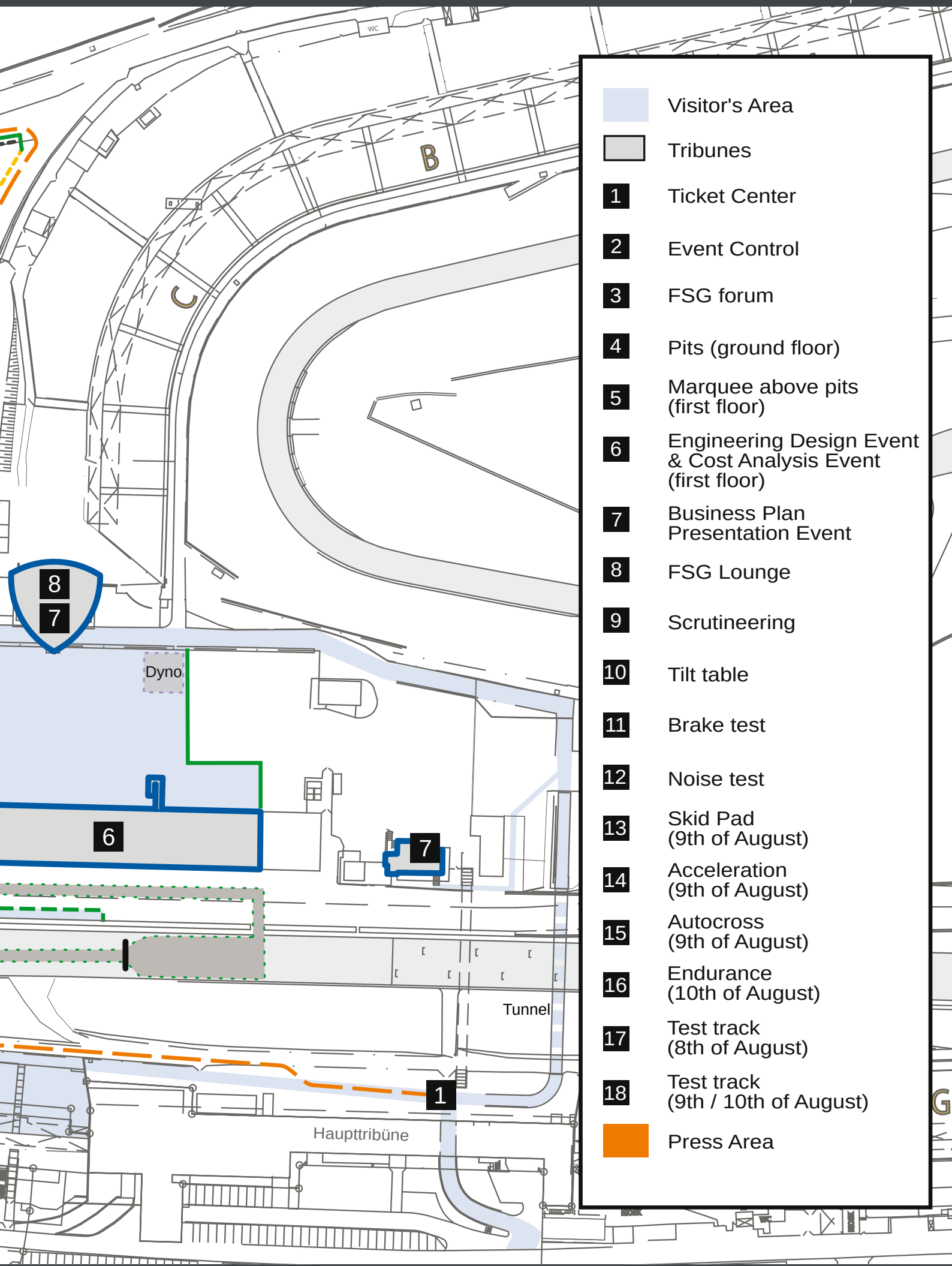
A



- Visitor's Area
- Tribunes
- 1 Ticket Center
- 2 Event Control
- 3 FSG forum
- 4 Pits (ground floor)
- 5 Marquee above pits (first floor)
- 6 Engineering Design Event & Cost Analysis Event (first floor)
- 7 Business Plan Presentation Event
- 8 FSG Lounge
- 9 Scrutineering
- 10 Tilt table
- 11 Brake test
- 12 Noise test
- 13 Skid Pad (9th of August)
- 14 Acceleration (9th of August)
- 15 Autocross (9th of August)
- 16 Endurance (10th of August)
- 17 Test track (8th of August)
- 18 Test track (9th / 10th of August)
- Press Area

Formula Student Germany Team

Formula Student Germany Team

Tim Hannig

Chairman
Board (Chair)
Steering Committee (Chair)
KION Group GmbH

Ludwig Vollrath

Board (President)
Steering Committee (Member)
VDI Society for Automotive and Traffic Systems Technology

Birgit Pattberg

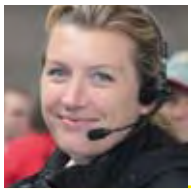
Communications
Steering Committee (Member)
German Aerospace Center (DLR)

Thomas Ballschmieter

Parking and Outer Area
Dr. Ing. h. c. F. Porsche AG

Leona Ehrenreich

Registration
Felix Nussbaum School – Secondary Modern School



Christine Hannig

Communications (Press, Media)
State Chancellery Hessen

Barbara Schlögl

Business Plan Presentation Event
CarboTech Composites GmbH

Karsten Stammen

Dynamics
Volkswagen AG

Rainer Kötke

Dynamics
Board (Member)
Steering Committee (Member)
Brunel GmbH

Board

The Board is responsible for the Formula Student Germany and its cooperations as well as for sponsoring, finances and strategy.

Das Board trägt Verantwortung für die Formula Student Germany und ihre Kooperationen sowie für Sponsoring, Finanzen und Strategie.

Ulf Steinfurth

Scrutineering
Steering Committee (Member)
University of Applied Sciences Stralsund

Matthias Brutschin

Event Support
reinisch AG

Wenke Friske

Communications (Marquee above pits)
KAISER+KRAFT Europa GmbH

Konrad Paule

Pit Marshal

André Schmidt

Scrutineering
Caterpillar Inc.

Karl Weinreich

Scrutineering
Bosch Engineering GmbH

Daniel Mazur

Chief Executive Event Manager
Board (Member)
Steering Committee (Guest)

mazur | events + media

Frank Röske

Engineering Design Event, Rules
Board (Member)
Steering Committee (Vice-chair)

Porsche Leipzig GmbH

Jan Helbig

Cost Analysis Event
Steering Committee (Member)

Europcar GmbH

Peter Jakowski

Scoring, Time Keeping
Steering Committee (Member)

2D Debus & Diebold Meßsysteme GmbH

Steering Committee

The Steering Committee stands for the design of the competition and the rules. Each member is responsible for a field, its preparation and realisation.

Das Steering Committee veranwortet Ausgestaltung von Wettbewerb und Reglement. Jedes Mitglied ist für Vorbereitung und Durchführung eines Bereiches verantwortlich.

Daniel Ahrens

Event Control (Front Desk)

Tchibo GmbH

Matthäus Decker

Communications (Guided Tours)
Event Support

Siemens Transportation Systems GmbH & Co.KG

Daniel Deussen

Dynamics, Scrutineering

Weber Automotive GmbH

Ulrike Fröhlich

Communications (FSG forum)

XS Company GmbH

Robert Fromholz

Cost Analysis Event

Intelligement AG

Sven Renkel

Communications (Press)

Verein Deutscher Ingenieure e.V. (VDI)

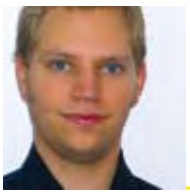
Günther Riedl

Dynamics

Stangl & Co. GmbH

Tim Schmidt

Event Control (Back Office)



Sebastian Seewaldt

Pit Marshal

Michael Zottler

Engineering Design Event

Operative Team

The Operative Team completes the management team by bearing responsibility for preparations and smooth processes at the event and during the year.

Das Operative Team komplettiert das Management Team, indem es beim Event und übers Jahr Verantwortung für Vorbereitung und reibungslosen Ablauf übernimmt.

Judges 2008
Juroren 2008

Engineering Design Event

Baur, Hartmut	*Daimler AG*
Becker, Dietmar	*Dr. Ing. h.c. F. Porsche AG*
Bergermann, André	*Toyota Motorsport GmbH*
Borchardt, Jan	*Andreas Stihl AG & Co.KG*
Bordiehn, Dirk	*Volkswagen Motorsport*
Capristo, Frank	*Brose Fahrzeugteile GmbH & Co. KG*
Clarke, Pat	*Hyundai Motor Company Australia*
Cooper, Nicholas	*Altan*
Crosby, Paul	*Crosby Composites Ltd*
Daillez, Benoit	*Toyota Motorsport GmbH*
Daman, Paul	*BMW AG*
Daniel, Frank	*Team Rosberg Engineering*
Daniel, Marc	*Volkswagen AG*
Diebold, Rainer	*2D Debus & Diebold Meßsysteme GmbH*
Dittrich, Rudolf	*BMW Motorsport*
Dölle, Norbert	*Daimler AG*
Enning, Norbert	*Audi AG*
Erb, Thiemo	*Dr. Ing. h.c. F. Porsche AG*
Euler, Magnus	*Bertrand*
Folie, Lukas	*Toyota Motorsport GmbH*
Fox, Steve	*PowerTrain Technology, Inc.*
Fries, Benedikt	*Audi AG*
Funk, Christian	*Audi AG*
Gesele, Frank	*Audi AG*
Goddard, Geoff	*former Chief Engineer of Cosworth F1*
Gould, David	*Gould Engineering*
Hickson, Alex	*INSYS Limited*
Himmler, Florian	*Carbo Tech Composites GmbH*
Höfflin, Florian	*HWA AG*
Hoffmann, Oliver	*Audi AG*
Hölzgen, André	*euro engineering AG*
Hulatsch, Mr.	*ZF Friedrichshafen AG*
Huy, Sascha	*euro engineering AG*
Kerber, Michael	*Audi AG*
Knipp, Christian	*Audi AG*
Kock, Jörg	*Continental AG*
Kohnen, Gangolf	*Toyota Motorsport GmbH*
Kretzter, Bernd	*2D Debus & Diebold Meßsysteme GmbH*
Krüger, Markus	*Caterpillar Motoren GmbH & Co. KG*
Kube, Oliver	*Kube GmbH Ingenieurbüro*
Ledoux, Vincent	*Toyota Motorsport GmbH*

Design Judges in 2007

Design Juroren im Jahr 2007

Maas, Gerhard	*IAV GmbH*
Meier, Thomas	*Dr. Ing. h.c. F. Porsche AG*
Miller, Tom	*UWA Racing*
Neidlein, Daniel	*Audi AG*
Nizzola, Corrado	*Daimler AG*
Nowicki, Daniel	*BMW AG*
Paasch, Bob	*Oregon State University*
Pälmer, Oliver	*Daimler AG*
Pfister, Felix	*AVL List*
Pollmeyer, Mr.	*ZF Friedrichshafen AG*
Powers, Craig	*Power Control Services*
Rausch, Andreas	*Toyota Motorsport GmbH*
Reetz, Volker	*Toyota Motorsport GmbH*
Reimann, Wolfgang	*IAV GmbH*
Rieke, Johannes	*TU Braunschweig*
Risch, Hendrik	*Audi AG*
Rouelle, Claude	*Optimum G*
Sander, Udo	*Tognum AG*
Schiberna, Peter	*Audi AG*
Schieblich, Wolfgang	*Consultant*
Schneider, Thomas	*Volkswagen AG*
Seidler, Jürgen	*Xentis*
Speidel, Gerd	*ZF Friedrichshafen AG*
Stammen, Karsten	*Volkswagen AG*
Staniforth, Allan	
Stretz, Mrs.	*ZF Friedrichshafen AG*
Strycek, Volker	*Adam Opel GmbH*
Sturm, Michael	*HSU Hamburg*
Underberg, Victor	*Audi AG*
Wenckel, Mathias	*Dolmar GmbH*
Wilkin, Matt	*Honda Racing F1 Team*
Wunschheim, Lukas	*euro engineering AG*
Zottler, Michael	

Cost Analysis Event

Ankert, Detlef	*Kautex Textron GmbH & Co. KG*
Aust, Kristina	*Schaeffler KG*
Bantleon, Dieter	
Blaschke, Volker	*Continental Automotive GmbH*
Buchhauser, Wolfgang	*Continental Automotive GmbH*
Eichler, Roland	*Schaeffler KG*
Fromholz, Robert	*Intelligement AG*
Grütter, Joachim	*TRW Automotive GmbH*
Grundner, Harald	*InnoVAVE*
Helbig, Jan	*Europcar Autovermietung GmbH*
Lukoschek, Marian Paul	*GM Europe GmbH*
Marchthaler, Jörg	*Universität Siegen*
Möll, Winfried	*Continental Automotive GmbH*
Morel, Romain	*Continental Mechanical Components*
Mueller, Jens-Thomas	*Bombardier Transportation (Locomotives)*
Pälmer, Reinhard	
Rauwerdink, Steven	
Sachse, Michael	*BorgWarner Turbo Systems GmbH*
Schallner, Sascha	*Festo AG & Co KG*
Scharff, Robert	*Daimler AG*
Schnabel, Matthias	*D.O.K. GmbH*
Schoon, Jürgen	*TEC'n ECO Unternehmens-beratung*
Steinmeier, Frank	*Continental Teves AG & Co. oHG*
Werner, Sebastian	*Festo AG & Co KG*
Wörz, Wolf	*Daimler AG*

Cost Judges in 2007

Cost Juroren im Jahr 2007

Business Plan Presentation Event

Presentation Judges in 2007

Presentation Juroren im Jahr 2007

Bienert, Margo	*FH Nürnberg*
Bjekovic, Robert	*Daimler AG*
Dechow, Dagmar	*Dow Corning*
Dingeldein, Ralf	*KION Group*
Dorfner, Barbara	*Daimler AG*
Esser, Klaus	*Kautex Textron GmbH & Co. KG*
Fohler, Gernot	*West LB*
Frank, Detlef	*BMW Group*
Gampfer, Michael	*CarboTech Composites GmbH*
Hannig, Peer	*DWP Bank*
Harm, Christian	*KION Group*
Herrmann, Jesko	*Bertrandt AG*
Holz, Patrick	*Consultant*
Hoyer, Helmut	*Ford-Werke GmbH*
Krüger, Jan	*Daimler AG*
Mahrholdt, Christian	*SoftPearls GmbH*
Mende, Ulrich	*Basell*
Müller, Andreas	*Kautex Textron GmbH & Co. KG*
Neddermeyer, Claus	*Neddermeyer Büro für Kommunikation*
Nestel, Ralf	*Daimler AG*
Niemeyer, Reinhard	*Air Liquide Deutschland GmbH*
Nottbrock, Claus	*YAZAKI Europe Ltd*
Tabatabai, Stefan	*Porsche Consulting*
Thiemer, Jens	*CNC Communications*
Tiebing, Peer	*Naspa*

Good reasons for supporting Formula Student Germany

Gute Gründe zur Unterstützung der Formula Student Germany

In the automotive industry, innovation is the driving force behind growth and success. This is precisely why AUDI AG is glad to promote creative, innovative and committed up-and-coming talents, especially in the field of engineering.

The teams lining up for the race this weekend have all come a long way and invested much work, time and emotion into their projects. Surely, many enjoyed intermediate success, but at the same time suffered getbacks, too. It is plain to see that everyone has put their heart and soul into their racing car. In so doing, you, the teams, have managed to convince Audi of your commitment, your team spirit and your expertise.

These are the very qualities we look for in our employees. And anyone who succeeds in transferring our brand values sportiness, progressiveness and sophistication to the race track is the right person for Audi.

Yvonne Herbst
International Human Resources Marketing
AUDI AG

Innovation ist vor allem in der Automobilindustrie der treibende Motor für Wachstum und Erfolg. Daher freut sich die AUDI AG besonders, im Rahmen des Projektes Formula Student kreative, innovative und engagierte Nachwuchskräfte, insbesondere der Ingenieurwissenschaften zu unterstützen.

Die Teams, die an diesem Wochenende ins Rennen starten, haben einen langen Weg mit viel Arbeit, Leidenschaft, Etappenerfolgen aber auch Rückschlägen hinter sich. Wir können bei jedem Einzelnen Herzblut und Leidenschaft für Ihren Rennwagen spüren. Auf diese Weise haben Sie, die Teams, es geschafft, Audi von Ihrem Engagement, Ihrem Teamgeist und Ihrem Wissen zu überzeugen.

Genau diese Eigenschaften wünschen wir uns von unseren Mitarbeitern. Und wer es schafft, unsere Markenwerte, Sportlichkeit, Progressivität und Hochwertigkeit auf die Rennstrecke zu bringen, passt auch gut zu Audi.

The BMW Group supports initiatives such as Formula Student which combine acquired theory with practical experience in an exemplary manner. The fact that this is much enjoyed by all those involved shows in particular that the acquisition of skills and key expertise such as interdisciplinary thinking, problem-solving and business knowledge is practised in exemplary fashion in the engineering competition. We are only too familiar with these requirements of teams from our own company.

We will therefore be glad to welcome applications later from qualified participants both from Germany and abroad for practical internships or job vacancies. In various areas, such as research and development, we are looking for enthusiastic young engineers who, like our own staff, enjoy being involved in innovative projects at the very highest level.

Joachim Hoffmann
Corporate Human Resources Policies, Vice President
Employee Development, Change Management Consulting
BMW Group

Die BMW Group befürwortet Initiativen wie die Formula Student. In vorbildlicher Weise verbindet sich dabei angelernte Theorie mit gelebter Praxis. Dass dies dann auch noch für alle Beteiligten Spaß macht, zeigt umso mehr, dass das Erlernen von Fähigkeiten und Schlüsselkompetenzen wie z. B. fachübergreifendes Denken, Problemlösefähigkeit oder wirtschaftliche Kenntnisse in dem Konstruktionswettbewerb vorbildlich in der praktischen Anwendung geübt wird. 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 später bei uns für Praxiseinsätze oder auch offene Stellen bewerben. Verschiedene Bereiche wie z. B. die Forschung und Entwicklung suchen begeisterte Nachwuchsingenieure, die genauso wie unsere Mitarbeiter Freude daran haben, auf höchstem Niveau an innovativen Themen mitzuwirken.

BOSCH
Invented for life
Bosch Engineering GmbH

As an innovative engineering service provider we at Bosch Engineering GmbH implement complex development tasks for international vehicle and engine manufacturers worldwide.

Thus we know the importance of young talents with fresh ideas and extraordinary engagement for future mobility.

Formula Student gives students the chance to prove their abilities in different categories and cope with interdisciplinary challenges in a team. For these reasons we support the Formula Student.

Furthermore the Formula Student is a great opportunity to get in contact with enthusiastic, highly motivated and well educated students.

We are looking forward to an exciting competition and wish all teams good luck!

Bernhard Bihr
President
Bosch Engineering GmbH

Als innovatives Ingenieurdienstleistungsunternehmen realisieren wir von der Bosch Engineering GmbH komplexe Entwicklungsaufgaben für Fahrzeug- und Motorenhersteller im In- und Ausland. Daher wissen wir, wie wichtig junge Talente mit frischen Ideen und außerordentlichem Engagement für die Zukunft der Mobilität sind.

Formula Student bietet Studenten die Chance, ihre Fähigkeiten in verschiedenen Kategorien unter Beweis zu stellen und interdisziplinäre Herausforderungen im Team zu meistern. Dies zu unterstützen ist uns ein großes Anliegen.

Für uns ist die Formula Student zudem eine sehr gute Möglichkeit, mit begeisterten, hochmotivierten und qualifizierten Studenten ins Gespräch zu kommen.

Wir freuen uns auf einen spannenden Wettbewerb und wünschen allen Teams viel Glück!

brunel

The Formula Student Germany offers young, enthusiastic engineers an excellent platform to present their extraordinary knowledge and engagement. In this construction competition students gain practical experiences and have to solve complex tasks as a team taking economic aspects into account. These characteristics exactly correspond to our profile, because Brunel specialists work out detailed solutions in the same way based on our customer requirements. For our technologically sophisticated and exciting projects we are looking for engineers, who share our passion for challenges. Brunel offers qualified engineers and developers challenging tasks with secure prospects and several opportunities for their professional and personal future. In the automotive sector, we have approximately 200 vacancies to be filled.

Carsten Siebeneich, MBA
General Manager
Brunel GmbH

Die Formula Student Germany bietet jungen, engagierten Nachwuchsingenieuren eine exzellente Plattform, ihr außergewöhnliches Fachwissen und Engagement zu zeigen. Die Studenten sammeln bei diesem Konstruktionswettbewerb praktische Erfahrungen und müssen in Teamarbeit komplexe Aufgaben unter betriebswirtschaftlichen Maßgaben lösen. Dies entspricht genau unserem Profil – denn die Spezialisten von Brunel erarbeiten exakt nach diesem System skalierte Lösungen auf Basis der vom Kunden gestellten Anforderungen. 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. Allein im Automobil-Sektor haben wir rund 200 offene Stellen zu besetzen.

Continental

We are aware that the future of cars depends largely on operation ability and the capability of innovation from the future generations of engineers. As a supplier of brake systems, systems and components for the powertrain and chassis, instrumentation, infotainment solutions, vehicle electronics, tires and technical elastomers, the corporation contributes towards enhanced driving safety and protection of the global climate. Formula Student offers the participants the possibility to prove their interdisciplinary abilities. During the development of a single-seat formula racing car the new generation engineers can gain knowledge in construction as well as in economic management. Furthermore such a large international project also shapes the factors of social competence, which we are looking for among all of our newcomers. We wish a full time success to all the teams and lots of fun during the event at the Hockenheimring.

Sehnaz Özden
Head of Corporate Employer Branding & Recruiting
Continental AG

Uns ist bewusst, dass die Zukunft des Automobils sehr stark von der Einsatzbereitschaft und Innovationsfähigkeit der kommenden Ingenieurgenerationen abhängt. Als Anbieter von Bremssystemen, Systemen und Komponenten für Antrieb und Fahrwerk, Instrumentierung, Infotainment-Lösungen, Fahrzeugelektronik, Reifen und technischen Elastomerprodukten trägt die Continental AG zu mehr Fahrsicherheit und zum Klimaschutz bei. Formula Student bietet den Teilnehmern die Möglichkeit, ihre interdisziplinären Fähigkeiten unter Beweis zu stellen. Die Nachwuchsingenieure eignen sich beim Bau eines einsitzigen Formelrennwagens sowohl Kenntnisse in Konstruktion als auch in Betriebswirtschaft an. Zudem schärft ein internationales Großprojekt wie Formula Student die Sozialkompetenzfaktoren, die wir bei allen unseren Einsteigern suchen. Wir wünschen allen Teams gutes Gelingen und viel Spaß bei der Veranstaltung auf dem Hockenheimring.

DAIMLER

Enthusiasm and passion for innovation and technology are the driving force of the automotive industry. This eagerness is also present among the participants who show enormous commitment and endurance when working on their racing cars. Excellent knowledge of their field of activity, the comprehension of complex processes and team work are decisive qualities of the competing students. These skills exactly match our requirements when looking for qualified junior staff.

With our involvement we wish to make a contribution to further the innovation force and enhance the passion of young talents for the automotive industry. At the Formula Student Germany we are looking forward to interesting discussions with the students and to show them the possibilities of starting their career with Daimler.

We wish all participants staying power and “lots of fuel in their system”!

Martina Recha
HR Marketing, Global Talent Acquisition and Development
Daimler AG

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 bei der Gewinnung qualifizierter Nachwuchskräfte. Wir möchten mit unserem Engagement einen Beitrag dazu leisten, die Innovationskraft der jungen Talente und ihre Begeisterung für die Automobilindustrie zu fördern. Bei dem Formula Student Event freuen wir uns auf interessante Gespräche mit den Teilnehmern, um ihnen Möglichkeiten zum beruflichen Einstieg bei Daimler aufzuzeigen.

Wir wünschen den Teilnehmern eine ganze Ladung Energie und „viel Benzin im Blut“!

DEKRA supports Formula Student Germany from the outset as the technical partner. Our engineers have extensive expertise in professional motor racing, as technical supervisors for the German Touring Car Masters (DTM) championship and other racing events.

Our DEKRA Technology Centre provides an excellent infrastructure. In 2008 again, some teams have tested the energy-absorbing structures for the crash boxes of their racing cars at the DEKRA Crash Test Center. This way Formula Student offers the possibility to students 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 who have, as we say in Germany, "fuel running in the blood".

Werner von Hebel
Member of the Executive Board
DEKRA Automobil GmbH

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).

Wir haben mit dem DEKRA Technology Center eine ausgezeichnete Infrastruktur für den technischen Wettbewerb. Auch im Jahr 2008 haben einzelne Teams die energieabsorbierenden Strukturen für die Crash-Boxen der Rennwagen im DEKRA Crash Test Center getestet. So bietet die Formula Student 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.

With over 3,000 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 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 and our careers portal at www.iav-inside.com.

Christian Willenberg
Public Relations
IAV GmbH

Die IAV ist mit über 3.000 Mitarbeitern weltweit einer der führenden Engineering-Partner der Automobilindustrie. Das Unternehmen entwickelt seit 25 Jahren innovative Konzepte und Technologien für zukünftige Fahrzeuggenerationen. Zu den Kernkompetenzen gehören perfekte, serientaugliche Lösungen in allen Bereichen der Antriebsstrang-, Elektronik-, und Fahrzeugentwicklung.

Die 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: Die 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 zur IAV erhalten Sie über www.iav.com und unser Karriereportal www.iav-inside.com.

MAHLE
Driven by performance

The MAHLE Group is among the top 30 automotive suppliers globally and is the world market leader for combustion engine components, systems and peripherals. MAHLE employs approximately 48,000 employees in 110 production plants and seven research and development centers. In 2007, MAHLE generated sales in excess of EUR 5 billion (USD 7.5 billion). For aspiring development engineers, Formula Student is a doorway to a fascinating world of opportunity – to realise a childhood dream. As our company has enjoyed close ties to motor sport since the early days, we support the racing series through close cooperation with a variety of universities. Not only do we have our own special motor – developed specifically for Formula Student – we also have what it takes to translate expertise into practice. And every now and again we stumble across budding engineers who are so captivated by our own products, they can't get enough of them – much to our delight.

Christina Schulte
Head of Management and Organization Development / HR Marketing, MAHLE International GmbH

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. MAHLE beschäftigt rund 48.000 Mitarbeiter an 110 Produktionsstandorten und in sieben Forschungs- und Entwicklungszentren. 2007 erzielte MAHLE einen Umsatz von über 5 Mrd. EUR (7,5 Mrd. USD). Die Formula Student ist für künftige Entwickler eine der faszinierenden Möglichkeiten, ihre Träume zu realisieren. Als ein von Anfang an dem Motorsport verbundenes Unternehmen unterstützen wir diese Rennserie durch eine intensive Kooperation mit mehreren Hochschulen, mit einem eigens für die Formula Student entwickelten Motor und umfangreichen Know-how-Transfer. Und wenn der eine oder andere Ingenieur nach dem ersten Kontakt mit unseren Produkten Lust auf mehr MAHLE hat – dann freut uns das natürlich ganz besonders.

SolidWorks

For the third time students are competing against each other designing their racing bolides at the Formula Student Germany. We are happy to offer teams our 3D CAD software this year again. Especially in times of skilled worker shortage it is important to support pupils and students proactively and awake their interest for technical professions. The Formula Student Germany is the perfect platform since it provides a holistic view: participants acquire, besides the technical know-how and the professional use of design tools, soft skills such as time management and teamwork. Thus, students will be prepared for their future working life. I am impressed to see how much effort the students put in their designs. The industry can look forward to having such motivated future employees.

Valérie Lécolle
Marketing manager of European education markets
SolidWorks Europe

Bereits zum dritten Mal messen sich Studenten bei der Formula Student Germany in der Konstruktion ihrer Rennboliden. Wir freuen uns, auch in diesem Jahr wieder Teams mit unserer 3D-CAD-Software unterstützen zu können. Gerade in Zeiten des Fachkräftemangels ist es wichtig, Schüler und Studenten aktiv zu fördern und sie für technische Berufe zu begeistern. Die Formula Student Germany ist dafür genau die richtige Plattform. Sie vermittelt ein ganzheitliches Bild und die Teilnehmer können sich neben technischem Know-how und dem professionellen Umgang mit Konstruktionswerkzeugen auch Softskills wie Zeitmanagement und Teamwork aneignen. Somit werden sie optimal auf ihren späteren Berufseinstieg vorbereitet. Es ist beeindruckend zu sehen, mit welchem Engagement die Teams an ihren Konstruktionen arbeiten. Die Industrie kann sich freuen, so motivierte Nachwuchskräfte zu haben.

ThyssenKrupp supports Formula Student Germany because it focuses on enthusiasm for technology. Through participation in Formula Student Germany, students have the opportunity to learn interdisciplinary cooperation in addition to technically developing a racing car. This allows them to gain practical experience during their studies and develop competencies such as project management, application-oriented learning and social and conceptual strengths. These factors are of great importance for professional development alongside high-quality training.

ThyssenKrupp will hire around 500 university graduates in the next 12 months. Around 75 percent of them will come from engineering-related courses, e.g. mechanical, electrical and industrial engineering. For this reason, ThyssenKrupp seeks to make contact with students at an early stage and supports Formula Student Germany.

Sascha Giel
Corporate Human Resources
ThyssenKrupp AG

ThyssenKrupp unterstützt die Formula Student Germany, weil die Begeisterung für Technik hier im Vordergrund steht. Durch die Beteiligung an der Formula Student Germany haben die Studierenden die Gelegenheit, neben der technischen Entwicklung eines Rennwagens auch die interdisziplinäre Zusammenarbeit mit anderen Fachrichtungen zu trainieren. So können sie bereits während des Studiums praktische Erfahrungen sammeln und Kompetenzen wie Projektmanagement, anwendungsorientiertes Lernen und soziale und methodische Stärken entwickeln.

ThyssenKrupp wird in den kommenden 12 Monaten rund 500 Hochschulabsolventen einstellen. Davon stammen rund 75 Prozent aus ingenieurwissenschaftlichen Studiengängen, z. B. Maschinenbau, Elektrotechnik und Wirtschaftsingenieurwesen. Aus diesem Grund sucht ThyssenKrupp frühzeitig Kontakt zu den Studierenden und unterstützt die Formula Student Germany.

The employees of the Tognum Group with its core company MTU Friedrichshafen know: Together, they achieve outstanding results. They value the opportunities for individual development and the multifaceted perspectives that come with being part of a powerful international enterprise. And they live the values represented by our corporation: inspiration, innovation, energy.

In our commitment to the Formula Student design contest, we rediscover those very values - as well as our own ambition to always “stay ahead of the game”. Therefore, we wholeheartedly support the event and the participating teams. We are glad that in doing so, we get to meet aspiring personalities willing to move the world with us as interns, as students working on their thesis projects, or as graduates. Who help us keep the Eiffel Tower shining at night and develop motors that have the power of a dozen Formula 1 engines. Welcome to Tognum in Friedrichshafen, Germany.

Volker Heuer
President and CEO
Tognum AG

Die Mitarbeiter der Tognum-Gruppe mit ihrem Kernunternehmen MTU Friedrichshafen wissen, dass sie gemeinsam Herausragendes erreichen. Sie schätzen die Entwicklungsmöglichkeiten und die vielseitigen Perspektiven, die die Zugehörigkeit zu einem starken internationalen Konzern ihnen eröffnet. Und sie leben die Werte, für die unser Unternehmen steht: Inspiration, Innovation und Dynamik.

In Ihrem Engagement im Formula Student Konstruktionswettbewerb finden wir diese Werte sowie unseren eigenen Anspruch wieder, dem Wettbewerb immer „eine Länge voraus zu sein“. Wir unterstützen daher aus Überzeugung diese Veranstaltung und die teilnehmenden Teams und freuen uns, dort ambitionierte Persönlichkeiten zu treffen, die als Praktikanten, Diplomanden und Berufseinsteiger mit uns die Welt bewegen möchten. Die mit uns den Eiffelturm zum Strahlen bringen und Motoren entwickeln, die die Power von einem Dutzend Formel-1-Motoren haben. Willkommen bei Tognum.

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. It is exactly these key qualifications that can be found with the teams of "Formula Student". For us, the event provides the ideal platform to engage in a dialog with the students and get them enthusiastic about our company and our products. The design engineering contest here in Hockenheim, is a kind of 'playground' for young engineers that have skills and qualifications going way beyond functional engineering training. Like no other student project, "Formula Student" sets an example in promoting young engineering talents – a target group that we urgently need as an innovation driver.

Dr. Hans-Jörg Domian
Senior Manager Advanced Engineering Innovative Chassis and Driveline
ZF Friedrichshafen AG

ZF als ein weltweit führender Automobilzulieferkonzern in der Antriebs- und Fahrwerktechnik ist permanent auf der Suche nach qualifizierten, kreativen und motivierten Nachwuchskräften. Gefragt sind Fähigkeiten wie Teamfähigkeit, Organisationstalent und solide Kenntnisse in Projektmanagement und Kostenoptimierung. Genau diese Schlüsselqualifikationen finden wir bei den Teams von „Formula Student“. Die Veranstaltung bietet uns eine ideale Plattform, um den Dialog mit Studierenden zu eröffnen und sie für unser Unternehmen und unsere Produkte zu begeistern. Der Konstruktionswettbewerb hier in Hockenheim ist ein Tummelplatz junger Menschen, die über Fähigkeiten verfügen, die weit über die fachbezogene Ingenieursausbildung hinausgehen. Wie kaum ein anderes studentisches Projekt fördert „Formula Student“ den ingenieurwissenschaftlichen Nachwuchs – eine Zielgruppe, die wir als Innovationstreiber so dringend benötigen.

Flags as communication on the track – an excerpt from the rules

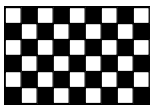
Flag signals are the communication tool from track marshals to drivers. There are two kinds of flags for the competition. Command flags are just that the flag signals have to be obeyed immediately and without question. Informational flags require no action from the driver, but should be used as added information to help him or her to maximize performance.

Command Flags

Pull into the penalty box for discussion with the Director of Operations or other official concerning an incident. A time penalty may be assessed for such incident.

Pull into the penalty box for a mechanical inspection of your car, something has been observed that needs closer inspection.

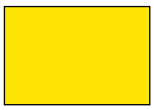
Pull into the designated passing zone to be passed by a faster competitor. Obey the corner workers hand signals at the end of the passing zone to merge into competition.



Your session has been completed. Exit the course at the first opportunity.

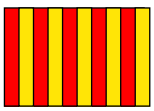
Your session has started, enter the course under direction of the starter.

Come to an immediate safe controlled stop on the course. Pull to the side of the course as much as possible to keep the course open. Follow corner workers' directions.



Something has happened beyond the flag station. No passing unless directed by the corner workers. *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.

Informational Flags



Something is on the racing surface that should not be there. Be prepared for evasive maneuvers to avoid the situation.

There is a slow moving vehicle on the course that is much slower than you are. Be prepared to approach it at a cautious rate.

Flaggen als Kommunikation auf der Strecke – ein Auszug aus dem Regelwerk

Flaggenzeichen sind das Kommunikationsmittel von Streckenposten zu Fahrern. Es gibt zwei Arten von Flaggen: Kommandoflaggen zeigen dem Teilnehmer eine Anweisung, die er sofort und ohne Frage befolgen muss. Informationsflaggen helfen dem Fahrer als Zusatzinformation, seine Performance zu verbessern.

Kommandoflaggen

Fahr in die Kontrollzone zum Gespräch mit dem Rennverantwortlichen. Für den Vorfall kann eine Zeitstrafe angesetzt werden.

Fahr in die Kontrollzone für eine Untersuchung des Fahrzeugs. Es wurde etwas entdeckt, was genauer betrachtet werden muss.

Lass dich in der Überholzone überholen. Ordne dich danach nach Handzeichen der Streckenposten wieder ein.

Deine Fahrt ist beendet. Verlass die Strecke bei der nächsten Gelegenheit.

Deine Fahrt beginnt. Fahr nach Anweisung des Start-Streckenpostens auf die Strecke.

Komm sofort kontrolliert zum Stehen. Halte so an, dass die Strecke möglichst frei bleibt. Folge den Anweisungen der Streckenposten.

Etwas ist hinter der Flagge passiert. Fahr nicht vorbei ohne Anweisung der Streckenposten. Feststehend: Gefahr! Fahr langsam, sei bereit zum Reagieren. Geschwenkt: Große Gefahr! Fahr langsam, eine Reaktion wird erforderlich. Sei bereit anzuhalten.

Informationsflaggen

Es ist etwas auf der Strecke, was nicht da sein sollte. Sei bereit zum Ausweichen, um eine Gefahrensituation zu vermeiden.

Es ist ein Fahrzeug auf der Strecke, das wesentlich langsamer ist als du. Sei bereit, dich vorsichtig anzunähern.

Pat's Corner: Composites and innovation in Formula Student

Pat's Corner: Verbundwerkstoffe und Innovationen in der Formula Student

Pat Clarke...

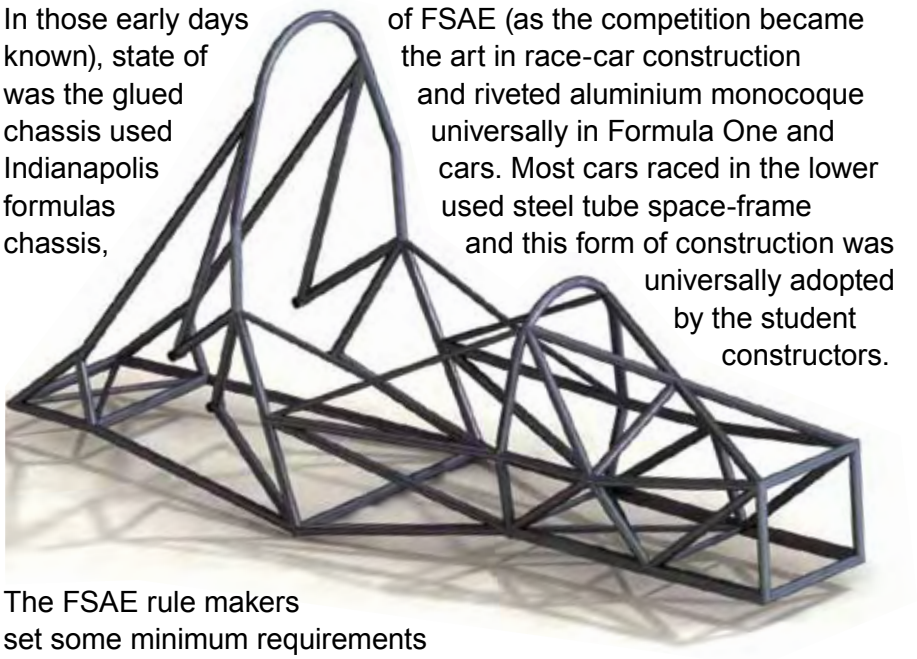
... gives advice to the teams as Technical Advisor for Formula Student Germany and is also one of the Design Judges. He works for the Hyundai Motor Company Australia.

... ist technischer Berater und Juror beim Design Event für die Formula Student Germany. Er arbeitet für die Hyundai Motor Company Australia.

When Formula Student (FS) was first run, (as "Mini Indy" in the US in 1979) the intent of the formula was to give graduating university students an interesting project that would enhance their practical skills. The rules were very lax in those early days, with no restriction on engines and no requirement for suspension. Very quickly the organisers saw the danger in the potentially very fast go-karts that developed, and so instituted some rules that would curb the students' enthusiasm for outright performance whilst encouraging their inventiveness. The result is a competition with the least restrictive rules in motor sport.

Initial idea: interesting project for graduating university students to enhance practical skills

In those early days of FSAE (as the competition became known), state of the art in race-car construction was the glued and riveted aluminium monocoque chassis used universally in Formula One and Indianapolis cars. Most cars raced in the lower formulas used steel tube space-frame chassis, and this form of construction was universally adopted by the student constructors.



Typical Formula Student space-frame chassis

Typischer Formula Student Gitterrohrrahmen

The FSAE rule makers set some minimum requirements for materials, side impact structures and rollover protection and the competition stabilised for some years with the majority of cars being space-frame cars.

Rules provide room for innovations like for the use of composites

In the early 1980s McLaren and Lotus teams introduced monocoque chassis constructed using composite materials such as carbon fibre and Kevlar into Formula One. The use of these composites had been developed in aerospace industries and offered many advantages to the race car

Die Formula Student (FS) wurde mit der Absicht geboren (als "Mini Indy" in den Vereinigten Staaten 1979), Studenten höherer Semester ein interessantes Projekt zu bieten, das ihre praktischen Fähigkeiten fördert. Die Regeln waren locker – ohne Beschränkungen für den Motor und ohne Anforderungen an das Fahrwerk. Schnell sahen die Organisatoren die wachsende Gefahr dieser mitunter sehr schnellen Go-Karts. Deshalb legten sie einige Regeln fest, die das Wetteifern der Studenten nach immer höheren Fahrleistungen bremsten, aber auch ihre Kreativität förderten. Das Ergebnis ist ein Wettbewerb mit dem am wenigsten einschränkenden Reglement im Motorsport.

In den Anfängen der FSAE (so wurde der Wettbewerb genannt) waren geklebte und genietete Aluminium-Monocoque-Chassis Stand der Technik im Motorsport, auch in Formel 1- und Indy-Cars. Die meisten Fahrzeuge niedrigerer Rennklassen verwendeten Stahlrohrrahmen, wie sie auch die meisten Studenten übernahmen.

Die FSAE-Organisatoren stellten einige Minimalanforderungen auf für Materialien, Seitenaufprallschutz und Überrollbügel. So etablierte sich der Wettbewerb für einige Jahre, wobei die meisten Fahrzeuge mit Gitterrohrrahmen gebaut wurden.

In den frühen 80ern führten McLaren und Lotus in der Formel 1 Monocoque-Chassis aus Verbundwerkstoffen ein. Diese Materialien waren für die Luft- und Raumfahrt entwickelt worden, boten aber auch für Rennwagen viele Vorteile. Die neuen Chassis waren steifer und leichter als die bisherigen Aluminium- oder Stahlrohrrahmen und boten dem Fahrer einen besseren Schutz bei Unfällen. Allerdings waren sie teuer und ihre Fertigung erforderte Erfahrung und Spezialwerkzeug.

constructor. These new chassis were much stiffer and lighter than the previous aluminium or steel tube frames and offered better protection to the driver in the case of an accident. However, the materials were expensive and construction required expertise and specialised equipment.

The first carbon fibre chassis in Formula Student was realised in 1998

Several College teams evaluated composite construction for their chassis, but it wasn't until the University of Leeds in the UK introduced a carbon fibre chassis at FSUK in 1998 that this technology reached the competition.

Improvement in manufacturing techniques, changes in the composite raw materials and good old student innovation has seen this new form of construction become commonplace in Formula Student.

Most teams start by making simple composite components, panels, seats, dashboards etc., but then graduate to complex components such as intake manifolds and plenum chambers and steering wheels. Usually, the next project is the chassis monocoque. Some teams have progressed to making very heavily loaded components such as suspension arms, driveshafts and wheels from carbon fibre composite.

Carbon composite suspension members and road wheel on TU München car 2007

Fahrwerk mit Kohlefaserkomponenten und Laufrad beim Auto der TU München 2007

Safety scrutineers are concerned that these composite structures are sound and there have been several instances of cars with composite structures not being permitted to compete until some modifications have been made, or some components replaced. There is no thought being given to banning these structures as the event organisers understand that many young engineers are developing skills that are very useful to industry. And with careful supervision they will not only get experience in this area of expertise, but will also develop new production systems and manufacturing techniques. An example of this is the patented composite curing technique developed by students at the University of Western Australia in Perth. Their technique is being used by commercial and military organisations to perform on-site repairs to composite structures like helicopters and other aircraft, work that previously needed to be done back at a dedicated facility.

Sometimes students make innovations which are used for industry

The introduction of composites, particularly chassis, has significantly reduced the weight of many FS cars. 200kg used to be a very light FS car and still is if the car is fitted with a steel tube chassis and a four

In die FS hielten Verbundwerkstoffe erst Einzug, als die University of Leeds 1998 erstmals ein Kohlefaser-Chassis baute.

Verbesserte Herstellungstechniken und Rohmaterialien und Erfindungsgeist haben diese neue Bauweise auch in der Formula Student zur Normalität gemacht.

Die meisten Teams beginnen mit einfachen Bauteilen, wie Platten, Sitzen, Armaturenbrettern usw., und gehen dann zu komplexeren Bauteilen über, wie z.B. Lenkrädern, Ansaugrohren und der Airbox. Meist ist das nächste Projekt dann das Monocoque. Einige Teams gehen sogar so weit, hochbelastete Bauteile wie Fahrwerksstreben, Antriebswellen und Räder aus Kohlefaser herzustellen.

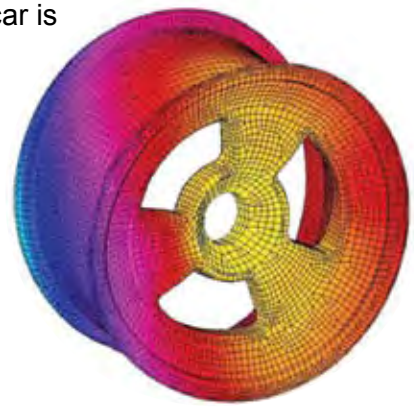
Beim Scrutineering wird sehr genau geprüft, ob die Verbundstrukturen fehlerfrei sind. In einigen Fällen durften Fahrzeuge mit Strukturbauteilen aus Faserverbundwerkstoff nicht starten, bevor nicht Änderungen vorgenommen oder Teile ausgetauscht wurden. Es wird jedoch nicht darüber nachgedacht, solche Bauteile zu verbieten. Denn die Organisatoren wissen, dass junge Ingenieure dadurch Fähigkeiten entwickeln, die für die Industrie wichtig sind. Bei guter Betreuung entwickeln die Studenten mitunter auch neue Produktions- und Fertigungstechniken. Ein Beispiel ist das patentierte Aushärteverfahren, das von Studenten der University of Western Australia in Perth entwickelt wurde. Es wird von kommerziellen und militärischen Einrichtungen verwendet, um Bauteile aus Faserverbundwerkstoffen (z.B. an Hubschraubern und Flugzeugen) vor Ort zu reparieren. Zuvor war das nur in einer Spezialwerkstatt möglich.

Der Einsatz von Verbundwerkstoffen, vor allem beim Chassis, hat das Gewicht vieler FS-Autos signifikant reduziert. Ein Fahrzeuggewicht von 200kg galt früher als sehr leicht. Und das ist auch heute noch der Fall, wenn das Auto mit Vierzylindermotor und Stahlrohrrahmen ausgestattet sind. Dagegen wiegen einige Fahrzeuge aus Faserverbundwerkstoffen (z.B. TU Delft oder RMIT) weniger als 150kg.

Photo: TU München

cylinder engine. Some composite cars, such as those built recently by the Dutch team Delft or 2007 FSUK winners RMIT weigh less than 150kg ready to go. Competition judges consider low weight as a very important factor in determining winners in the Engineering Design competition, and as a result, many teams feel pressured to build composite cars or 'plastic fantastics' as the judges call them.

Some Universities insist that their FS car is built as a steel space-frame. As FS is an educational programme, many feel that understanding of 'load paths' in a space frame structure is much more intuitive than feeding loads into the skin of a monocoque structure and using a computer program to analyse it. They also may feel that a student built structure is easier to 'prove' in steel than in carbon fibre.



Finite Element Analysis of carbon fibre wheel from TU Graz 2007

Finite Elemente Analyse eines Kohlefaserrades der TU Graz von 2007

Other universities encourage the development of composite technology, as they are interested in forward looking technology or are supported by companies who may well prefer graduates with such skills. The increase of composite structures in all forms of engineering and in automotive engineering in particular may well see an increase in this influence.

One particular area where this development is seen is in the research going into lightweight and stiff carbon fibre road wheels, as will be seen on many cars at FSG 2008.

As FS cars are supposedly prototypes for a production race car to be sold to 'the average weekend racer', many feel that a carbon composite car is not suitable for this market, that it cannot be safely repaired after an accident. Many of the winning cars in recent years, including 2006 FSG winners Stuttgart and 2006 FSAE winners Madison Wisconsin, have used space-frame chassis so the decision to move to a carbon chassis is far from clear cut.

Carbon composite or space-frame – students make their experiences in each concept for a FS car

However, the introduction to FS cars of composite construction along with other advanced engineering and electronics ensures that the students who graduate from this program are very valuable employees in the future.

Pat

Für die Juroren ist das Fahrzeuggewicht ein wichtiger Faktor bei der Auswahl der Sieger des Engineering Design Events. Das hat zur Folge, dass viele Teams sich gedrängt fühlen, Fahrzeuge aus Faserverbundwerkstoffen zu bauen – 'Plastic fantastics', wie die Juroren sie nennen.

Manche Universitäten bestehen auf Autos mit Stahlrohrrahmen. Sie glauben, dass das Verstehen von Kraftflüssen in einem Gitterrohrrahmen intuitiver ist als Kräfte in die Oberfläche einer Monocoque-Struktur einzuleiten und die Kraftflüsse mit einem Computerprogramm zu berechnen. Manche glauben auch, dass eine Struktur besser überprüft werden kann, wenn sie aus Stahl anstatt aus Karbon besteht.

Andere Universitäten ermutigen ihre Studenten zur Verwendung von Verbundwerkstoffen, da sie an zukunftsorientierten Technologien interessiert sind oder von Unternehmen unterstützt werden, die Absolventen mit entsprechenden Kenntnissen suchen. Die zunehmende Verwendung von Faserverbundwerkstoffen im Maschinenbau und besonders im Automobilbereich verstärkt diese Tendenz.

Insbesondere an den leichten und gleichzeitig steifen Kohlefaserfelgen, wie sie bei der FSG 2008 oft zu sehen sind, kann diese Entwicklung beobachtet werden.

FS-Autos sind Prototypen für die angenommene Produktion eines Rennwagens für den nicht-professionellen Wochenendrennfahrer. Viele halten Verbundwerkstoffe für diesen Markt für nicht angemessen, da man sie nach einem Unfall nur schwer reparieren kann. Viele der Siegfahrzeuge der letzten Jahre, unter anderem die Gewinner der FSG 2007, Stuttgart, und der FSAE 2007, Madison Wisconsin, haben mit dem Einsatz von Stahlrohrrahmen gezeigt, dass die Entscheidung für ein Kohlefaserchassis bei weitem nicht eindeutig ist.

Wie auch immer: Die Einführung von Verbundwerkstoffen in Verbindung mit hochentwickelter Technik und Elektronik stellt sicher, dass Studenten, die in der Formula Student aktiv waren, zu wertvollen zukünftigen Mitarbeitern werden.

Picture: TU Graz

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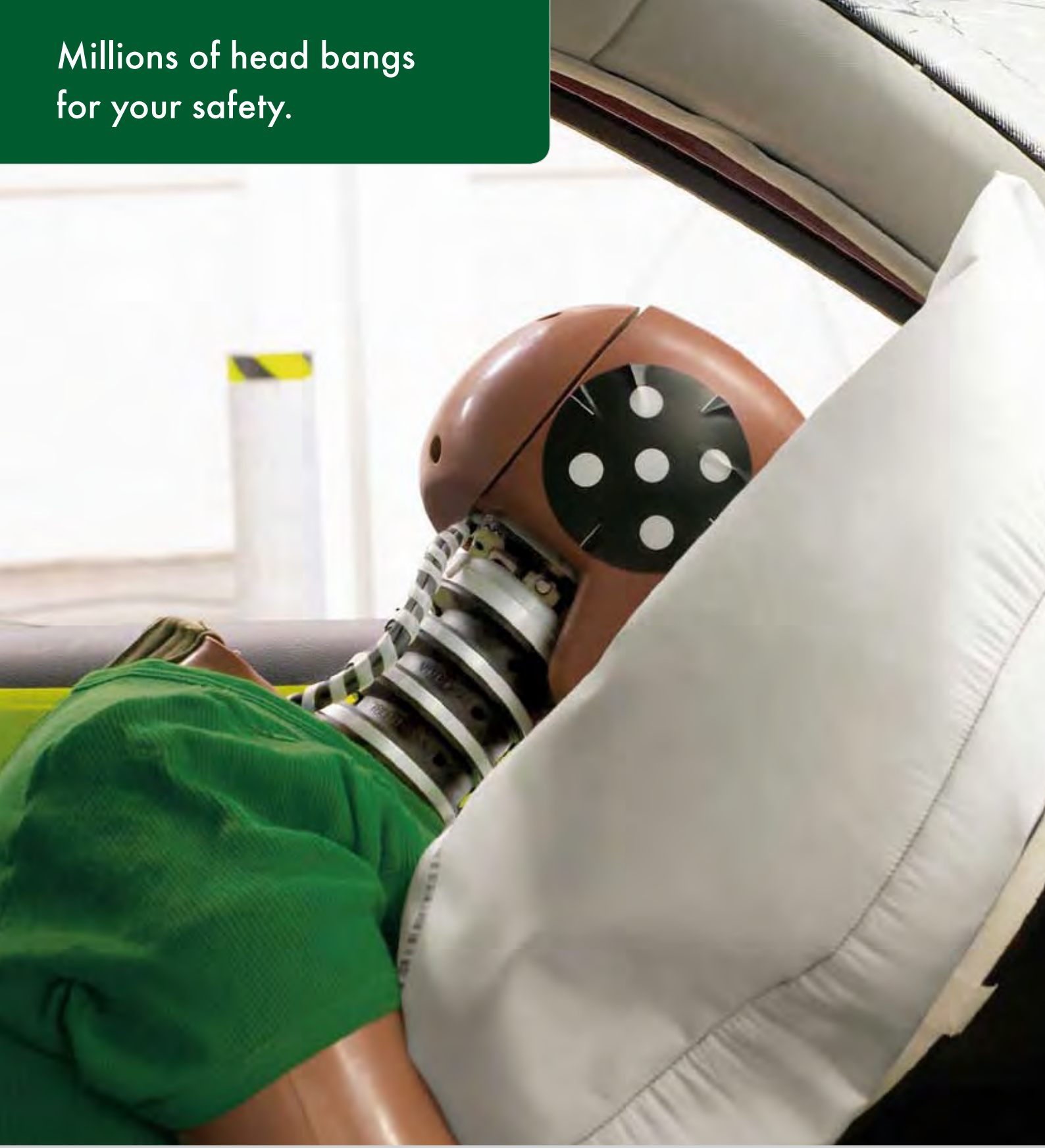

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formula student germany

Making business with race cars – things to learn in the Business Plan Presentation Event

Mit Rennwagen Geschäfte machen – was es beim Business Plan Presentation Event zu lernen gibt

Barbara Schlögl...

... is responsible for the Business Plan Presentation Event at the Formula Student Germany. She was team captain of the TU Graz 2006 and now works for the motorsport supplier Carbo Tech Composites.

... ist verantwortlich für die Business Plan Presentation bei der Formula Student Germany. Sie war 2006 Team Captain der TU Graz und arbeitet nun bei dem Rennsport-Zulieferer Carbo Tech Composites.

The Business Plan Presentation Event is one of eight disciplines, within which the students have to proof their business knowledge, business savvy and professionalism. In contrast to the dynamic disciplines that judge the performance of the student-built car, the Business Plan Presentation Event is part of the static disciplines. Similar to in the Engineering Design and the Cost Analysis Event, the theoretical approaches emphasize the business model. In this event the teams are able to gain 75 of 1000 possible points.

The essence of the Business Plan Presentation Event is very similar to all Formula Student/ FSAE Events. With only 10 Minutes of actual presentation and then 5 minutes of questioning, the students have to convince a jury of industrial representatives (potential investors), that their project is a viable investment for the target group of non-professional weekend racers. A good business plan takes into consideration the value added products, which are also a part of this market, market analysis, financing, product manufacture, and after-sales service and supply aspects. Due to the limited time factor, it is essential that the students present only the most relevant information and key accounting figures.

Judgement

There are five key categories in this event which are judged equal in value: Was the plan good and conclusive? Was it graphically logically presented? Was the presentation well structured and was it presented convincingly and comprehensively? How well is the presentation conducted (English is the official FSG language) – and were the students able to answer the judges' questions accurately and consistently?

One or more team members present the business plan to a group of 3 or 4 judges. Besides the projection they can bring visual aids to illustrate their concept.

Ein oder mehrere Teammitglieder präsentieren einer Gruppe von 3 oder 4 Juroren den Business Plan. Zusätzlich können sie visuelle Hilfsmittel zur Veranschaulichung ihres Konzeptes mitbingen.

Das Business Plan Presentation Event ist eine der acht Disziplinen, in denen die studentischen Teams ihre Leistungsfähigkeit, ihr Wissen, Können und Professionalität unter Beweis stellen sollen. Im Gegensatz zu den dynamischen Disziplinen, in denen die Fahrleistungen des Autos bewertet werden, gehört das Business Plan Presentation Event zu den drei statischen Disziplinen. Neben dem Engineering Design (Konstruktionsbewertung) und dem Cost Event (Kostenkalkulation) stehen hierbei die theoretischen Ansätze und das Geschäftsmodell im Vordergrund. Damit können die Teams 75 von 1.000 möglichen Punkten erreichen.

Die grundsätzlichen Regeln beim Business Plan Presentation Event sind auf allen Wettbewerben der Formula Student/ FSAE gleich. Die Teams haben 10 Minuten Präsentations- und anschließend 5 Minuten Frage- und Antwortzeit, um eine Jury von Industrie-Vertretern (fiktive Investoren) davon zu überzeugen, dass ihr präsentiertes Projekt ein lohnendes Investment ist. Dabei zielt das Rollenspiel auf einen Markt nicht-professioneller Wochenend-Rennfahrer ab. Zu einem guten Business-Plan gehören sämtliche Überlegungen der Wertschöpfungskette zum Eintritt in diesen Markt, angefangen bei Marktanalysen über Finanzierung und Produktion bis hin zu After-Markt-Gesichtspunkten etc. Elementar ist es anschließend natürlich, der Jury nur die relevanten Punkte aus den Gesamtüberlegungen zu präsentieren.

Bewertung

Bewertet werden fünf Kategorien zu gleichen Anteilen: War der Inhalt gut und schlüssig? Wurde der Inhalt grafisch sinnvoll aufbereitet? War die Präsentation klar gegliedert? Wurde sie überzeugend und

Presentation Finals: Learning from the best

Formula Student Germany has added new aspects to the Business Plan Presentation Event. The goal of this evolution is to enable the teams to learn from each other, especially from the best presentations. This was achieved by installing the Business Plan Presentation Finals in 2006. During the day, each team presents its presentation individually to three or four judges. The judges then identify the four or five best presentations overall. Those teams are then invited back to make their presentations publicly that evening – in front of the judges and all of the students, without questioning time.

In the finals the 4 or 5 best teams repeat their Business Plan Presentation in public.

Die 4 oder 5 besten Teams wiederholen ihre Business Plan Presentation im Finale öffentlich.

Afterwards the judges decide the placing together. As a result, the judgement is on the one side a common decision of all judges, on the other the teams have the opportunity to see and learn from the best presentations of the event. This year, the Presentation Finals take place on the 8th of August in front of approximately 2000 spectators.

Learning from the best for the next year – many teams film the finals.

Von den Besten lernen für das nächste Jahr – viele Teams filmen das Finale.

Executive Summary: Overview of static disciplines

Another key change to the way Formula Student Germany is run, is the new link between all of the static disciplines. Up until now, no relationship existed between each individual static event. As a result, Cost and Design judges as well as all the other student competitors never had the opportunity to watch the business plans of any of the other competing teams. This brings a cohesive feeling to the event that helps tie all aspects of the competition together.

Prior to the event (2 weeks in advance) the teams have to submit a summary of their presentation. This extract, which cannot be longer

verständlich vorgestellt (alle Präsentationen werden auf Englisch gehalten) und konnten die Studierenden auf die Fragen der Juroren konsistent antworten.

Presentation Finals: Lernen von den Besten

Die Formula Student Germany hat einige neue Aspekte in das Business Plan Presentation Event eingebracht. Dabei stand zunächst die Schaffung eines Rahmens im Vordergrund, in dem die Teams von den Besten lernen können. Dies gelang 2006 mit der Einführung der Business Plan Presentation Finals. Die Teams treten über den Tag verteilt in Einzel-Runden an, um Juroren-Teams aus 3 bis 4 Juroren von ihrem Konzept zu überzeugen. Die Juroren bewerten alle Teams und definieren gemeinsam die 4 oder 5 besten Präsentationen. Diese Präsentationen halten die Studenten dann am Abend nochmal öffentlich – vor allen Juroren und allen anderen Studierenden. Dabei gibt es dann keine Fragerunde mehr. Die Juroren entscheiden im Anschluss an die letzte Präsentation alle gemeinschaftlich über die Platzierung der präsentierenden Teams. Somit ist einerseits das Urteil ein gemeinsames aller Juroren und andererseits haben alle Teams die Möglichkeit, die Spitzen-Präsentationen zu sehen und davon zu lernen. Dieses Jahr findet das Finale am Freitag, den 8. August um 19 Uhr vor etwa 2.000 Zuschauern statt.

Executive Summary: statische Disziplinen im Überblick

Eine weitere Neuerung in der Formula Student Germany ist der in 2008 neu geschaffene inhaltliche Zusammenhang zwischen den statischen Disziplinen. Bisher gab es bei der Formula Student keinerlei inhaltliche Verbindung zwischen den einzelnen statischen Wettbewerbsteilen. Die Inhalte der Business Presentation waren den Cost- und Design-Juroren sowie den anderen Teams nicht bekannt.

Nun müssen die Teams im Vorfeld (2 Wochen vor dem Wettbewerb) eine Zusammenfassung ihrer Präsentation einsenden. Dieser Extrakt, der nur eine einzige DIN A4 Seite umfassen darf,

than one page DIN A4, has to consist of the business plan's key aspects, two technical highlights of the car, as well as projected cost of the production run per car. All of the judges of static disciplines get this summary. For the first time in Formula Student competition history, the judges are able to analyze the consistency of the competitors between individual static events. Handled in this fashion, the static tasks now become an overall package, closely linked with one another. At the same time, the teams will recognize that it really pays to to work on the Business Plan Presentation very early on in the car's development. If a team does not hand in its summary, some points are automatically lost in the scoring of the presentation event. All of the teams are very aware that each static event can have a very positive (or negative) effect on their overall placement .

Executive Summary
Executive Summary

- brief description of the Business Plan
- the two most outstanding technical features of the car
- prototype costs
- anticipated production costs, per vehicle, in a production run of 1000 cars per year

- *kurze Beschreibung des Geschäftsmodells*
- *die zwei herausragendsten technischen Highlights des Fahrzeugs*
- *Kosten für den Prototypen*
- *voraussichtliche Produktionskosten pro Fahrzeug bei einer Produktion von 1000 Autos pro Jahr*

muss mindestens die Eckdaten des Business Plans, zwei technische Highlights des Fahrzeugs sowie die Herstellkosten des Prototyps und einer Kleinserie enthalten. Diese Zusammenfassung erhalten alle Juroren der statischen Disziplinen, also auch die der Kosten- und Konstruktionsbewertung. So können sie zum ersten Mal die Konsistenz der Angaben zwischen den einzelnen Disziplinen bewerten. Inhaltlich rücken die einzelnen Elemente des Wettbewerbes damit näher zusammen und werden stärker zu einem Gesamtpaket. Ganz nebenbei steigt die Notwendigkeit für die Teams, sich frühzeitig mit der Business Plan Presentation auseinanderzusetzen. Ein Team, das die so genannte Executive Summary nicht einreicht, muss mit Punktabzügen in der Business Plan Presentation Disziplin rechnen. Was aber allen Teams bewusst ist: Jeder einzelne Punkt kann im Gesamtwettbewerb über den ersten oder zweiten Platz entscheiden.

The Future

Formula Student Germany continuously strives to develop and improve the event. Stay tuned in 2009 and beyond, as we are always looking ahead at the needs of the students and industry and adjust the rules of this competition as needed in order to link the tasks with current real-world developments.

Die Zukunft

Die Formula Student Germany wird auch weiterhin daran arbeiten, den Wettbewerb weiter zu entwickeln. Das Ziel ist es, gesellschaftliche Veränderungen und industrielle Bedürfnisse durch behutsame aber nachhaltige Anpassungen des Regelwerkes und der Bewertungskriterien zu berücksichtigen. Auch für 2009 sind bereits Neuerungen geplant, die die Herausforderungen noch stärker mit aktuellen Themen verbinden.

Business Plan Presentation at a glance
Business Plan Presentation im Überblick

- objective: presentation of a comprehensive business case that convices a manufacturing firm of the profitable investment
- format: Business Executive Summary, 10 minutes presentation, 5 minutes question and answer session – and for the 4 or 5 best team: finals
- evaluation criteria: content, organization, visual aids, delivery, answers to questions
- points: max. 75
- new in 2006: Business Plan Presentation finals presented to all of the judges and teams
- new in 2008: Business Executive Summary to connect Cost, Design and Presentation Event

- *Inhalt: Präsentation eines umfassenden Geschäftsmodells, das eine Herstellerfirma von dem profitablen Investment überzeugt*
- *Bestandteile: Business Executive Summary, 10 Minuten Präsentation, 5 Minuten Frage- und Antwortzeit – und für die besten 4 oder 5 Teams: Finale*
- *Bewertungskriterien: Inhalt, Struktur, visuelle Gestaltung, Ausführung, Antworten auf Fragen*
- *Punkte: max. 75*
- *neu in 2006: Business Plan Presentation Finals vor allen Juroren und Teams*
- *neu in 2008: Business Executive Summary zur Verknüpfung von Cost, Design und Presentation Event*

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Discussing the work of a year – the Engineering Design Event

Die Arbeit eines Jahres in der Diskussion – der Engineering Design Event

Frank Röske...

... is responsible for the Engineering Design Event of the Formula Student Germany. As a student he built cars at UAS Stralsund. Today he works for Porsche Leipzig GmbH.

... ist verantwortlich für den Engineering Design Event bei der Formula Student Germany. Als Student baute er Rennwagen an der FH Stralsund. Heute arbeitet er bei der Porsche Leipzig GmbH.

Steve Fox...

... is one of three Chief Design Judges at the Formula Student Germany with longterm experiences judging in the USA, most recently as co-Captain of the Design Event at the Formula SAE® VIR.

... ist einer von drei Chef-Design-Juroren bei der Formula Student Germany mit langjährigen Erfahrungen als Juror in den USA, zuletzt als Co-Captain beim Design Event bei der Formula SAE® VIR.

What is the purpose of the Engineering Design Event?

The most important feature of the Formula Student Germany (FSG) Design Competition is the engineering and design of the vehicle. The Engineering Design Event is where we judge to see that all components of the car work as designed, and interact with the rest of the engineered sub-systems of the vehicle. We also evaluate how well the students understand the engineering of the vehicle. The students need to be able to give valid engineering reasons for their solutions to certain problems. The design, construction quality, and performance of the student built vehicle could be the best ever seen in the world, but if the students cannot demonstrate that they understand the engineering, they will not do very well in the Engineering Design Event.

What does the Engineering Design Event pay for points?

In the Engineering Design Event a team can earn as much as 150 points. That is more than in the other static events in the competition, because this is an engineering competition. At FSG, the students gain much more than just points though: They will have an opportunity to discuss their car's design, and individual engineering solutions with the Engineering Design Judges and other specialists, and thus expand their engineering knowledge immeasurably.

They gained 150 points and a lot of experience – the TU München won the Engineering Design Event in 2007.

Sie gewannen 150 Punkte und viel Erfahrung – die TU München gewann den Engineering Design Event 2007.

Was ist Sinn und Zweck des Engineering Design Events?

Bei einem Konstruktionswettbewerb ist die Bewertung der Konstruktion (des Engineering Designs) das Kernstück. Dabei bewerten wir alle Komponenten des Fahrzeugs danach, ob sie ihre Aufgaben erfüllen und im Zusammenspiel funktionieren. Wir bewerten aber auch das Wissen der Studenten. Sie müssen ihre Lösungen für bestimmte Aufgaben begründen können. Design, Fertigungsqualität und Performance des Fahrzeugs könnten die besten der Welt sein, aber wenn die Studenten nicht zeigen können, dass sie das Konstruieren verstanden haben, werden sie im Engineering Design Event nicht gut sein.

Was gibt es zu gewinnen?

Maximal können die Teams im Engineering Design 150 Punkte erreichen. Das ist mehr als in den anderen statischen Disziplinen, denn schließlich ist es ein Konstruktionswettbewerb. Für die Studenten gibt es aber viel mehr zu gewinnen: Sie können ihre eigene Lösung mit Spezialisten diskutieren und daraus ihr Wissen weiter ausbauen.

Was wird genau bewertet?

Wir bewerten verschiedene Aspekte rund um die Aufgabe, einen Rennwagen für eine bestimmte Zielgruppe und Strecke zu konstruieren. Die Juroren bewerten zuerst das Fahrzeug an sich und inwieweit es

What exactly will be judged?

First, the judges will have an overall look at the race car itself and determine to what extent it fulfills the task. The FSG competition allows many solutions. There is no one ideal design solution. Therefore the judges will then discuss with the students how they arrived at their design and also judge the students' knowledge of the design with questions such as: Why did you decide to solve the problem this way? How did you reach this solution and which engineering tools did you use? As for outsourced items, we judge whether the parts fulfill their function and how the students made the decision to build or purchase.

For every part and sub-system on the car, the students must be able to explain what the goal of their design was, how they reached their goal, and what considerations drove the decision making process. If a goal wasn't reached, for some reason, the students should be able to explain that as well.

The discipline consists of two parts: report and discussion. Which function does the report have?

The judges need to be well prepared to judge the cars and the Engineering Design Report provides the necessary details to be able to judge the cars in such a short period of time. Think of the Engineering Design Report as the resume for your car.

FSG's goal is to give the students lots of opportunity to discuss their designs with Engineering Design Judges and other specialists at the competition. The student competitors will leave the Engineering Design Event and any further discussions later in the weekend with a wealth of knowledge that simply cannot be gained any other way!

What happens during the discussion?

Imagine that Ferrari built a car for one of the student teams that competed at FSG. When we judge this car it would probably be good enough to win. During the discussion portion of Engineering Design Judging we want to discover what the students did and learned about building this car over the last year. We will ask questions about all aspects of the car. How it was designed. How it was built. How it was tested. If the students can demonstrate knowledge of all the engineering of the sub systems of the car, they will do well in the event.

Additionally the students will get tips and helpful suggestions from professionals to use on their next car as well as throughout their career. The judges sometimes even learn from the students. The judges might pick up new ideas from FSG cars that they sometimes implement in their own designs.

Judge and students in discussion

Juror und Studenten bei der Diskussion

die Aufgabe erfüllt. Die Aufgabenstellung lässt viele Lösungen zu, die ideale Lösung gibt es also nicht. Die Juroren beginnen deswegen schnell die Diskussion und bewerten Wissen und Herangehensweise der Studenten: Warum haben sie sich für diese Lösung entschieden, wie sind sie zu dieser Lösung gekommen und welche ingenieurtechnischen Werkzeuge haben sie eingesetzt? Bei Zukaufteilen bewerten wir, ob die Teile ihre Funktion erfüllen und wie sie dafür ausgewählt wurden. Die Studenten müssen für jedes Bauteil und jede Baugruppe erklären können, welches Ziel sie bei der Entwicklung hatten, wie sie diese Ziele erreicht haben und welche Überlegung dahintersteckt. Wenn Ziele mal nicht erreicht werden, sollten die Studenten die Gründe dafür erklären können.

Die Disziplin besteht aus zwei Teilen: Report und Diskussion. Welche Funktion erfüllt der Report?

Wir wollen, dass die Studenten ein Wissensplus aus der Diskussion mitnehmen. Dazu müssen die Juroren selbst auch gut vorbereitet in die Diskussion gehen. Mit dem Report schaffen wir dafür die Basis.

Ziel der FSG ist es, den Studenten viele Diskussionsmöglichkeiten für ihre Konstruktionen mit den Juroren und anderen Experten zu bieten. Die Studenten gehen nach dem Engineering Design Event und einigen weiteren Diskussionen aus dem Wochenende mit einem Wissensplus heraus, das kaum auf einem anderen Weg erlangt werden kann.

Was passiert bei der Diskussion?

Stellen wir uns vor, Ferrari hätte einem Studententeam ein Auto gebaut, mit dem dieses beim Wettbewerb antritt. Würden wir nur dieses Fahrzeug bewerten, würde es wahrscheinlich gewinnen. Deswegen wollen wir in der Diskussion herausfinden, was die Studenten im letzten Jahr gemacht und gelernt haben. Wir fragen nach allen Aspekten des Fahrzeugs. Wie es konstruiert wurde, wie es gebaut wurde, wie es getestet wurde. Wenn die Studenten Wissen zu allen Bereichen und Teilbereichen des Fahrzeugs vorweisen können, werden sie erfolgreich sein.

Who are the judges?

Our judges all work in the automotive and motorsports industries and are specialists in their area of expertise – most of them have world class expertise. They work as engineers particularly in Formula 1 and for motorsports teams and in the motorsports industry. In order to provide a valuable learning experience, we try to ensure that we employ judges with the expertise to cover all aspects of race car design, construction and testing. We are proud of the fact that the team of Engineering Design Judges at FSG comes from six different nations. We like to think of this elite group of men and women as some of the most talented of their kind in the world!

Judges discussing their decision

Juroren bei der Diskussion ihres Urteils

2008 has a new Engineering Design Event evaluation method. Why?

This year we have 78 teams competing at FSG. It is difficult to decide on a winner especially since any one judge doesn‘t get to see all the cars. In the first round each judge gets to look at eight cars. The best six to eight teams are then advanced to the finals judging. Because of the high quality of the cars and the closeness of the top teams it is impossible to decide on the best team immediately. So, we have a second look at the candidates, in finals judging to confirm our initial suspicions. The final order of the top teams is then decided upon after the conclusion of finals judging.

How should the students prepare themselves for this event?

Prepare as much written, graphical, picture, audio, or video engineering evidence for the design of your car as you can. Practice your oral presentation skills. Be prepared to answer any and all questions about the design, manufacture, and testing of your car. Try and ensure that as many students in the team are versed in the engineering of the car as possible. Think of the Engineering Design Event as a multi channel experience, with your team transferring knowledge to as many of the judges as you can at one time. If only one student knows all the engineering of the car, the other four to five judges will be looking for someone else to answer questions. Very important: Have the documentation that backs up your engineering decisions with you at the time of judging.

Many students should be able to answer questions to the group of judges.

Mehrere Studenten sollten die Fragen der Juroren beantworten können.

Und sie sollen Anregungen und Tipps von den Profis erhalten – für das nächste Auto und fürs Leben. Und nicht selten nehmen auch die Juroren neue Ideen mit und setzen sie in ihrem Berufsleben in die Realität um.

Wer sind die Juroren?

Unsere Juroren kommen alle aus der Industrie und sind Spezialisten auf ihren Gebieten, die meisten davon mit Weltklasse. Sie arbeiten als Ingenieure vor allem in Formel 1- und Motorsportteams und in der Motorsportzulieferindustrie. Für eine breite Diskussionsbasis versuchen wir, alle Bereiche des Fahrzeugs mit Juroren-KnowHow abzudecken. Wir sind stolz darauf, dass sich das Jurorenteam aus sechs Nationen zusammensetzt. Ein Team, in dem jeder und jede zu den Talentiertesten der Welt gehört!

2008 wird eine weitere Bewertungsrunde eingeführt. Wieso?

Wir bewerten dieses Jahr 78 Teams. Da ist es schwierig, einen Gewinner zu bestimmen, vor allem da nicht jeder Juror alle Fahrzeuge sehen kann. In der ersten Runde bewertet jeder Juror acht Fahrzeuge. Die besten sechs bis acht Teams kommen dann ins Finale. Bei der hohen Leistungsdichte an der Spitze ist es schlicht unmöglich, die besten Teams für das Finale auszuwählen. Daher sichten wir in diesem Jahr die Kandidaten für das Finale nochmals, wenn wir uns nicht sofort auf die Finalisten einigen können. Das Top-Ranking wird dann im Finale entschieden.

Wie sollten die Studenten sich vorbereiten?

Bereitet so viel wie möglich Text, Grafiken, Fotos oder Videos als Belege eurer ingenieurwissenschaftlichen Arbeit vor. Probt eure mündlichen Präsentationsfertigkeiten! Seid vorbereitet, auf alle Fragen zu Design, Herstellung und Test eures Autos zu antworten. Versucht, so viele Leute wie möglich vertieft vorzubereiten, damit sie versiert Auskunft geben können. Seht den Engineering Design Event als Möglichkeit, viele Rückmeldungen zu sammeln. Wenn nur ein Student die

You are not judged by the car as much as you are judged by your knowledge of all the engineering that went into the car! The judges have had a chance to read your Design Report, so they will be pretty familiar with your car, when you arrive. Do not make comparisons to previous year's cars. The judges are interested in the car that is presented to them at the time, not your previous year's effort.

Even the best car can only win if the students know their car and are able to explain their design solutions. Sometimes the students use solutions from previous year's cars without understanding the engineering fully. In this case they cannot back up the reasons for their design choices and consequently they cannot explain the performance effects on the car they are presenting.

Last... RELAX! You have ample time to get all of your ideas across to the judges. Take a deep breath, and simply answer the questions as best as you can. Remember, the judges already know the answers to the questions (or they would not be asking them), so you do not have to go into minute detail. They simply want to see if you can demonstrate the knowledge that goes into the decisions your team made.

What is the role of the actual constructed car?

A big one! The car is the star of this FSG movie. The actual constructed car is the basis for all the discussion. The car is your collection of good ideas all rolled into one mechanical expression. This is where we get to see if your best engineering ideas can actually be built into a real rolling, driveable... WINNING race car. The really great thing about FSG is the diversity of all the cars. Even though they all conform to one set of rules, there will be no two cars that come even remotely close to being identical. To the Engineering Design Judges, it is all the differences in the cars (the fact that there are no two alike) that excites us the most about FSG.

The actual constructed car is the basis for the discussion.

Das tatsächlich gebaute Auto ist Grundlage der Diskussion.

Will a team automatically perform well on track, if it does well in the Engineering Design Event?

Ask any Engineering Design Judge and they will tell you that: 'FORM FOLLOWS FUNCTION'. We pride ourselves in being able to pick out the cars that will perform well on track. After all a well engineered car already has a good advantage over the competition even before it hits the track, right?

With that said, the real answer at FSG is not so clear. There is no really direct relationship between well engineered and great on-track

Fragen beantworten kann, werden die anderen vier oder fünf Juroren einen anderen zum Antworten suchen. Und ganz wichtig: Habt die Dokumentation für eure Designentscheidung dabei.

Ihr werdet mehr nach der ingenieurwissenschaftlichen Arbeit bewertet, die in das Auto eingeflossen ist, als nach dem Fahrzeug selbst! Die Juroren haben euren Design Report gelesen und kennen das Auto daher, bevor ihr kommt. Macht keine Vergleiche mit dem Vorjahreswagen. Die Juroren interessiert nur das aktuell vorgestellte Auto.

Auch das beste Auto kann nur gewinnen, wenn die Studenten ihr Auto kennen und ihre Lösungen erklären können. Manchmal werden Sachen vom letzten Auto übernommen, ohne die Konstruktion komplett zu verstehen. Dann wissen sie auch die Gründe für diese Lösung nicht und können die Auswirkungen auf die Performance des präsentierten Fahrzeugs auch nicht erklären.

Letztlich – ruhig bleiben! Ihr habt jede Menge Zeit, den Juroren eure Ideen zu vermitteln. Atmet tief durch und beantwortet einfach die Fragen, so gut ihr könnt. Denkt dran: Die Juroren kennen die Antworten auf die Fragen schon (sonst würden sie sie nicht stellen), ihr braucht also nicht ins Detail zu gehen. Sie wollen bloß sehen, ob ihr euer Wissen demonstrieren könnt, mit dem ihr im Team die Entscheidungen gefällt habt.

Welche Rolle spielt das tatsächlich gebaute Auto?

Eine große! Das tatsächlich gebaute Auto ist die Diskussionsbasis. Der Rennwagen ist eine Sammlung guter Ideen in mechanischer Gestalt. Daran sehen wir, ob eure besten Design-Ideen auch in ein echtes Auto umzusetzen sind – rollend, fahrend, ...gewinnend! Das wirklich Interessante an der FSG is die Vielfalt der Autos. Auch wenn alle den gleichen Regeln entsprechen, sind niemals zwei Autos auch nur annähernd identisch. Für die Juroren macht genau das die FSG so interessant.

performance. The reason? Too many other variables come into play. How well did the team select the proper materials for every part of the car? How well was each and every last part constructed? How good is that team at testing, in order to wring out every last bit of performance from their world class design? Have you ever heard the expression: The car is only as strong as its weakest link? It certainly applies at FSG.

The FSG teams themselves are relatively inexperienced. As a result their cars are usually not prepared at the same level as a professional race car would be. This can lead to on-track failures. But... the biggest variable that we see though is – the driver. Some drivers are very good. Some cars are very good. You do not always have the top drivers in the top cars though. As a result, we see some cars that are actually driven to higher levels of performance than we suspect they would be capable of otherwise.

Engineering Design Event at a glance
Engineering Design Event im Überblick

- objective: evaluation of the engineering effort that went into the design of the car
- Design Report = resume of the car: max. eight pages with text and drawings, containing a brief description of the vehicle and the most important design features and vehicle concepts
- Discussion: answering the judges' questions about the engineering based on the actual built vehicle in ready-to-run condition
- Finals: the best 8 teams
- evaluation criteria: aesthetics, mechanical design, chassis design, manufacturability for 1000 cars a year, serviceability, innovativeness, ergonomics/interiors/safety, powertrain, build quality, miscellaneous
- points: max. 150
- new in 2008: additional look at the candidates for the finals

- *Inhalt: Bewertung der ingenieurwissenschaftlichen Arbeit, die in die Konstruktion des Fahrzeugs geflossen ist*
- *Design Report = Zusammenfassung des Autos: max. acht Seiten mit Text und Bildern, beinhaltet eine kurze Beschreibung des Fahrzeugs und die wichtigsten Konstruktionsmerkmale und Fahrzeugkonzepte*
- *Diskussion: Beantwortung der Fragen der Juroren zum Design basierend auf dem tatsächlich gebauten Fahrzeug*
- *Finale: die besten 8 Teams*
- *Bewertungskriterien: Ästhetik, mechanische Gestaltung, Fahrwerksauslegung, Produktionsfähigkeit für 1000 Fahrzeuge pro Jahr, Wartbarkeit, Innovation, Ergonomie/Cockpit/Sicherheit, Antrieb, Qualität, Verschiedenes*
- *Punkte: max. 150*
- *neu in 2008: zusätzliche Bewertungsrunde zur Bestimmung der Finalisten*

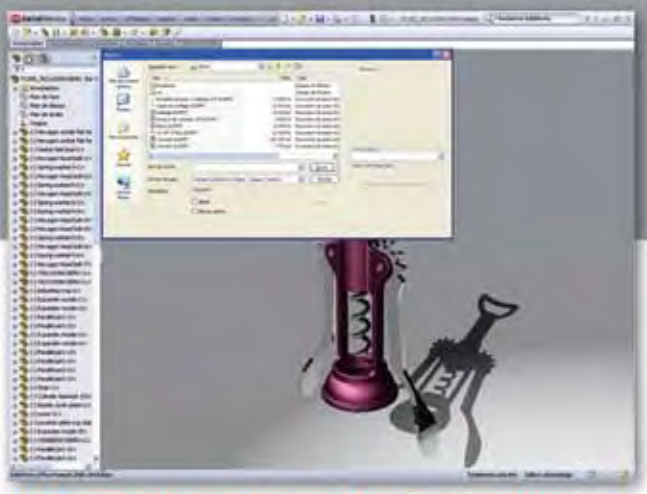
Ist ein Team, das im Engineering Design zu den besten gehört, automatisch auch gut auf der Strecke?

Stellt man diese Frage einem beliebigen Juror, wird er sagen: 'Form follows function'. Wir rühmen uns, in der Lage zu sein, die besten Teams auf der Strecke schon vorher bestimmen zu können. Ein gut konstruiertes Auto hat einen Vorsprung, bevor es überhaupt auf die Strecke geht, nicht wahr?

Die Antwort ist bei der FSG nicht so einfach. Es gibt keinen direkten Zusammenhang zwischen gutem Design und guter Performance. Der Grund? Zu viele andere Variablen sind im Spiel. Wie gut hat das Team die Materialien für jedes Teil des Fahrzeugs ausgesucht? Wie gut wurde jedes einzelne Teil konstruiert? Wie gut hat das Team getestet, um das letzte bisschen Performance aus dem Weltklasse-Design herauszukitzeln? Wie heißt es doch so schön: Ein Auto ist immer nur so stark wie sein schwächstes Glied!

Die Teams haben relativ wenig Erfahrung. Daher sind ihre Autos nicht auf demselben Niveau vorbereitet, wie ein professionelles Rennauto es sein würde. Das kann zu Ausfällen auf der Strecke führen. Aber... die größte Unbekannte, die wir sehen, ist – der Fahrer. Manche Fahrer sind sehr gut. Manche Autos sind sehr gut. Man hat aber nicht immer das Top-Auto und den Top-Fahrer zugleich. Als Ergebnis sehen wir einige Autos, die mit einer beeindruckenden Performance gefahren werden, während wir von ihnen genau das Gegenteil erwartet hätten.

real solution



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88

WISCONSIN
SAE
105

UW-MADISON
FRAGILE
FRAGIL
UP

90






Our special thanks goes to Harald Almonat, Frank Bramkamp, Kimmo Hirvonen, Korbinian Lohr, Ingo Reichmann and Johannes Rieke for the amazing photos of the FSG 2007. ► More pictures on http://www.formulastudent.de/events/event-2007/gallery/

Unser spezieller Dank gilt Harald Almonat, Frank Bramkamp, Kimmo Hirvonen, Korbinian Lohr, Ingo Reichmann and Johannes Rieke, die diese Impressionen von der FSG 2007 in Bildern festgehalten haben. ► Mehr Bilder unter http://www.formulastudent.de/events/event-2007/gallery/

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Participating teams 2008 at a glance

Teilnehmende Teams 2008 auf einen Blick

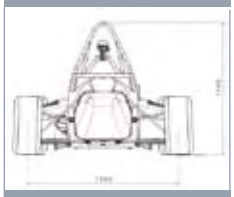
Car no.	City	Country	Pit no.	Page
1	Stuttgart	Germany	53	92
2	Graz	Austria	45	71
3	Graz	Austria	67	71
4	Helsinki	Finland	58	74
5	Rochester	United States	71	89
6	Darmstadt	Germany	64	64
7	Stralsund	Germany	42	91
8	Oxford	United Kingdom	50	85
10	Karlsruhe	Germany	48	76
11	Birmingham	United Kingdom	11	59
12	Loughborough	United Kingdom	68	79
13	Toronto	Canada	63	92
14	Berlin	Germany	20	58
15	Dortmund	Germany	32	65
16	Padova	Italy	23	86
17	Ulm	Germany	77	94
18	Aalborg	Denmark	38	53
20	Berlin	Germany	4	57
21	Mumbai	India	33	83
22	Cambridge	United Kingdom	49	60
23	Amberg	Germany	72	53
24	Offenburg	Germany	52	84
25	Ravensburg	Germany	74	88
26	Budapest	Hungary	16	60
27	Paderborn	Germany	65	86
28	Kempten	Germany	22	77
30	Esslingen	Germany	70	68
31	München	Germany	17	82
32	Mittweida	Germany	51	80
33	Zürich	Switzerland	15	97
34	Konstanz	Germany	29	78
35	Wolfenbüttel	Germany	37	96
36	Bari	Italy	25	56
38	München	Germany	56	83
39	Belfast	United Kingdom	78	57
40	Eindhoven	Netherlands	21	66
41	Wien	Austria	6	95
42	Aachen	Germany	19	52
44	Dresden	Germany	69	66

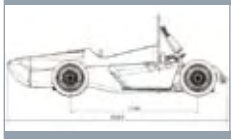
Car no.	City	Country	Pit no.	Page
45	Bangalore	India	44	54
46	Turin	Italy	13	93
48	Bayreuth	Germany	27	56
50	Lisboa	Portugal	26	79
51	Espoo	Finland	3	67
53	Kiel	Germany	5	77
54	Wuppertal	Germany	66	96
55	Moscow	Russia	14	82
56	Alwar	India	40	-
57	Barcelona	Spain	1	54
58	Nevers	France	75	84
60	Saarbrücken	Germany	60	90
61	Braunschweig	Germany	2	59
62	Regensburg	Germany	54	89
63	Aachen	Germany	18	52
64	Kaiserslautern	Germany	57	74
65	Wiesbaden	Germany	35	95
66	Diepholz	Germany	55	65
67	Osnabrück	Germany	41	85
68	Uxbridge	United Kingdom	62	94
69	Hamburg	Germany	73	72
70	Frankfurt a.M.	Germany	24	68
71	Stockholm	Sweden	34	91
72	Hamburg	Germany	43	72
74	Erlangen	Germany	76	67
76	Freiberg	Germany	59	70
77	Hatoyama	Japan	36	73
78	Montreal	Canada	61	80
80	Berlin	Germany	31	58
81	Coburg	Germany	7	62
83	Cottbus	Germany	30	62
84	Glasgow	United Kingdom	46	70
85	Delft	Netherlands	47	64
86	Patras	Greece	8	88
88	Hatfield	United Kingdom	10	73
90	Köln	Germany	28	78
96	Zwickau	Germany	39	97
97	Schweinfurt	Germany	12	90
99	Karlsruhe	Germany	9	76

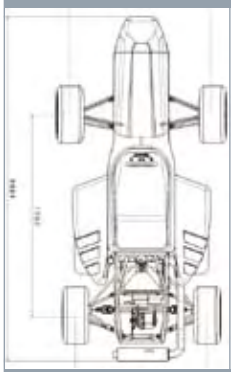
Aachen
RWTH Aachen University

This year, the students of the RWTH Aachen designed and constructed their fifth race car. Due to an engine change, the team Ecurie Aix had to abandon the innovative CVT for the EAC05. Now a motorcycle engine from Suzuki provides the required performance, which is transmitted by a conventional motorcycle gear. As a result, there are also rocker switches behind the steering wheel because now, the drivers have to shift manually. The 600-ccm-engine runs on E85. Furthermore, Ecurie Aix uses a hybrid construction of a carbon fiber monocoque and a tubular steel rearframe. The monocoque is made of CFK-sandwich-compound and the rear frame consists of high-alloy steel profiles. In the case of a lateral collison, the structure of the Monocoque provides a sufficient safety, which is crash-test-proved. At the multi-link-front axle, the EAC05 features mono-shock-absorbers. This concept was tested in last year's model EAC04 and was further developed for the EAC05.

Car 42







Germany

FRAME CONSTRUCTION Monocoque with tubular steel rearframe

MATERIAL CFK-Monocoque & high-alloy steel rearframe

OVERALL L / W / H (mm) 3020 / 1450 / 1150

WHEELBASE (mm) 1760

TRACK (Fr / Rr) (mm) 1250 / 1174

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 196

SUSPENSION Front:Multilink suspension. Push rod actuated horizontally oriented mono shock and rollspring;Rear:Pull rod actuated diagonally oriented spring and damper

TYRES (Fr / Rr) 175/505 R13 Dunlop SP SPORT

WHEELS (Fr / Rr) 6 inch wide, 3 pc Al Rim, no offset

ENGINE Suzuki GSX-R 600

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

COMPRESSION RATIO 12:1

FUEL SYSTEM Student built ,fuel injection (BOSCH injectors), ECU controlled, stainless steel fuel

FUEL 85% Ethanol

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE Chain #530

DIFFERENTIAL Visco-Lok-Differential, Bias ratio 1:1

COOLING cooling system with oil heat exchanger, left side pod mounted radiator

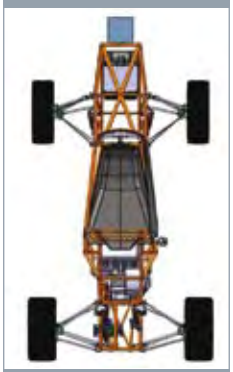
BRAKE SYSTEM Floating, Stainless Steel, hub mounted, 240 mm dia., vent holes, Student Built

ELECTRONICS modular microprocessor controlled fuse- and relaybox using power-MOSFET switches, realtime data via WLAN

Aachen
University of Applied Sciences Aachen

„Aixtreme Racing" is the name of our Formula Student project at the University of Applied Science Aachen. The establishment of this team in March 2007 is the brainchild of a group of enthusiastic students from Department 6, the Faculty of Aerospace Engineering. We wish to establish our position at the University and make a name for ourselves in the arena of Formula Student Germany. The a08 is the first car built by our team and is designed to compete in FSG 2008. The technical main features are an electric shifting system which allows shifting on the steering wheel, and the aerodynamically optimized bodywork and undercarriage.We hope that we can live up to the high expectations given by the competition, even by competing the first time.

Car 63



Germany

FRAME CONSTRUCTION welded tubular steel frame

MATERIAL S 235

OVERALL L / W / H (mm) 2866 / 1460 / 1013

WHEELBASE (mm) 1736

TRACK (Fr / Rr) (mm) 1237 / 1244

WEIGHT WITH 68kg DRIVER (Fr / Rr) 124 / 157

SUSPENSION Double unequal length A-Arm. Horizontally oriented spring and damper. Pullrods in front, pushrods in rear.

TYRES (Fr / Rr) 6,2/20.0 R13, Avon A45 / 7.2/20.0 Avon A45

WHEELS (Fr / Rr) 6x13, 10.8mm offset, 3 pc Al Rim / 6x13, 10.8mm offset, 3 pc Al Rim

ENGINE Honda CBR 600 (PC37)

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

COMPRESSION RATIO 12:1

FUEL SYSTEM Trijekt Plus management, semisequential injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11800

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE 6-speed sequential motorcycle gearbox

DIFFERENTIAL Quaife ATB Helical LSD differential

COOLING Twin side pod mounted radiators with one thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, 250 mm Rotors, adjustable brake balance

ELECTRONICS sealed wiring harnes, self designed elctric shifting system

Aalborg
Aalborg University

Unicorn Race Engineering comes from Aalborg University in Denmark. The team consists of 16 members primarily studying mechanical engineering. The motivation for the members of the team is of course the race theme, but also the chance of putting the theory to the test. The main objective for this team is therefore to learn about the many aspects in race engineering and combine it with the different studies of interest for each member. The main design objective of this car has been to ease the production cost and time. This has been carried out by e.g. standardizing production processes and doing cost-effective optimization. The most interesting design features of the car are the rear suspension geometry which is mounted around the engine block to obtain better load paths, and a supercharger installed to give the car a more constant torque. This put together with all the other design features of the car makes the Unicorn G3 a very unique race car.

Car 18

FRAME CONSTRUCTION Tubular space frame, semi stressed engine

MATERIAL Structural steel S235

OVERALL L / W / H (mm) 2689 / 1427 / 1090

WHEELBASE (mm) 1644

TRACK (Fr / Rr) (mm) 1200 / 1156

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 165

SUSPENSION Double unequal length A-arm, Pull-rod actuated horizontally oriented spring and damper. Adjustable in compression and in rebound range. Anti-roll bar system in front and rear

TYRES (Fr / Rr) 205 x 55 R13, Avon A54 / 235 x 50 R13, Avon A54

WHEELS (Fr / Rr) 6.5 x 13, 40 mm offset, 3 pc. Al rim / 7.0 x 13, 32 mm offset, 3 pc. Al rim

ENGINE Supercharged Honda CBR 600 RR

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

COMPRESSION RATIO 12.0:1

FUEL SYSTEM FFJ105-1 Engine management system with sequential injection and ignition

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 6500

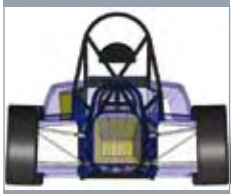
DRIVE TYPE Standard Honda CBR 600 RR transmission

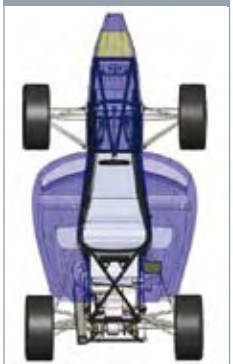
DIFFERENTIAL Torsen University special limited slip with modified housing

COOLING Side-pod mounted 1000 cc radiator and electric fan

BRAKE SYSTEM 4-Disk system mounted in each wheel, custom designed rotors with 230 mm diameter, adjustable brake balance

ELECTRONICS Shift padles on steering wheel actuating electronc gear shifter, Selfdesigned instrumentation and live telemetry system





Denmark

Amberg
University of Applied Sciences Amberg-Weiden

The Running Snail Racing Team was established in August 2004. Since then we participated with sustained success at the Formula Student Events in England, Germany and Italy. And we take the challenge in 2008. The RS08-FZS is our 4th car and the result of the tests and competitions of our first three cars. On the 4th of June the car was shown to the broad public. Our goal was again to reduce the weight to now 229 kg, to keep up our high quality standards, give the car a good drivability and reach better ergonomics for the drivers. Beside the racetracks we were not inactive. Our three race cars were shown in different exhibitions, firm presentations or the “Partner Cup”. This is an event we originated in 2006 to thank our sponsors. They had the chance to drive one of our cars in an SAE level track and to feel what it means to be a race driver. More information about our team and our cars are available on www.running-snail.de

Car 23

FRAME CONSTRUCTION Steel tube space frame with glued glas fibre side panels

MATERIAL H 1.0570

OVERALL L / W / H (mm) 3080 / 1380 / 1080

WHEELBASE (mm) 1600

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 145 / 152

SUSPENSION Front: Unequal length A-Arms. Pull rod actuated Manitou Swinger spring/damper units; Rear: Unequal length A-Arms. Push rod actuated Manitou Swinger spring/damper units

TYRES (Fr / Rr) 16/53-13 radial ply tire Michelin S6A / slick

WHEELS (Fr / Rr) BBS AlMg / 7 inches wide, 10 mm offset

ENGINE 1998 Yamaha FZS 600 4 cylinder

BORE / STROKE / CYLINDERS / DISPLACEMENT 62.0mm / 49.6mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Student des/built, fuel injection, sequential

FUEL 98 octane unleaded gasoline (Shell Optimax)

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE D.I.D. double o-sealing-ring chain

DIFFERENTIAL Drexler limited slip differential

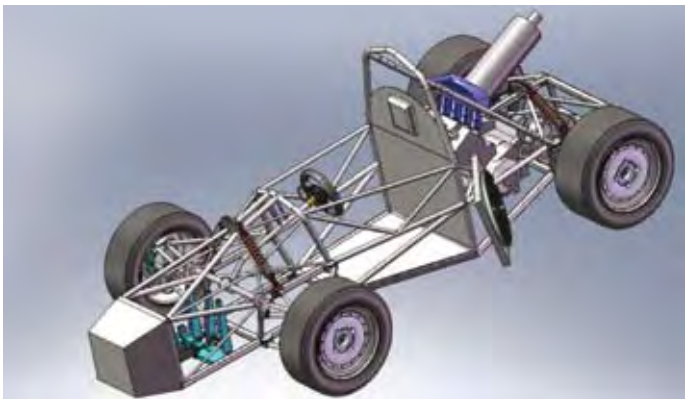
COOLING Twin side pod mounted radiators with air duct, electric controlled waterpumps

BRAKE SYSTEM SiC, hub mounted, 220 mm outer and 160 mm inner diameter

ELECTRONICS Sensors for: steering angle, spring travel, RPM, oil temperature, coolant temperature, g-force; ECU diagnostics via OBD2 interface

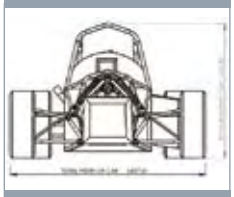
Germany

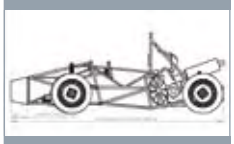
Bangalore
R.V. College of Engineering

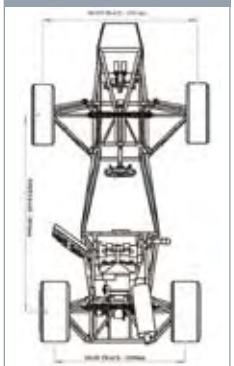


Ashwa Racing at RV College of Engineering, Bangalore, India is a team of about 30 members from various technical disciplines. Since the team's inception in 2003,we have participated twice in FSAE Australasia and also in FSG 2007. After pinpointing the areas for improvement in our designs, we have come up with the RZ08 for FSG 2008. The major keynote this season has been design optimisation for extensive data acquisition by making use of ANSYS for CFD and FEA analysis and incorporation the Motec M800 ECU. Moreover we have made significant improvement by incorporating racing-specific components in our designs thus improving our performance. The team is a fine blend of experience and fresh members and is very eager to perform at FSG 2008. Our technical advancement and incorporation of high-end components is mainly attributed to the encouragement, trust and support of all our sponsors.

Car 45







India

FRAME CONSTRUCTION Tubular space frame using square and circular tubing

MATERIAL Mild steel tubes

OVERALL L / W / H (mm) 2693 / 1488 / 1320

WHEELBASE (mm) 1803

TRACK (Fr / Rr) (mm) 1302 / 1109

WEIGHT WITH 68kg DRIVER (Fr / Rr) 160 / 200

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

TYRES (Fr / Rr) 20.5x6 R13, Hoosier / 20.5x7.5 R13, Hoosier

WHEELS (Fr / Rr) 6x13, 3 pc Al Rim / 8.5x13, 3 pc Al Rim

ENGINE 2003 HONDA F4i 600cc

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

COMPRESSION RATIO 12.0:1

FUEL SYSTEM student des/built,Motec tuned programable fuel injection,sequential

FUEL 97 Octane Unleaded gasoline

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 7200

DRIVE TYPE Chain

DIFFERENTIAL Torsen T1 LSD - University SAE Type - TBR 5.0:1

COOLING Side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4-disk system hub mounted 1040 Steel alloy-240mm outer dia,self-offset,vented,Willwod PS1 dual piston calipers

ELECTRONICS Motec M800 Engine Management System with custom wiring harness

Barcelona
PT University of Catalonia - Engineering School of Barcelona

This is the 1st year for a completely new team: ETSEIB Motorsport. And 2008 is the first entry of our University to FSG. The team has been created in order to have a stable structure, to establish the foundations of a new project to keep evolving the design of the car in the years to come and permitting us to achieve enough experience, background and know-how for ending manufacturing a really competitive car. The team is composed by 12 members, structured in four groups: Frame&Body, Chassis, Engine&Electronics and Management, all coordinated by the Package Group. It has been a hard work as the project was started in February, so we had only 6 months left to design, build and test the car. The main objective was to build a car in time, focusing on its reliability and overall performance to go through all events successfully. This car is named CAT01. Finally, we really want to thank our sponsors and all the people who helped and supported us to make this possible! Good luck to all teams!

Car 57

Spain

FRAME CONSTRUCTION Steel tubular frame. MIG welded

MATERIAL Alloy Steel Ducal ST-52. Different tube sizes

OVERALL L / W / H (mm) 2734 / 1378 / 1253

WHEELBASE (mm) 1593

TRACK (Fr / Rr) (mm) 1175 / 1175

WEIGHT WITH 68kg DRIVER (Fr / Rr) 143 / 175

SUSPENSION Double unequal length A-Arms. Push rod actuated Ollé spring/damper units. Adjustable in compression range. Also adjustable in toe, camber, caster angle and kingpin angle.

TYRES (Fr / Rr) 20.5x7.0 R13, Hoosier R25A / 20.5x7.0 R13, Hoosier R25A

WHEELS (Fr / Rr) 7.0x13, 31 mm offset, alloy rim / 7.0x13, 31 mm offset, alloy rim

ENGINE 2003 Suzuki GSX R-600

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

COMPRESSION RATIO 12.2:1

FUEL SYSTEM Student design/built , fuel sequential injection

FUEL 98-100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 7700

DRIVE TYPE Chain, #530

DIFFERENTIAL Torsen Quaife differential QDF7Z

COOLING Twin side pod mounted radiators with controlled electric fans. 1000cc

BRAKE SYSTEM 4-Disk system, cast iron hub mounted rotors, with 214mm outer diameter. Adjustable brake balance. Front Brembo/Rear AJP calipers

ELECTRONICS DTA S60 ECU, customized. LC, TC and two injection maps. Modified original Suzuki GSXR-600 dash


This is never going to work.
We have to be out by the end of the month.
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Bari
Polytechnic University of Bari

Poliba Corse, team of the Politecnico di Bari (a University in the south of Italy), presents for the first time its car at the FSG 2008. In 2006 Poliba Corse participated at the Formula SAE Italy in Class 3, presenting the design of the car only. In that competition the team won the third place. Since this is the first experience with a real prototype in a Formula Student competition, the team, first of all, chooses simple and feasible technical solutions without forgetting however other important objects like: car performances, in term of engine power supply, handling and brake; ergonomics; easy maintenance; the using of fine quality components; aesthetic appeal. The team thanks its main partners for the contribution to the success of the project: Provincia di Bari; Comune di Bari; Pennelli Veicoli Speciali; Bridgestone; TAF Pneumatici; OMP; INA FAG; Tarox; EFI Technology; Magneti Marelli; Allegri. More information on the website www.polibacorse.it

Car 36

FRAME CONSTRUCTION Tubular space frame

MATERIAL Fe360 NBK steel round tubing 22mm to 25mm dia / 1,5mm to 3mm thickness

OVERALL L / W / H (mm) 3000 / 1490 / 1370

WHEELBASE (mm) 1625

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 197 / 213

SUSPENSION Double unequal length A-Arm. Pull-rod actuated (front) push-rod actuated (rear), horizontally oriented spring and damper. Adjustable in compression and in rebound range.

TYRES (Fr / Rr) 180x46 R13 Bridgestone Potenza YGS / 180x46 R13 Bridgestone Potenza YGS

WHEELS (Fr / Rr) 8.0x13, 2.6mm offset, 3 pc Al-Mg Rim / 8.0x13, 2.6mm offset, 3 pc Al-Mg Rim

ENGINE Modified Honda CB600F5 Hornet

BORE / STROKE / CYLINDERS / DISPLACEMENT 65.0mm / 45.2mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Semi-sequential fuel injection and wasted-spark ignition, returnless fuel pump.

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE roller chain (525)

DIFFERENTIAL N/A

COOLING Two side mounted 1000 cc radiators with two 200mm electric fans

BRAKE SYSTEM 3-Disk system, with two 250mm diameter front and one 260mm rear rotors, 6 pistons Ergal calipers, adjustable brake balance

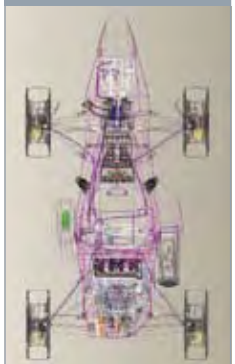
ELECTRONICS Programmable injection/ignition system (ECU)

Italy

Bayreuth
University of Bayreuth

The team‘s name is derived from the Faculty of Applied Sciences‘ abreviation FAN which shares its letter string with the clever and powerful animal. Founded in 2004, Elefant Racing took part in the 3 European competitions in 2006 and 2007 where it mostly gained places in the upper midfield as well as some special awards. One central aim has been to not only create a competitve racecar but also a highly desirable product. With the FR8 the team appears with a vehicle that firstly implements all concepts that were created and discussed by it in the last years as well as evolutionary findings. All major structural components are realised with advanced composites, electronics offer maximum flexibility and freedom of solution design, drivetrain by many modifications has become light and compact, suspension was developed without any negative influence caused by arbitrary chassis design. Goal for 2008 is to present a highly competitive vehicle that backs the team in achieving top 10 places.

Car 48



FRAME CONSTRUCTION Monocoque with quick-mountable powertrain platform

MATERIAL CFRP/Al-honeycomb composite

OVERALL L / W / H (mm) 2775 / 1380 / 1040

WHEELBASE (mm) 1550

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 124 / 134

SUSPENSION Double-A-arms (CFRP/PMI-foam composite), pushrods actuated, Cane Creek Double Barrel (adjustable high/low speed push/pull stage), Aluminium uprights, adjustable anti-roll-bars

TYRES (Fr / Rr) Hoosier 20.5 x 7.0-13 R25B

WHEELS (Fr / Rr) One-piece CFRP/Al-honeycomb Rims

ENGINE Modified Honda CBR600F (PC35)

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

COMPRESSION RATIO 13:1

FUEL SYSTEM Proprietary design sequential injection using Bosch Motorsport MS3 Sport ECU

FUEL 100 octane petrol

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE Secondary Gear

DIFFERENTIAL Modified Torsion differential

COOLING Single side pod mounted radiator with OBC - controlled electric fans and flaps

BRAKE SYSTEM Student designed rotors (208mm O.D.), Brembo Calipers (front/rear: 4/2 pistons), ABS Bosch M4 adjustable via BCS

ELECTRONICS OBC: Elefant Racing BCS8 (Network of one SH4 CPU and six PIC µCs), Instrument steering wheel with 3.5” touch screen

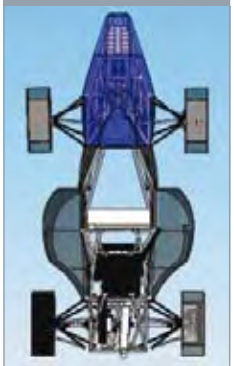
Germany

Belfast
University of Ulster

The UUJ racing team has competed at the UK Formula Student competition for 6 years and the German FSG for 2 years. The team is made up of undergraduates from a range of courses within the Faculty of Engineering. The 08 car builds on knowledge gained from previous years, including FSG 07. New design objectives, including reduced weight and increased stiffness, have been integrated into the design spec for each component of this car. The team identified the main areas for a successful FSG car to be handling, acceleration and ergonomics/drivability. The improvements in this design include a highly adjustable suspension system with an accurately controlled roll centre, coupled with a rigid, spaceframe chassis. An optimised YZF R6 Yamaha engine has been selected as the power plant. Improved and customised driver seating position and control layout have been added. Design for manufacture ensures manufacturing and purchasing costs are kept to a minimum. Best of luck to UUJ R08.

Car 39

FRAME CONSTRUCTION Tubular spaceframe
MATERIAL T45 Steel tubing
OVERALL L / W / H (mm) 2677 / 1422 / 1016
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1200 / 1150
WEIGHT WITH 68kg DRIVER (Fr / Rr) 127 / 170
SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper
TYRES (Fr / Rr) 508 x 182-330 A45 Avon
WHEELS (Fr / Rr) 202 mm wide, 3 pc Al Rim
ENGINE 2004 / Yamaha YZF-R6 four stroke
BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc
COMPRESSION RATIO 12.4:1
FUEL SYSTEM DTA Pro 8 ECU and harness
FUEL 98 RON
MAX POWER DESIGN (rpm) 12000
MAX TORQUE DESIGN (rpm) 8000
DRIVE TYPE Single 520 chain
DIFFERENTIAL Quaife automatic torque biasing differential
COOLING Single side pod mounted radiator with thermostatic controlled electric fan
BRAKE SYSTEM 4 220mm disks, AP Racing 4 pot and 2 pot calipers, manual adjust bias bar
ELECTRONICS Custom wiring harness



United Kingdom

Berlin
Berlin School of Economics

The moto8 is the second racecar of the Berufsakademie Berlin (Berlin School of Economics). This year the unusual concept idea of the first vehicle is continued and presented at the Formula student in more optimized and still higher performance version. Of course the BA-Motors team remains with the brand label all-wheel drive and 1-cylinder-turboengine, since this system is combined optimal with a fully developed chassis optimized to a track full of curves and straights to accelerate.

Car 20

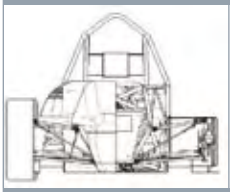
FRAME CONSTRUCTION Tubular space frame
MATERIAL E355 round tubing 25x2,5mm; 25x2mm; 10x2mm
OVERALL L / W / H (mm) 2840 / 1427 / 1115
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1250 / 1250
WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 168
SUSPENSION Double equal/unequal(fr,rr) length A-Arm. Pull/Push Rod (ff/rr) actuated horizontally spring and damper
TYRES (Fr / Rr) 16/53-13, Michelin S6B
WHEELS (Fr / Rr) BBS 6.5x13, 17,15mm offset, 3 pc Al/Mg Rim
ENGINE 2003 KTM-LC4-1 cylinder, modified
BORE / STROKE / CYLINDERS / DISPLACEMENT 101mm / 76mm / 1 cylinders / 609cc
COMPRESSION RATIO 9:1
FUEL SYSTEM Student designed/built ,fuel injection, sequential
FUEL E-85 ethanol
DRIVE TYPE chain drive 4 whell drive
DIFFERENTIAL 3 Torsen limited slip, 1:3 bias ratio
COOLING right mounted cooler with fan
BRAKE SYSTEM Floating, Cast Iron, 205 mm Dia hub mounted front , 254mm Dia differential mounted rear
ELECTRONICS semi automaticly pneumatical actuated shifter, switches on steering wheel;student build steering wheel mounted LED-display speed/t

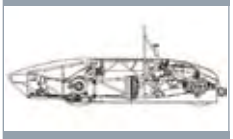
Germany

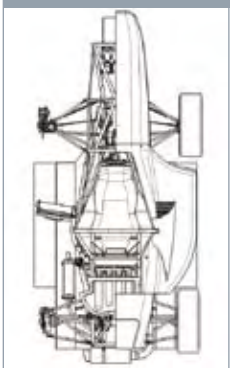
Berlin
Technical University of Berlin

The Formula Student Team of the Technical University of Berlin – FaST-TUBe in short – participates in the Formula Student Germany for the third time. The team has grown to a number of 50 active students from a broad variety of studying fields. The FT2008, their latest addition to the team's pool of racecars, represents a milestone in the team's history for it is the last car the students who initiated the project in 2005 are involved with. Next year's car will be the first one built entirely by non-founder members.The FT2008 is the result of exactly that constellation: Experience from the last two seasons paired with creativity coming from fresh and open-minded novices. Variable air intake lengths, dual rotating cylinder throttle system, exhaust throttle, two-gear hydraulic shifting, highly integrated electronics system including traction control, fully carbon fibre bodywork and floor closeout and the lightweight steel spaceframe are just a few of the highlights of the FT2008

Car 80







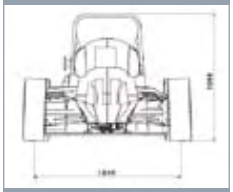
Germany

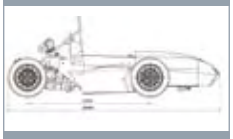
FRAME CONSTRUCTION tubular space frame
MATERIAL 25CrMo4 steel
OVERALL L / W / H (mm) 2800 / 1377 / 1015
WHEELBASE (mm) 1575
TRACK (Fr / Rr) (mm) 1200 / 1180
WEIGHT WITH 68kg DRIVER (Fr / Rr) 145 / 160
SUSPENSION Double unequal length A-Arm. Front: pull rod actuated. Rear: push rod actuated. Cane Creek Double Barrel dampers - adjustable in compression and rebound range in high and lowspeed
TYRES (Fr / Rr) Goodyear D2692 20.0x7.0-13 R075
WHEELS (Fr / Rr) Goodyear D2692 20.0x7.0-13 R075
ENGINE 2003 Suzuki GSX-R 600
BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc
COMPRESSION RATIO 12.2:1
FUEL SYSTEM student built sequential fuel injection
FUEL 100 octane unleaded gasoline
MAX POWER DESIGN (rpm) 12000
MAX TORQUE DESIGN (rpm) 8500
DRIVE TYPE chain drive, 2 gear hydraulic shifting
DIFFERENTIAL Drexler differential, limited slip
COOLING left side pod mounted radiator with thermostatically controlled electric fan
BRAKE SYSTEM 210mm floating brake discs; Front: ISR Brakes, two pistons, 34mm dia. Rear: MQ Brakes, two pistons 32mm dia.
ELECTRONICS wiring harness sealed to IP65, Multifunctional Steering Wheel, hydraulic shifting System, CAN Bus, traction control, data logging

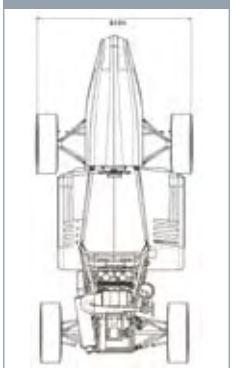
Berlin
University of Applied Sciences Berlin

FHTW Motorsport is entering the Formula Student Germany event for the third time. In 2007 the Team reached a very satisfying 19th place. In this season the BRC08 (Berlin Race Car) made a tremendous evolution compared to is older brother. The main aspect is the weight reduction of about 70 kg using carbon fibre composites and high-strength aluminium on nearly every assembly. The heart of the car is a highly modified Yamaha 4 cylinder engine. For maximum torque over the whole rpm-range the airbox is equipped with an innovative mechanism allowing to change the length of the suction pipes within 0.3 sec. Also every part of the car was optimized concerning functionality and weight. The BRC08 will be a highly competitive and lightweight race car specially designed for the Formula Student disciplines.The Team is made up of members with different academic backgrounds. There are automotive, mechanical and industrial engineers as well as computer scientist and business students.

Car 14



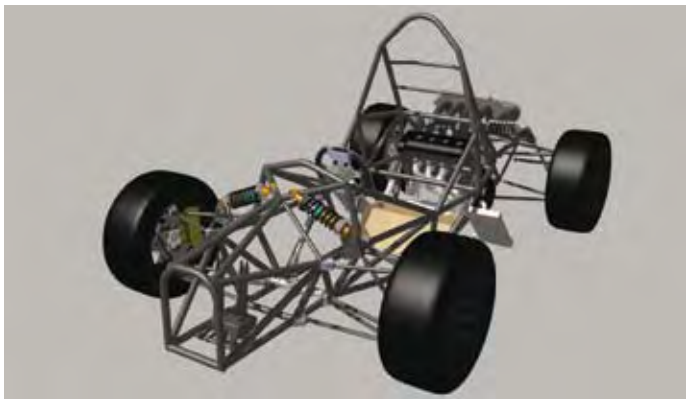




Germany

FRAME CONSTRUCTION Steel tube space frame
MATERIAL S355 J2G3 mild steel tube, 10mm to 15mm dia
OVERALL L / W / H (mm) 2860 / 1365 / 1068
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1205 / 1145
WEIGHT WITH 68kg DRIVER (Fr / Rr) 150 / 158
SUSPENSION Unequal length A-Arms. Pull rod actuated, Magura damper/air units
TYRES (Fr / Rr) Hoosier, front 205x55 R13, R25A, rear 235x50 R13, R25A
WHEELS (Fr / Rr) front 6.5x13, 50mm offset, 3 pc Al Rim, rear 8.5x13, -75mm offset, 3 pc Al Rim
ENGINE Yamaha R6 600ccm
BORE / STROKE / CYLINDERS / DISPLACEMENT 65,5mm / 44,5mm / 4 cylinders / 600cc
COMPRESSION RATIO 13:1
FUEL SYSTEM Yamaha Fuel Injektors, Motec ECU
FUEL 100 octane
MAX POWER DESIGN (rpm) 13100
MAX TORQUE DESIGN (rpm) 7000
DRIVE TYPE 3 gear Yamaha Drivetrain
DIFFERENTIAL Drexler Differential
COOLING Right mounted radiator
BRAKE SYSTEM 4-Disc system, Brembo Calipers, self made discs
ELECTRONICS Multifunctional Steering Wheel, electronic shifting system

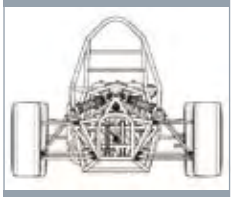
Birmingham
University of Birmingham

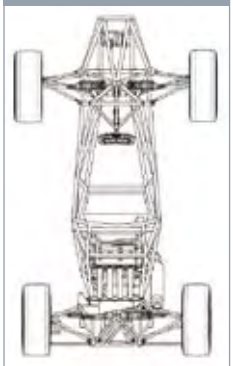


UBR11 is the University of Birmingham Racing Team's 11th Formula SAE/Student car. This car is an evolution of our 2007 car which achieved a 6th place in the autocross event at Germany. The design of UBR11 is simple. It is a tubular steel spaceframe and diffbox incorporating an unstressed 600cc Yamaha R6 engine with custom designed sump. The team has worked to improve reliability, but also further the development on the car. This year we have been developing a Formula SAE/Student specific tyre through Dunlop Motorsport, using our new Race-Technology DL2 data logger. This allows us to log lateral and longitudinal G-forces, full engine information, GPS, steering angle and tyre temperature. Other new developments on the car include a new DTA S80 Pro ECU with full traction and launch control. A custom built LCD dashboard with engine diagnostic readouts. The length of the chassis has decreased thanks to a new highly compact pedal box design.

Car 11

FRAME CONSTRUCTION Tubular Steel Spaceframe
MATERIAL T45 / Clubman 500
OVERALL L / W / H (mm) 2630 / 1375 / 1080
WHEELBASE (mm) 1690
TRACK (Fr / Rr) (mm) 1200 / 1150
WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 154
SUSPENSION Unequal length, unparallel A-Arms front and rear. Push rod actuated Bilstein spring/damper units
TYRES (Fr / Rr) 7.2/20-13 Dunlop Motorsport Radial FS Tyre
WHEELS (Fr / Rr) 7.2/20-13 Dunlop Motorsport Radial FS Tyre
ENGINE 2004 Yamaha YZF-R6
BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 599cc
COMPRESSION RATIO 12.4:1
FUEL SYSTEM Sequential ignition and fuel injection
FUEL 98 Octane Unleaded Gasoline
MAX POWER DESIGN (rpm) 10500
MAX TORQUE DESIGN (rpm) 8500
DRIVE TYPE Simplex DID Chain
DIFFERENTIAL Yamaha Grizzly Front Limited Slip Differential
COOLING Twin Aprilla RSV Mille Radiators with ECU controlled fans
BRAKE SYSTEM AP Racing Master Cylinders, 190mm Brake Discs, AP Rear Calipers, Tokico Front Calipers
ELECTRONICS DTA S80 Pro ECU, Dashboard ECU Readout





United Kingdom

Braunschweig
Technical University of Braunschweig

The Lions Racing Team was the second German team to enter the world of Formula Student and the first team worldwide, with a working Race-ABS. Ever since our first entry in 2002 we have been consequently developing the technical and economic knowledge of the team members. Results of these developments are increasingly innovative and fast cars with a high quality finish.Our new car, the LR08, is once again equipped with an ABS system. The aggressive suspension concept, a very compact and highly sophisticated package and supporting Continental AG for the tyre development, make the LR08 the fastest car built by our team to date.The LR08 and its drivers have been running through well planned and documented test procedures consisting of functional and setup tests to improve both, the vehicle's reliability and speed. Because of the above mentioned reasons we hope to reach a Top 5 position in the FSG 2008 event. If we sparked your interest, feel free to visit us in our pit.

Car 61

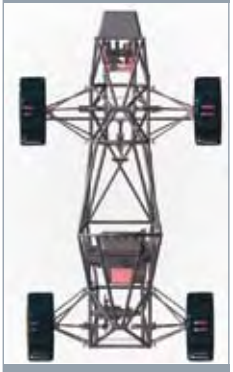
FRAME CONSTRUCTION Tubular space frame with supporting frames and hollow nodes
MATERIAL 25CrMo4 steel round tubing 10mm to 25mm dia
OVERALL L / W / H (mm) 2620 / 1500 / 1150
WHEELBASE (mm) 1525
TRACK (Fr / Rr) (mm) 1310 / 1190
WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 166
SUSPENSION Double unequal length A-Arm. Push rod actuated spring and damper (orientated in 7 deg inclined plane), rear Anti-roll Bar
TYRES (Fr / Rr) 195/500 R13, Continental, 245/500 R13, Continental
WHEELS (Fr / Rr) 7x13; 0mm offset, 3 pc Al/Mg Rim, 9x13; -25,4mm offset, 3 pc Al/Mg Rim
ENGINE Suzuki GSX-R600 K4
BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinders / 599cc
COMPRESSION RATIO 13.5:1
FUEL SYSTEM sequential ignition and injection, CFD-optimized intake system
FUEL 100 octane unleaded gasoline
MAX POWER DESIGN (rpm) 11500
MAX TORQUE DESIGN (rpm) 9500
DRIVE TYPE chain driven, #520
DIFFERENTIAL GKN fabricate progressive locking speed sensing ViscoLok LSD
COOLING sidepod mounted radiator with two ECU-controlled electric fans
BRAKE SYSTEM ABS, 4-Disk system, self developed rotors, adjustable brake balance, Brembo and AP-Racing calipers
ELECTRONICS wiring harness sealed to IP67, Multi-functional Steering Wheel, Electropneumatic Shifting System, selfdesigned LiveTelemetry System

Germany

Budapest
Budapest University of Technology and Economics

The BME Formula Racing Team is a first year competitor and the first team from Hungary. Our team worked hard in the last year to reach the goal: entering for the Formula Student Germany in 2008. We had no experience in designing racecars, and had no reference from the previous car so it was a great challenge to design and build it. This needed a lot of learning, reading books and developing our theoretical and practical knowledge. The car was manufactured completely by the team members with help from the university that provides the workshop and some tools. Our main sponsors - ThyssenKrupp, Knorr-Bremse, EJJT and Department of Automobile Engineering - gave us financial support without this our car could not be finished. We would like to perform well on our first race and we do everything that we can for this aim.

Car 26



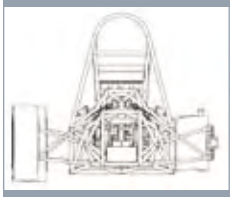
Hungary

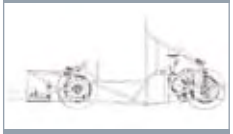
FRAME CONSTRUCTION Welded tubular frame
MATERIAL St 35 mild steel
OVERALL L / W / H (mm) 2660 / 1330 / 1150
WHEELBASE (mm) 1644
TRACK (Fr / Rr) (mm) 1180 / 1068
WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 164
SUSPENSION Double unequal length A-arms, push rods
TYRES (Fr / Rr) Bridgestone 175/50 R13
WHEELS (Fr / Rr) Aluminum 6x13“
ENGINE 2005 Yamaha R6
BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 600cc
COMPRESSION RATIO 12.4:1
FUEL SYSTEM Yamaha fuel injection system using Whistler ECU
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 11500
MAX TORQUE DESIGN (rpm) 9500
DRIVE TYPE Chain #520
DIFFERENTIAL Audi A6 central torsen differential
COOLING Yamaha R6 radiator mounted is sidepod
BRAKE SYSTEM 4-Disk system, floating rotors with 220 mm diameter
ELECTRONICS Student designed data acquisition system

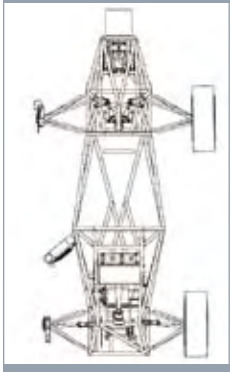
Cambridge
University of Cambridge

The year 2007/08 has been an exciting one for Full Blue Racing. Despite enduring a difficult first year last year, the fact that we even made it to FSG 2007 has spurred us on to try and achieve greater things in 2008. We return to Hockenheim this year to show people that even without a big budget and University backing it is possible to compete with the best.The experience gained last year has proved invaluable, and by combining it with the skill and hard work of our 15-strong team of engineers we have been able to produce what we believe is a competitive and reliable car – the FBR08.The FBR08 is based upon similar design principles to those of the FBR07; namely low cost, ease of maintenance and excellent driveability. These have been achieved by foregoing the “bells and whistles” approach that seems to be becoming standard in Formula Student, and recognising instead that a simple but well-designed car is definitely best.

Car 22







United Kingdom

FRAME CONSTRUCTION Tubular steel speceframe
MATERIAL Mild steel
OVERALL L / W / H (mm) 2928 / 1428 / 1121
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1250 / 1200
WEIGHT WITH 68kg DRIVER (Fr / Rr) 135 / 205
SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper. Damping adjustable in compression and in rebound.
TYRES (Fr / Rr) 20.0x7.0 R13, Goodyear D2692 R075 / 20.0x7.0 R13, Goodyear D2692 R075
WHEELS (Fr / Rr) 6.0x13, +12mm offset, 1 pc Al Rim / 6.0x13, +12mm offset, 1 pc Al Rim
ENGINE 2005 Yamaha YZF-R6
BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinders / 600cc
COMPRESSION RATIO 12.4:1
FUEL SYSTEM Open-source MegaSquirt system with semi-sequential injection and wasted-spark ignition
FUEL 95 octane unleaded gasoline
MAX POWER DESIGN (rpm) 9000
MAX TORQUE DESIGN (rpm) 8000
DRIVE TYPE Single stage chain drive
DIFFERENTIAL Spool
COOLING Side mounted Rover Mini radiator with 254mm thermostat-controlled electric fan
BRAKE SYSTEM 3 disc system (outboard front, single inboard rear) with 220mm discs, adjustable balance bar and Brembo opposing-piston calipers
ELECTRONICS Wiring harness sealed to IP67, digital tachometer display

Passion is the power to fulfil dreams. Developing innovative ideas, reaching out for goals and celebrating triumphs – that's the essence of motorsport. The Panasonic Toyota Racing team wishes all Formula Student teams an exciting event – passion included.

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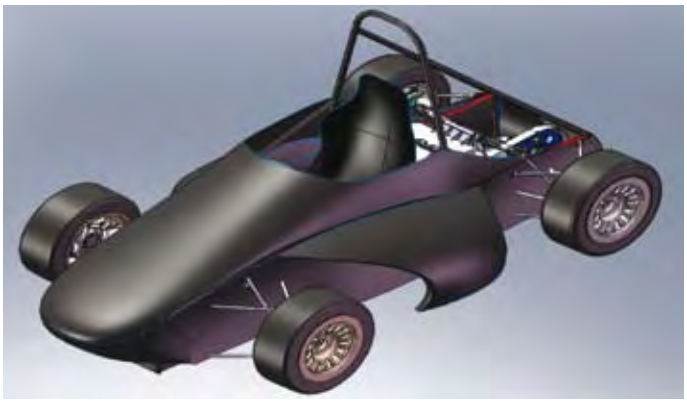
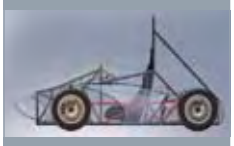
Panasonic TOYOTA Racing

Coburg
University of Applied Sciences Coburg



CAT Racing was founded in spring 2007 by students of the University of applied Sciences Coburg and participates for the first time in 2008 in the Formula Student competition. Our Team comprises mainly of students from the Faculty of Engineering, but also from various other faculties within the University. Members of our team gain valuable experience and stay a member for life due to a lot of sweat and energy that have gone into that project. Thanks to the support of our partners and the help from friendly competitors we look forward to seeing you this August! C08 Panther is a predator in subtle elegance. Our main focus while designing the C08 Panther was on building a car which reaches the objectives to compete in higher classes. The body shell built with carbon fibre and the electromagnetically actuated gear shift make the C08 Panther a light and agile racecar. The concept of modular assembly allows fast and facile substitution of car components for repairing and maintanance.

Car 81



Germany

FRAME CONSTRUCTION WIG and MAG welded tubular space frame

MATERIAL S355 steel round tubing 25mm OD, various wall thicknesses

OVERALL L / W / H (mm) 2520 / 1438 / 1320

WHEELBASE (mm) 1580

TRACK (Fr / Rr) (mm) 1255 / 1217

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 180

SUSPENSION Double equal length A-Arms. Push rod actuated horizontally oriented spring and damper. Adjustable in rebound, high-speed and low-speed compression. Adjustable anti-roll bar.

TYRES (Fr / Rr) 16/53-13 Michelin S 6 A / 16/53-13 Michelin S 6 A

WHEELS (Fr / Rr) 7.0x13, 5mm offset, 1 pc Al Rim

ENGINE Modified Yamaha YZF-R6

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

COMPRESSION RATIO 12.4:1

FUEL SYSTEM full sequential intake manifold injection, Yamaha YZF-R6 4 beam injection valves

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE roller chain, pitch 525

DIFFERENTIAL GKN Visco-Lok-Differential (limited slip speed)

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

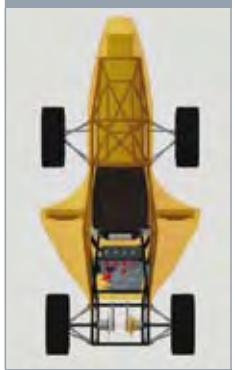
BRAKE SYSTEM 4 disk system, fixed rotors, cast Iron, hub mounted, 220mm OD, vented, adjustable brake balance, FTE opposing dual piston

ELECTRONICS wiring harness sealed to IP67, multifunctional steering wheel, electromagnetic shifting system

Cottbus
Brandenburg University of Technology

The team of the Technical University of Cottbus is a newcomer in FSG 08. The nonprofit association BTU Motorsport e.V. was founded in spring 2007 and counted 7 members. Until now the team increased to 15 members of different engineering fields, mechanic as well as economic. Our first aim was to gain experience with a reliable and down-to-earth car. Furthermore we wanted to provide a solid basis for future FSG participants of our university. In a four cylinder engine of a Suzuki GSX-R 600 K4 we found the heart of our vehicle. Step by step through construction and design work, knowledge and enthusiasm our Gravis08 developed. Now we are anxious to see, how our work proves in the static and dynamic competitions. Last but not least, we would like to thank all our supporters and especially our sponsors for their endless support, without it would not have been possible to produce the first Formula Student Car in Brandenburg.

Car 83



Germany

FRAME CONSTRUCTION Tubular space frame

MATERIAL S355 steel round tubing; 25x2.5 mm dia

OVERALL L / W / H (mm) 3070 / 1440 / 1115

WHEELBASE (mm) 1720

TRACK (Fr / Rr) (mm) 1200 / 1100

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 160

SUSPENSION Double wishbone, Push rod actuated vertically oriented air-shocks

TYRES (Fr / Rr) Michelin 13

WHEELS (Fr / Rr) 7x13, 3mm offset, Al Rim

ENGINE Suzuki GSX-R 600 K4

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

COMPRESSION RATIO 12.5:1

FUEL SYSTEM port injection with Trijekt Plus ECU

FUEL ROZ 98

MAX POWER DESIGN (rpm) 13000

MAX TORQUE DESIGN (rpm) 10500

DRIVE TYPE Chain

DIFFERENTIAL N/A

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 3-Disk system, self developed rotors with 180/270 mm dia, adjustable brake balance

ELECTRONICS Electropneumatic Shifting System, Multifunctional Steering Wheel

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Darmstadt

Technical University of Darmstadt

With last year's revolutionary concept beta2007, DART Racing was able to finish 6th overall in the Formula Student Germany competition. The outstanding performance of this concept was proved with the first place in the Autocross. Having this ability of performance in mind, the team decided to choose evolution over revolution. Every part of the beta2007 was analyzed regarding performance and reliability. With the results of this research, the new high performance race car gamma2008 was developed. Some of the 2008 car's main features are the 15 inch CFRP rims and CFRP wishbones with integrated carbon fibre spring elements. With the further development of the custom-built tires, the unsprung masses in the suspension system were radically reduced. Furthermore a traction control system has been implemented, supporting the car's dynamic abilities even more. We would like to thank the TU Darmstadt & our Sponsors for their support. For more information visit our Homepage www.dart-racing.de.

Car 6

Germany

FRAME CONSTRUCTION Front: carbo fibre monocoque; rear: tubular space frame

MATERIAL Front:carbon fibre monocoque; rear: 1.7734 (15cdv6) and 1.7218 (25CrMo4)

OVERALL L / W / H (mm) 2784 / 1432 / 978

WHEELBASE (mm) 1640

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 109 / 163

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

TYRES (Fr / Rr) 190/40 R-15 Pirelli student designed

WHEELS (Fr / Rr) 7.0x15, 1 pc CFRP Rims, 10mm neg offset. student designed and built

ENGINE 2002 Suzuki GSX-R 600

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

COMPRESSION RATIO 13.8:1

FUEL SYSTEM Student designed; fully sequential, cylinder-selective dual stage fuel injection,MoTec ECU

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Chain

DIFFERENTIAL Drexler Formula SAE special, limited slip

COOLING Water cooled, ECU-controlled electric water pumps, single radiator, ECU-controlled fan

BRAKE SYSTEM 4-Disk system, student-designed floating rotors with 215mm diameter, adjustable brake balance, 6 piston ISR calipers

ELECTRONICS Multifunctional steering wheel, electric actuated shifting system (paddels on steering wheel) and clutch

Delft

Technical University of Delft

The Delft University of Technology presents the next Formula Student Car it has built, the DUT08. The car is a mix of evolution and revolution. The evolution is based on the experience and knowledge obtained in the previous years and resulted in a lighter, stiffer and safer chassis together with an easy to adjust suspension. The revolution of the DUT08 is found in the custom developed data acquisition and engine management system, E85 staged injection WR450 power package and lightweight driveline with Salisbury differential. The design philosophy used is: "user centered design", which focuses on the needs, wants and limitations of the end user, i.e. the weekend race driver. As a result the design is a constant compromise between Performance and Reliability, Availability, Maintainability and Serviceability (RAMS).

Car 85

Netherlands

FRAME CONSTRUCTION Vacuum infused two piece full monocoque glued together

MATERIAL Carbon and Technora fibres, DSM Aeronite resin, Corecell T400 foam

OVERALL L / W / H (mm) 2455 / 1375 / 1118

WHEELBASE (mm) 1540

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 105 / 113

SUSPENSION Double unequal length A-Arm. Front push rod actuated, rear pull rod. Spring and damper (coil-over). Adjustable in compression and in rebound range

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

WHEELS (Fr / Rr) 6,0x10, -30 mm offset from middle, 2 piece aluminum center/rim with carbon rim

ENGINE Yamaha WR450F

BORE / STROKE / CYLINDERS / DISPLACEMENT 95.0mm / 63.4mm / 1 cylinders / 449cc

COMPRESSION RATIO 13,5:1

FUEL SYSTEM Dual staged injection

FUEL E85

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE Chain drive

DIFFERENTIAL Salisbury type with internal preload adjustment

COOLING Custom radiator with electric fan

BRAKE SYSTEM 4-disc, full floating brake discs, AP4226 calipers

ELECTRONICS Student developed data aquisition and engine management system. Driver info by student designed LCD dashboard.

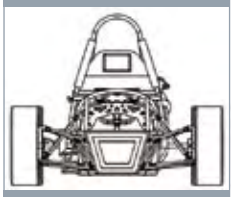
Diepholz

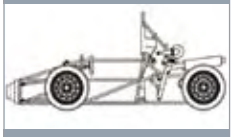
University of Applied Sciences Diepholz/Oldenburg/Vechta

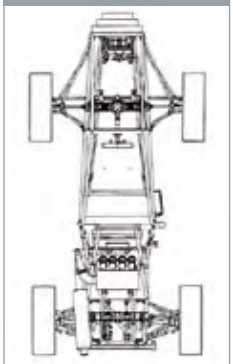
The Racing Team of the FHWT Diepholz (University of Applied Sciences for Economy and Mechanics) was founded in September 2005. It constitutes a part of project studies, where students have to realize a design project from defining the strategy to the completion of the product. When founded, the team consisted of four students of mechanical and two of industrial engineering. Today the team has 14 members and is supported by many experienced students and professors. Since this is the second participation in an FS event, the main goal for the Formula Student event in August is to score in all dynamic and static events. A place in the midfield would be a great result for the team and would help to establish the project for following years. Beside that the event is a great chance for the participating team members to get to know a lot of other motor sports enthusiastic students from all over the world.

Car 66

FRAME CONSTRUCTION Tubular space frame
MATERIAL S355JR (1.0045) steel round tubing 6
OVERALL L / W / H (mm) 2667 / 1397 / 1100
WHEELBASE (mm) 1660
TRACK (Fr / Rr) (mm) 1200 / 1155
WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 210
SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper
TYRES (Fr / Rr) 20x7,5-13 R25A Hoosier
WHEELS (Fr / Rr) 20x9-13 R25A Hossier
ENGINE 2001 Honda CBR 699 F4i / PC35
BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 43.0mm / 4 cylinders / 599cc
COMPRESSION RATIO 12,1:1
FUEL SYSTEM Silent Hektik ECU; orig. fuel rail & press. valve; Bosch fuel pump, filter and injection
FUEL 100 Octan unleaded gasoline
MAX POWER DESIGN (rpm) 11000
MAX TORQUE DESIGN (rpm) 9000
DRIVE TYPE 30mm x 10mm cogged belt
DIFFERENTIAL Zexel Torsen University Special; student des/built aluminum housing
COOLING single radiator with two thermostatic controlled electric fans mounted at the back of the car
BRAKE SYSTEM 4-Disk system; wave rotors from Magura; adjustable brake balance
ELECTRONICS Shifting system actuated over air pressure caliper; LED for gear shift point and neutral gear position







Germany

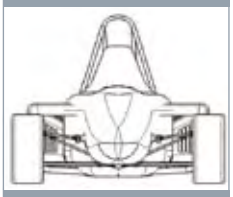
Dortmund

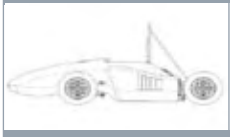
University of Applied Sciences Dortmund

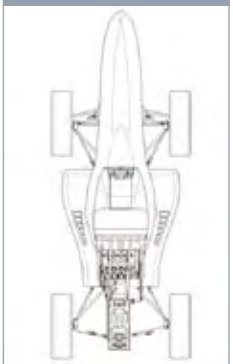
Basing on the last year's car, the RI 08 was built new and better than its predecessor. While the basic features remained the same, the reliability and the driver ergonomics have been improved.The new Monocoque is a Carbonfibre Honeycomb sandwich structure which offers maximum strength and durability while being very light.The CNC-machined rear-frame is connected to the Monocoque via the Honda CBR 600 engine. The FH Dortmund Race-Ing. Team is looking forward to the 2008 FSG competition and wishes the fellow raceteams luck and blessing.

Car 15

FRAME CONSTRUCTION selfmade Carbonfibre Honeycomb-Sandwich Monococue
MATERIAL Carbonfibre, Hexion Resine, Coremaster Honeycomb
OVERALL L / W / H (mm) 2815 / 1360 / 1230
WHEELBASE (mm) 1670
TRACK (Fr / Rr) (mm) 1200 / 1150
SUSPENSION Unequal length A-Arms. push / pull rod actuated DNM RC spring/damper units
TYRES (Fr / Rr) 160/530 R13 Avon
WHEELS (Fr / Rr) 195/530 R13 Avon
ENGINE Honda CBR 600 PC35
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 43mm / 4 cylinders / 599cc
COMPRESSION RATIO 12:1
FUEL SYSTEM Trijekt EMS
FUEL 89 Octane unleaded gasoline
MAX POWER DESIGN (rpm) 12000
DRIVE TYPE Chaindrive
DIFFERENTIAL Drexler LSD
BRAKE SYSTEM Brembo







Germany

Dresden
Technical University of Dresden

A new star is rising on the firmament of Formula Student Competition. The Elbflorace Team from Dresden University of Technology currently consisting of 25 team members is making it´s maiden trip in Hockenheim 2008. Our objective for the event? Nothing less than becoming one of the top three newcomers. This project is the challenging possibility to connect academic knowledge gained in university life and crafty practical work. Therefore the ultimate benefit of the competition is to acquire first-hand experience with the overall construction of a race car, using well established technical fundamentals and some associated dynamic innovations. A lot of blood, sweat and tears of a hard working team as well as our sponsors and supporters who we send our best thanks made it possible that we can proudly present the “ARCUS”. You are curious? Take a look on car No.44!

Car 44

Germany

FRAME CONSTRUCTION tube space frame, outer dia. 25mm-16mm, thickness 2.5mm-1mm

MATERIAL 25 CrMo4

OVERALL L / W / H (mm) 2607 / 1360 / 1291

WHEELBASE (mm) 1685

TRACK (Fr / Rr) (mm) 1225 / 1190

WEIGHT WITH 68kg DRIVER (Fr / Rr) 155 / 195

SUSPENSION double unequal length A-Arm. push rod actuated horizontally oriented spring and damper

TYRES (Fr / Rr) 175-535 R13 Dunlop SP Sport

WHEELS (Fr / Rr) Keizer 6.0x13, 3pc Mg Center, 0mm offset

ENGINE 2001 Honda CBR 600 PC35i

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

COMPRESSION RATIO 12:01

FUEL SYSTEM student designed/built, fuel injection

FUEL 100 octan

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE 520zzz ENUMA chain drive, 21mm x 14mm

DIFFERENTIAL clutch pack limited slip (limit variable), 45°/60° bias ratio

COOLING one side pod mounted radiator with thermostatic controlled electric fan

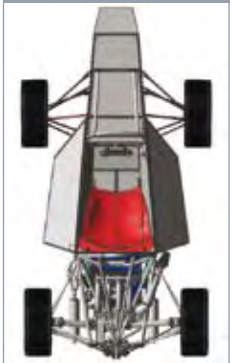
BRAKE SYSTEM 4-Disk System, rotors 259mm/220mm, 2piston calipers, adjustable brake balance

ELECTRONICS CAN-Bus, telemetry system with “nanoNet standard” transmission

Eindhoven
Technical University of Eindhoven

University Racing Eindhoven is proud to present the third operational race car that competes in the Formula Student competition, the URE 04. The URE 04 with its innovative multi-link suspension and very low centre of gravity provides excellent handling capabilities. Besides that, the team managed to save 15 kg of weight compared to the URE 03. The chassis consists of an aluminum honeycomb monocoque in front and a steel tubular space frame at the rear, for better accessibility of the engine and components. Great improvements were made in the area of the powertrain. This includes self-designed cam shafts, dry-sump lubrication and an intake made with SLS rapid prototyping. Together with 4 weeks of tuning the engine on our own engine test bed lead to excellent driving characteristics with wide power and torque bands. Together with excellent driver ergonomics, consisting of a special designed carbon fiber seat and a multifunctional steering wheel, the URE 04 is very easy to race.

Car 40



Netherlands

FRAME CONSTRUCTION Aluminium sandwich panel box structure with rear steel tubular frame

MATERIAL Alcan ALUCORE aluminium honeycomb sandwich panel

OVERALL L / W / H (mm) 2745 / 1334 / 1080

WHEELBASE (mm) 1600

TRACK (Fr / Rr) (mm) 1225 / 1175

WEIGHT WITH 68kg DRIVER (Fr / Rr) 149 / 149

SUSPENSION Front: Full multilink. Pull rod actuated Koni 2612 spring/damper units Rear: Full multilink. Push rod actuated Koni 2612 spring/damper units

TYRES (Fr / Rr) 20.5X7-13 R25B Hoosier/20.5X7-13 R25B Hoosier

WHEELS (Fr / Rr) 6 inch wide, 3 pc AL/Mg Rim / 6 inch wide, 3 pc AL/Mg Rim

ENGINE Modified Suzuki GSX-R600 K2

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

COMPRESSION RATIO 13.0:1

FUEL SYSTEM Multipoint fuel injection system using Motec M400 ECU

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE chain drive, 520

DIFFERENTIAL Torsen University Special, bias ratio 3.2:1

COOLING Electric waterpump and fan, thermostatic controlled, sidepod mounted radiator

BRAKE SYSTEM 4-Disk system,self developed rotors,230 mm diameter, adjustabele brake balance, 2 Grimeca & Brembo P332G brake calipers

ELECTRONICS Self-developed CAN-bus, data-acquisition, telemetry and multi-functional steering wheel. Electronic shift system, pneumatic clutch

Erlangen
University of Erlangen-Nuremberg

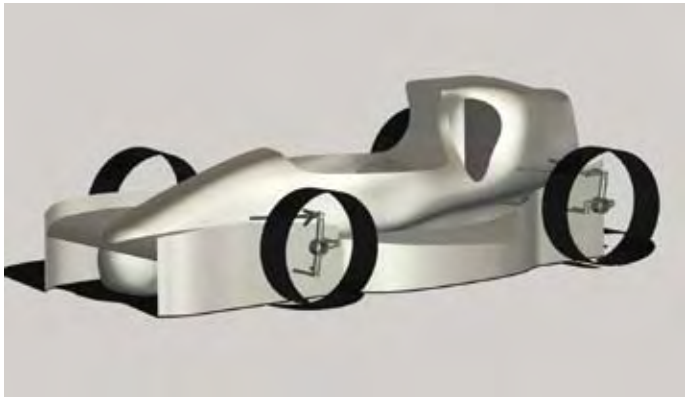
High-Octane Motorsports, the team of the University of Erlangen-Nuremberg is one of this year's newcomers. Founded in early 2007 we spent countless hours of planning, designing and simulating to catch up with the already established teams and finally came up with a good design that is not only controllable for a first year team, but also meets our high expectations. Our Car, the FAUmax alpha, features several highlights such as the aerodynamically shaped carbon fibre A-arms, the carbon fibre reinforced SiC ceramic brake discs or the extensively modified one cylinder engine with supercharger. We do not only hope to enthuse judges and visitors with this, but also to achieve high scores in the different events to fight for the title of the best newcomer. Special thanks go to the Faculty of Engineering, especially the Deparment of Mechanical Engineering and to all our sponsors and supporters, which helped to realize this project. We are looking forward to your visit in our box!

Car 74

FRAME CONSTRUCTION Steel Tubular Spaceframe
MATERIAL 25CrMo4
OVERALL L / W / H (mm) 2870 / 1455 / 1160
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1250 / 1200
WEIGHT WITH 68kg DRIVER (Fr / Rr) 165 / 152
SUSPENSION Double wishbones, unequal length, pushrod actuated Cane Creek coilover dampers
TYRES (Fr / Rr) Goodyear Eagle D2692, 20''x7''-13'' (f+r)
WHEELS (Fr / Rr) Dymag Magnesium Cast Wheels (f+r)
ENGINE 2005 KTM 640 LC4 single cylinder
BORE / STROKE / CYLINDERS / DISPLACEMENT 101mm / 76mm / 1 cylinders / 609cc
COMPRESSION RATIO 9,17:1
FUEL SYSTEM Student des/built, fuel injection
FUEL unleaded gasoline
MAX POWER DESIGN (rpm) 7500
MAX TORQUE DESIGN (rpm) 4500
DRIVE TYPE chain
DIFFERENTIAL Torsen torque sensitive limited slip differential
COOLING Left pod mounted radiator with thermostatic controlled fan, right side pod mounted intercooler
BRAKE SYSTEM 3-disc-system; carbonfibre reinfroced SiC ceramic rotors: 230mm - 130mm; floating, hub mounted
ELECTRONICS Self built steering wheel with integrated clutch, display and shifting pushbuttons, traction control, electronic shifting system

Germany

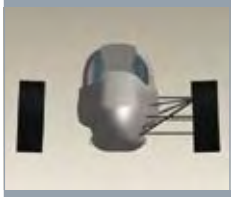
Espoo
Technical University of Helsinki

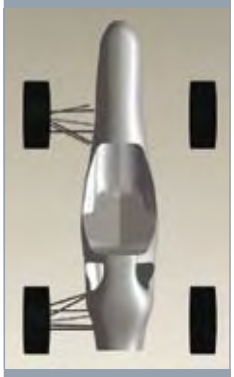


The Otaniemi Flying Finns Formula SAE / Student team (OFF for short) was founded in November 2007, and presently contains 20 students in its service with students' study disciplines vary from mechanical engineering to electronics and material sciences. Formula Student Germany 2008 will be its first entry. From the start the team considered simulation and optimization to be important factors in high-performance development. Students in the team have found a way to unite their academic interests with their passion for automotive engineering and motorsports - be it fluid mechanics, engine combustion, machine design et cetera. The FO-1 will contain a few rather rare properties - the transmission and drivetrain probably stand out most from the common standards. From an external as well as an engineering standpoint, the aerodynamics provide an interestingly different view as well. OFF is happy to participate in FSG 08!

Car 51

FRAME CONSTRUCTION Aluminium monocoque
MATERIAL 2mm cnc-robot formed sheet
OVERALL L / W / H (mm) 2500 / 1310 / 800
WHEELBASE (mm) 1550
TRACK (Fr / Rr) (mm) 1300 / 1300
WEIGHT WITH 68kg DRIVER (Fr / Rr) 130 / 130
SUSPENSION Double A-Arm. Pull rod actuated coil-overs, longitudinally mounted front, vertically mounted rear
TYRES (Fr / Rr) 6.6/19.5-14
WHEELS (Fr / Rr) 6.6/19.5-14
ENGINE Modified Yamaha Genesis 80FI
BORE / STROKE / CYLINDERS / DISPLACEMENT 77mmmm / 54mmmm / 2 cylinders / 499cc
COMPRESSION RATIO 9,5:1
FUEL SYSTEM Open-source VEMS ECU, sequential injection, COP ignition
FUEL 98E
MAX POWER DESIGN (rpm) 8000
MAX TORQUE DESIGN (rpm) 6000
DRIVE TYPE Double clutch two-speed custom gearbox
DIFFERENTIAL Active center differential lock with torque based side differential locks
COOLING Center-rear mounted radiator-intercooler package with electric fan
BRAKE SYSTEM 4-Disk brakes external mounting, with internally mounted calipers, dual master cylinders
ELECTRONICS Custom coded multifunctional ECU; integrated shift & diff lock control, electronics fully operated through steering wheel





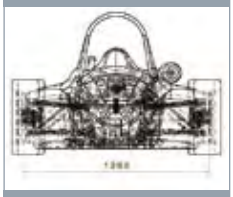
Finland

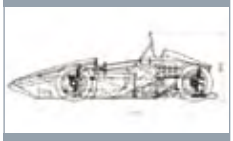
Esslingen

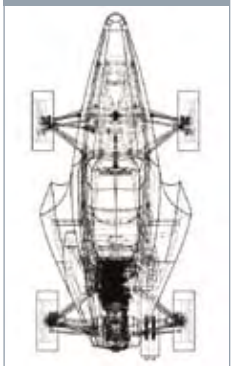
University of Applied Sciences Esslingen

The Rennstall Esslingen was founded in 2006 and participates the second time in the FSG. After the first steps with a prototype in 2006, later called Stallardo´06, nearly 70 Students began to design the last year competition car, Stallardo´07. With this car the first experiences and, above all, results could be earned and celebrated. In November 2007 the team started to design its dream: the Stallardo´08.The main tasks were not only to build an average car, the Rennstall designed a car which can step into the footprints of its predecessor. Every system of the Stallardo´07 was completely reworked, taking the costs, reliability and the weight into account. New systems and innovations were integrated into the new vehicle while we kept the identity of a Stallardo - an emotional and beautiful car, appearing with an extraordinary styling. With a huge gain in experience, new ideas and technologies the team is confident that its efforts will ensure success in the Formula Student Germany 2008.

Car 30







FRAME CONSTRUCTION Front Tubular Frame with removable Rear frame

MATERIAL S355 / mild steel round 10 mm to 26 mm diameter

OVERALL L / W / H (mm) 2950 / 1400 / 955

WHEELBASE (mm) 1700

TRACK (Fr / Rr) (mm) 1260 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 134 / 171

SUSPENSION Pushrod actuated unequal lenght double A-Arm suspension. Adjustable in compression and in rebound range

TYRES (Fr / Rr) 20.5x6.0 13s Hoosier R25A / 20.5x7.0 - 13 Hoosier R25A

WHEELS (Fr / Rr) 6.0x13, 3 pc AlMg rim / 7.0x13, 3 pc Al Mg Rim

ENGINE MAHLE SAE Engine V3

BORE / STROKE / CYLINDERS / DISPLACEMENT 46,9mm / 74,2mm / 3 cylinders / 608cc

COMPRESSION RATIO 13:1

FUEL SYSTEM Intake tube injection, 60.1mm from valves, Bosch injectors, Mahle Rail

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE longitudinal mounted gearbox

DIFFERENTIAL Torsen differential

COOLING Side pot mounted Radiators, in line

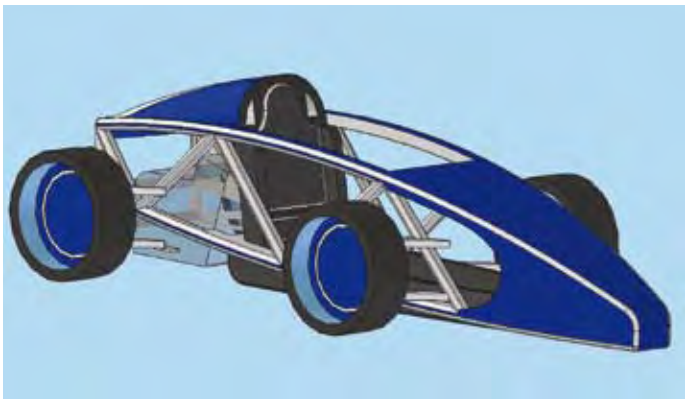
BRAKE SYSTEM 4-Disk System, adjustable brake-balance, 2 pisten calipers front & rear

ELECTRONICS Multifunctional Steering Wheel, selfdesigned Telemetry System

Germany

Frankfurt am Main

University of Applied Sciences Frankfurt am Main



In the year 2008 it is the first time that the „Fh Frankfurt Racing“ Team participates in the FSG. Founded in November 2007 and being a newcomer team we are looking forward to the upcoming event and are very proud to present you our vehicle, the „Ribbed 08“. This car is the construction where technology meets Frankfurt´s traditions therefore the concept is based on “das Gerippte” -a cider jar you can find in Frankfurt and its surrounding area. Our Team has got twentytwo members and all work hard in their leisure time to develop, construct and build a race car with this outstanding design. They are studying in diverse fields of engineering and economics to unite to one team to fulfill the given tasks. Achieving all these goals we are an attractive partner for our university and our sponsors such as euro engineering, DEKRA, Dunlop and Conrad Electronics. We are hoping for the best rookie award, a good time with all teams and a bright formula student future.

Car 70

FRAME CONSTRUCTION Tubular steel spaceframe

MATERIAL 25CrMo4 for the frame, fibre composit for casings

OVERALL L / W / H (mm) 2720 / 1390 / 1390

WHEELBASE (mm) 1540

TRACK (Fr / Rr) (mm) 1540 / 1440

WEIGHT WITH 68kg DRIVER (Fr / Rr) 109 / 181

SUSPENSION double wishbone axle in fornt and rear, push rods actuated to horizontally ordiented spring and damper, adjustable compression and rebound range of the dampers

TYRES (Fr / Rr) R 13 Dunlop formula student prototype

WHEELS (Fr / Rr) 7x13 ET 20 ATS Classic Rim

ENGINE modified Yamaha YZF-R6

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

COMPRESSION RATIO 13.1:1

FUEL SYSTEM open source Megasquirt injection system

FUEL 98octane petrol

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE chain

DIFFERENTIAL GKN Visco loc limited slip

COOLING twin side mounted radioators with electric fans in front of rear axle

BRAKE SYSTEM 3-Disk brake system with two discs on the front axle and one mounted to rear axle, discs: wave design, adjustable brake balance

ELECTRONICS electromechanic shifting system, multifuctional steering wheel

Germany

Are you auto-motivated? Welcome!

With targeted annual sales of more than € 26.4 billion for 2008, the Continental Corporation is one of the top automotive suppliers worldwide. As a supplier of brake systems, systems and components for the powertrain and chassis, instrumentation, infotainment solutions, vehicle electronics, tires and technical elastomers, the corporation contributes towards enhanced driving safety and protection of the global climate. Continental is also a competent partner in networked automobile communication. Today, the corporation employs approximately 150,000 people at nearly 200 locations in 36 countries. For you, that means ample scope to get your career up to speed – in an atmosphere defined by openness, flat hierarchies, international mobility and self-motivation. Like to drive with us? This way to our high-perfomance team:

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Freiberg

Technical University of Freiberg

At the beginning there was a union of students to build the idea to regulate a driving-ready racer. So the Racetech Racing Team TU Freiberg e.V. was founded on 20th of April, 2005 with the discharge of our statute. Since then we can exist regardless of the university and operate independently. After 1 year of hard work we attended Formula Student Germany 2007. Although our RT01 did not go on overtaking lane at first time we were very proud of our achievement building an exceeding race car.Today our team passes approximately 34 motivated students, which study vehicle construction, mechanical engineering, economic engineering, geotechnics and many other subjects. Meanwhile with our many-sided knowledge we have improved and developed our RT02. The team's main focus is lying on high end materials and its production technologies such as magnesium-, aluminium- and steel- castings besides composite materials. We would like to thank our University, our Sponsors but especially our Families.

Car 76

FRAME CONSTRUCTION Tubular steel frame

MATERIAL 25CrMo4 steel, round and square tubing, 16mm to 30mm diameter or side length

OVERALL L / W / H (mm) 3030 / 1440 / 1075

WHEELBASE (mm) 1700

TRACK (Fr / Rr) (mm) 1240 / 1240

WEIGHT WITH 68kg DRIVER (Fr / Rr) 145 / 178

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

TYRES (Fr / Rr) 20.0x7.0 R13, Avon A15 / 20.0x7.0 R13, Avon A15

WHEELS (Fr / Rr) 7.0x13, 57mm offset, 2 pc Steel Rim / 7.0x13, 57mm offset, 2 pc Steel Rim

ENGINE 2003 Honda PC37

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

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Student des/built , fuel injection, sequential

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE DID 525 chaindrive

DIFFERENTIAL Drexler Formula Student, 25 Nm preload

COOLING single side pod mounted radiators with electric fans

BRAKE SYSTEM 4-discs, self designed floating rotors with 220mm diameter, adjustable brake balance, front/ rear AP-Racing 4/2 piston calipers

ELECTRONICS multifunctional display for status infos, electromagnetic shifting system, infrared fuel level sensor

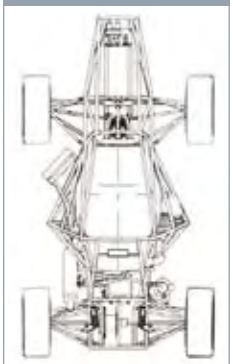
Germany

Glasgow

University of Strathclyde

The design of USM07's successor, USM08, is driven by performance and reliability. A large emphasis was placed on validation of theoretical results, by application and use of strain gauging, chassis torsional testing, flow bench and dynamometer testing, and tire data.USM08's chassis has a 40% increase in torsional stiffness, 2146 Nm/deg. The suspension incorporates both anti-squat and anti-dive, and use of Ohlin's Cane-Creek Double Barrel dampers. The uprights are manufactured from CNC aluminium. The engine incorporates a Garrett GT12 turbocharger, producing a 32% increase in torque. The cast iron Torsen T1 diff casing is replaced with a CNC aluminium casing. The wheel design features custom designed cast aluminium centres and carbon fibre rims. The hubs are single piece, with rears integrating tripod housings. USM08 uses a DTA Fast ECU and a dashboard featuring alphanumeric LCD. The team would like to thank all sponsors and wish all Formula Student teams the best of luck!!

Car 84



FRAME CONSTRUCTION TIG Welded Steel tube space frame

MATERIAL ERW mild steel tube

OVERALL L / W / H (mm) 2822 / 1411 / 1170

WHEELBASE (mm) 1570

TRACK (Fr / Rr) (mm) 1222 / 1220

WEIGHT WITH 68kg DRIVER (Fr / Rr) 155 / 165

SUSPENSION Unequal length A-Arms. Pull rod front and push-rod rear, actuated Ohlins / Cane Creek Double Barrel dampers. U-type ARB.

TYRES (Fr / Rr) Goodyear D2692 20.0x7.0-13 R075

WHEELS (Fr / Rr) Custome cast aluminium centre and carbon fibre rim. 7x13 13.8mm offset.

ENGINE Honda CBR 600 F4i

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

COMPRESSION RATIO 12:1

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

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain

DIFFERENTIAL Zexel Torsen T1 with custom CNC aluminium housing.

COOLING Sidepod mounted custom aluminium radiator.

BRAKE SYSTEM 3 disc, 2 front outboard and single inboard rear. Wilwood GP320 front and ISR22027 rear. Self designed laser cut steel discs.

ELECTRONICS Wiring harness attached to DTA fast ECU. Racetechnology DL1 Data logger, damper linear potentiometers.

United Kingdom

Graz
Technical University of Graz

This year, the TU Graz Racing Team is celebrating its 5th year of competing in Formula Student. Once again, 43 team members from different academic fields have come together to turn their vision into reality and design and manufacture a new car: The Tankia (“There Are No Kangaroos In Austria”) 2008. This year, we paid extra attention to the car’s driveability and maintainability. Some of the Tankia 2008’s many highlights are the electro-mechanical clutch, the wishbones, which are made of one single piece of carbon fibre, and the new carbon fibre rim which weight less than 1.1 kg and is more rigid than any rim we have used before. To lower the weight we have included the pickup point of the rear tie rod, and replaced the rod ends at the chassis with flex-plates. The flex-plates are not only lighter and maintenance-free, but they also eliminated the play and the friction in the pickup points at the chassis.

Car 2

FRAME CONSTRUCTION carbon fibre monocoque and carbon fibre rear end

MATERIAL CBP sandwich with prepreg and nomex core foam

OVERALL L / W / H (mm) 2725 / 1364 / 950

WHEELBASE (mm) 1575

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 110 / 128

SUSPENSION double unequal length A-Arms. Push rod actuated. Cane Creek Double Barrel spring and damper unit . titanium flex-plate connections

TYRES (Fr / Rr) Goodyear D2692 20.0x7.0-13 / Goodyear D2692 20.0x7.0-13

WHEELS (Fr / Rr) 7 inch wide, self made one piece carbon fibre rim

ENGINE 2006 Yamaha YZF R6

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

COMPRESSION RATIO 13,7:1

FUEL SYSTEM student designed and built, fuel injection, sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 8500

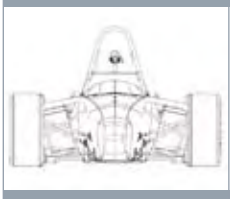
DRIVE TYPE 3-gear sequential gearbox, DID 520 chain

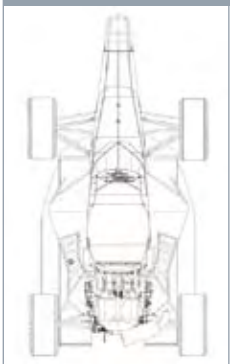
DIFFERENTIAL multiplate limited slip differential

COOLING twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4-disk system, self developed rotors with diameter 200mm, electronical adjustable break balance via balance bar

ELECTRONICS multifunctional steering wheel, electronically controlled clutch and gearbox, distrubited sensor network, multiuser live-telemetry





Austria

Graz
University of Applied Sciences Joanneum Graz

joanneum racing graz team took part in the static competitions in 2003 for the first time and has built a new car every year since 2004. The basic team consists of 30 Vehicle Technology students from the University of Applied Sciences, Graz. In the 2006 competition in Italy the joanneum racing team achieved the “Overall Winner”, the first U. A. S. to ever achieve this. At the event in Germany in 2007, the team’s hard work was rewarded with the 3rd place Overall. These results show that our team is one of the main favourites at the competition this year - especially in the Skid Pad event which was won in England in 2006 & 2007, Italy 2006 and Detroit 2007. The jr08 is lighter and more ergonomic to drive than its predecessor. The supercharged 450cc one-cylinder engine supplies a power of 84 HP and a max. torque of 72 Nm to the crankshaft. Important highlights of the jr08 are the one-piece CFRP rims, the integrated drive shafts and the pneumatically actuated clutch and gearbox.

Car 3

FRAME CONSTRUCTION Tubular space frame

MATERIAL E235, CFRP tubes with aluminium inserts

OVERALL L / W / H (mm) 2705 / 1395 / 1015

WHEELBASE (mm) 1650

TRACK (Fr / Rr) (mm) 1200 / 1140

WEIGHT WITH 68kg DRIVER (Fr / Rr) 112 / 136

SUSPENSION Unequal length A-Arms. Push/pull rod actuated Sachs RD36 dampers with H&R springs. Adjustable anti-roll bars on both axles. Camber and toe angle adjustable.

TYRES (Fr / Rr) 6.2 - 20.0 - 13 AVON A45 / 6.2 - 20.0 - 13 AVON A45

WHEELS (Fr / Rr) 6.0x13 single piece carbon wheels. 12.3 mm positive offset

ENGINE Supercharged BRP Rotax Type 499

BORE / STROKE / CYLINDERS / DISPLACEMENT 97mm / 60.8mm / 1 cylinders / 449cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Student des/built fuel injection system

FUEL E85

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 8000

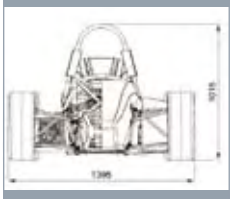
DRIVE TYPE 5-gear seqential gearbox, chain #520

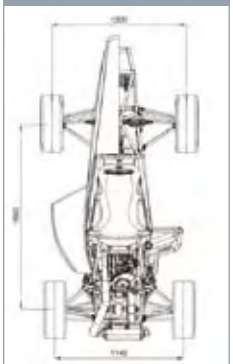
DIFFERENTIAL Clutch pack limited slip, tailor made aluminium housing

COOLING Left side pod: tailor-made water cooler and oil cooler. Right side pod: tailor-made intercooler

BRAKE SYSTEM 4-disk system with front/rear seperation. Adjustable brake balance. Student designed, laser cut and ground steel rotors.

ELECTRONICS MoTeC M800 ECU, electropneumatic shifting system, self developed alternator system, prototype lithium-ion battery





Austria

Hamburg
Helmut Schmidt University of Federal Armed Forces Hamburg

After first conceptual pencil sketches in 2006, we proudly present the R.U.S.H. 08 as a state-of-the-art expression of HSU students engineering and technical ability. The need for high performance stability, handling ability and low weight defined the car's form and construction. Therefore the car makes extensive use of ultra light carbon-fibre body parts and accessories. Its high level of performance is delivered by the combination of inherent light weight, near perfect weight distribution, a powerful 4-cylinder engine and an electronically steered transmission, while a freely programmable ECU provides full control of fuel injection/ ignition cycles. Key innovative features include a custom-made wire harness which caters for electric power supply and data processing, a thermostatically controlled twin aluminium radiator cooling system with cooling fans mounted in flow optimized carbon housings, aluminium differential and a 4-2-1 exhaust manifold made from light-weight stainless steel.

Car 72

FRAME CONSTRUCTION Tubular space frame with different diametertubes

MATERIAL S235 & S355 steel round tubing 14x2mm to 25x2.5mm dia

OVERALL L / W / H (mm) 2985 / 1440 / 1245

WHEELBASE (mm) 1740

TRACK (Fr / Rr) (mm) 1190 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 192 / 146

SUSPENSION Double unequal length A-Arms, push rod actuated non linear airsprings

TYRES (Fr / Rr) 175/505 R13, C55 XX 425 / 175/505 R13, C55 XX 425

WHEELS (Fr / Rr) 13x7 BBS 3 pc AL rim

ENGINE 2002 Honda CBR600 F, 4 cylinders

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

COMPRESSION RATIO 12:1

FUEL SYSTEM Student designed and built, ECU-A sequential fuel injection and spark ingnition

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE 525-splitting chain-belt drive

DIFFERENTIAL Mini Cooper Differential, custom aluminium housing

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4-Disk system, front 240mm diam., rear 190mm diam., hub mounted

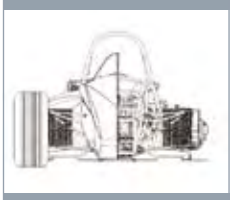
ELECTRONICS Semiautomatic Shifting System using ultralight servodrives, Multifunctional Steering Wheel

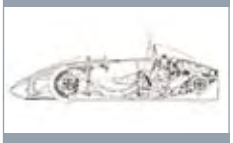
Germany

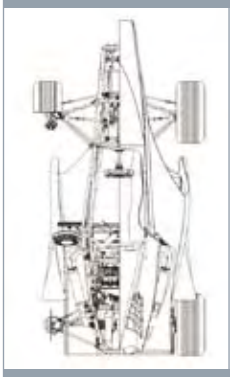
Hamburg
University of Applied Sciences Hamburg

The Hawks Racing Team of the HAW Hamburg was founded in 2003 and participated in Formula Student the first time in 2004 with our first car: The Hawk 69! This car defines the roots of our team and our cars, which our team has developed over the years. In the meantime we have build another two cars, the Hawk06 in 2006 followed by the Hawk07- great success since it brought us the 9th place in Hockenheim and the 4th at the Italy Competition last year. One of our cars very important feature is the unique styling, which convinced the judges at the Hockenheimring competition. It was rewarded by the 1st place at the style contest for its ambitious appearance. Every Hawk is an Evolution of his older brother and now we are about to present our fourth car: The Hawk08. It is designed to take advantage of the success of the Hawk 07 and due to an enormous weight loss in all areas and an improved styling this car will enrich your and our race experience. We look forward to the great competition ahead!

Car 69







FRAME CONSTRUCTION Tubular space frame

MATERIAL Chassis made of mild steel fully covered by carbon exterieur

OVERALL L / W / H (mm) 2836 / 1270 / 944

WHEELBASE (mm) 1800

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 152 / 158

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

TYRES (Fr / Rr) Goodyear EAGLE 20.0 x 7.0 - 13 (Fr and Rr)

WHEELS (Fr / Rr) 8.0x13, 2.6mm offset, 3 pc Al Rim (Fr and Rr)

ENGINE Modified 2000 Kawasaki ZX-6R

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

COMPRESSION RATIO 12,8:1

FUEL SYSTEM Student des/built ,fuel injection, fully sequential, Walbro TDD HPUH-1 ECU

FUEL 100 octane gasoline

MAX POWER DESIGN (rpm) 11100

MAX TORQUE DESIGN (rpm) 10500

DRIVE TYPE Chain Drive, Chain Type 520

DIFFERENTIAL Drexler Formula Student multi-disk differenzial

COOLING Twin side pod mounted radiators with electric fans controlled by ECU

BRAKE SYSTEM 4-Disk system,Floating, hub mounted 260 diam. rotors, adjustable brake balance, student designed Fr 6 piston, Rr 4 piston calipers

ELECTRONICS Electronics include self designed Sensoring, Electronic Shifting, Live-Telemetry, Multi-funct. Steering Wheel and ECU using CAN Bus

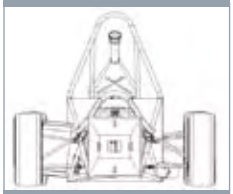
Germany

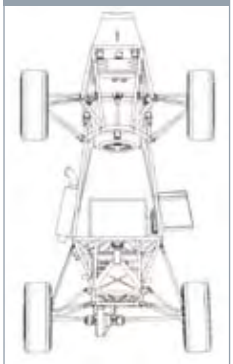
Hatfield
University of Hertfordshire

Carbon fibre has been completely eliminated on UH11 and replaced with a woven polypropylene material called Pure, saving over $500. The new materials CO2 footprint is much smaller and is very easy to recycle.UH Racing were the first team to drive on a new Dunlop tyre developed specifically for FS. Numerous tests in the months leading up to the event have produced a new compound which offers a significant improvement in control, feel and durability.The increased grip is certainly needed as the R6 engine is our most powerful, developing 92bhp thanks to extensive research on the inlet, exhaust and camshafts.The in-house development of a dynamic vehicle simulation program has enabled UH Racing to evaluate a much wider range of design concepts than in previous years.UH11 is fully future-proof, adhering to the 2009 rules regarding increased chassis size and crash safety, making it UH Racing's most driver-friendly car yet. UH11 is also our lightest at 194kg and is $2000 cheaper.

Car 88

FRAME CONSTRUCTION Tubular Spaceframe
MATERIAL CDS Mild Steel
OVERALL L / W / H (mm) 2480 / 1400 / 1150
WHEELBASE (mm) 1530
TRACK (Fr / Rr) (mm) 1200 / 1130
WEIGHT WITH 68kg DRIVER (Fr / Rr) 126 / 136
SUSPENSION Double unequal length A-Arm. Pushrod actuated spring and damper
TYRES (Fr / Rr) 175/505 R13, Dunlop D55XX 414
WHEELS (Fr / Rr) 6.2x13 3 pc Al Rim
ENGINE Yamaha YZF-R6 2CO 2007
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc
COMPRESSION RATIO 13.4:1
FUEL SYSTEM Life Racing F88 Sequential Injection and Ignition
FUEL 98 octane unleaded
MAX POWER DESIGN (rpm) 10500
MAX TORQUE DESIGN (rpm) 9000
DRIVE TYPE 520 Chain
DIFFERENTIAL Clutch Pack Limited Slip
COOLING Side Mounted with 7.5" Fan
BRAKE SYSTEM Student designed, laser cut 1040 steel, floating disc on hub spokes, 220mm dia
ELECTRONICS Launch/Traction Control, self designed Live-2way-Telemetry.





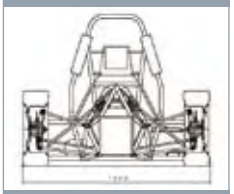
United Kingdom

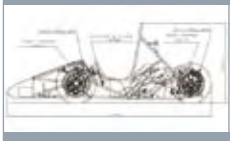
Hatoyama
Tokyo Denki University

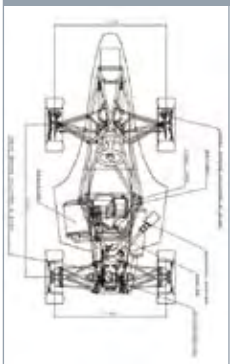
Our vehicle concept is light and compact with high performance. We thank all our sponsors for their support!

Car 77

FRAME CONSTRUCTION Tubular Space frame
MATERIAL 4130 Chrome Moly tube and High-Tensile Steel tube 0.5 inches to 1 inch diameter
OVERALL L / W / H (mm) 2711 / 1303 / 1303
WHEELBASE (mm) 1530
TRACK (Fr / Rr) (mm) 1120 / 1120
WEIGHT WITH 68kg DRIVER (Fr / Rr) 119 / 129
SUSPENSION Double unequal length A-arm. Push rod actuated horizontally oriented spring and damper
TYRES (Fr / Rr) 20x6.5-13 R065 Goodyear / 20x6.5-13 R065 Goodyear
WHEELS (Fr / Rr) 6.0x13, Al rim, Al machined ctr / 6.0x13, Al rim, Al machined ctr
ENGINE HONDA CRF450X
BORE / STROKE / CYLINDERS / DISPLACEMENT 101mm / 62mm / 1 cylinders / 498cc
COMPRESSION RATIO 13:1
FUEL SYSTEM TDU-Developed Fuel Injection System
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 8000
MAX TORQUE DESIGN (rpm) 6500
DRIVE TYPE Chain
DIFFERENTIAL Zexel Torsen University Special
COOLING Aluminum single core radiator, Located in inside of left side pod
BRAKE SYSTEM 3-Disk system
ELECTRONICS Sugoi wiring harness.







Japan

Helsinki

Helsinki Polytechnic Stadia

HPF008 is the latest achievement of Helsinki Polytechnic's 11-member Formula Engineering Team. Under the beautiful appearance of the ultra light body panels hides a full blooded racer. Light weight is a priority in every detail of the car, like the carbon fiber a-arms, magnesium steering gear, multifunctional carbon fiber steering wheel. The naturally aspired Yamaha R6 2008 engine is tuned with loosing a few unnecessary gears and making our own variable length intake system. Engine management is executed with Finnish Tatech system which includes self developed traction control and launch control systems. Maximum power output is 93 hp and 68 Nm of torque. The modified 4-speed gearbox is pneumatically actuated and it can be operated either in semi-auto or full-auto mode. Communication between control units is via CAN-bus and information is gathered with two-way telemetry at any time. The car was made in record time and several hundred test kilometers build confidence in reliability.

Car 4

Finland

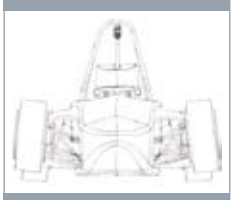
FRAME CONSTRUCTION Steel Tube Spaceframe
MATERIAL Ruukki FORM 600
OVERALL L / W / H (mm) 2650 / 1450 / 925
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1250 / 1200
WEIGHT WITH 68kg DRIVER (Fr / Rr) 111 / 154
SUSPENSION Pull/Push rod actuated, horizontally mounted self developed coilovers
TYRES (Fr / Rr) GoodYear 73x7,0-20,5
WHEELS (Fr / Rr) 7x13 3pc Al-Mg rim
ENGINE Yamaha R6
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42,5mm / 4 cylinders / 599cc
COMPRESSION RATIO 13:1
FUEL SYSTEM Tatech sequential injection system
FUEL 98E
MAX POWER DESIGN (rpm) 10500
MAX TORQUE DESIGN (rpm) 8500
DRIVE TYPE Chain
DIFFERENTIAL Friction type LSD
COOLING Dual Radiators
BRAKE SYSTEM 4-Disk system, 4-piston calipers in front, 2-piston calipers in the rear, electronically controlled brake ballance
ELECTRONICS Multifuctional Steering Wheel, Electropneumatic Shifter, CAN-bus

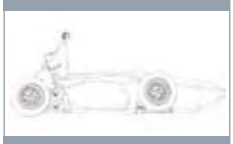
Kaiserslautern

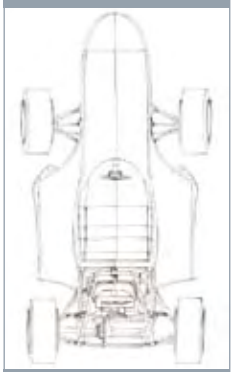
Technical University of Kaiserslautern

Kaiserslautern Racing Team is a first year competitor in the Formula Student series. The air intake system is based on a full variable air intake length and the use of light weight materials. Also a dry sump lubrication system was integrated to the engine because of it's ability to prevent oil-starvation at high g looads. An electrical water pump was installed to ensure sufficient cooling of the engine. In order to be able to achieve maximum performance and driving comfort a custom data acquisition and driver support system had to be implemented based on a 1Mbps CAN system. Besides the standard vehicle parameters additional information about the current vehicle state have to be gathered in order to ensure superior testability of the vehicle. We would like to thank our partners for their trust in our team and their engagement. For further information take a look at www.KaRaT-Racing.de

Car 64







Germany

FRAME CONSTRUCTION monocoque and rear tubular space frame
MATERIAL CFRP, foam core, 25CrMo4
OVERALL L / W / H (mm) 2834 / 1412 / 1120
WHEELBASE (mm) 1700
TRACK (Fr / Rr) (mm) 1262 / 1170
WEIGHT WITH 68kg DRIVER (Fr / Rr) 128 / 192
SUSPENSION double unequal length A-Arms. Pull rod (front) and push rod (rear) actuated horizontally oriented spring and damper
TYRES (Fr / Rr) 160/550 R 13 Hankook F200
WHEELS (Fr / Rr) 6''x13'', 15,3mm offset , 3 piece aluminium rim
ENGINE Modified Suzuki GSX-R 600 K4
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc
COMPRESSION RATIO 12.5:1
FUEL SYSTEM student optimized fuel injection
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 10000
MAX TORQUE DESIGN (rpm) 8000
DRIVE TYPE chain drive
DIFFERENTIAL GKN Visco Lok limited slip
COOLING one side pod mounted self designed raditor with thermostatic controlled electric fan
BRAKE SYSTEM 4-disc system, self designed floating rotors with 220mm front diamater and 210mm rear diameter, adjustable brake balance
ELECTRONICS multifunctional steering wheel, electro-pneumatic shifting system, self-designed CAN bus

Liebhaber gesucht!*

Wenn Sie darauf brennen, Ihre Leidenschaft zum Automobil endlich auszuleben und damit sogar noch Karriere machen möchten, dann gibt es in der Automotivebranche keinen besseren Ansprechpartner als uns. Die Ingenieurgesellschaft Auto und Verkehr ist mit über 3.000 Mitarbeitern einer der führenden Engineering-Partner der Automobilindustrie. Mit unserer Expertise in der Elektronik-, Antriebsstrang- und Fahrzeugentwicklung erhalten unsere Kunden zukunftsweisende Lösungen für kommende Fahrzeuggenerationen. Zu unseren Auftraggebern gehören alle namhaften Automobilhersteller und Zulieferer.

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*Natürlich sprechen wir ausdrücklich Automobilliebhaber und Automobilliebhaberinnen an!

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Karlsruhe
University of Applied Sciences Karlsruhe

After the successful start into the Formula Student in 2007 the team of the University of Applied Sciences is motivated to embellish their position in the new season. About sixty students worked hard on the new concept improving every part of the new prototype. Beside an individual Air intake and exhaust system, the special oil lubrication and a full aluminum chassis suspension are only a few highlights making the F102 so unique. Modern manufacturing processes decrease costs and make the vehicle ready for production run. The technical aspects can only be exceeded by an exciting style making the car look even faster. Furthermore we would like to thank all our partners and fans for their support and we are looking forward to a great and fair competition. Would you like to share your enthusiasm for motorsport with us? So feel free to visit our team in Hockenheim and take a look at Formula Student Germany's next Top-Model.

Car 99

Germany

FRAME CONSTRUCTION Tubular space frame with crash box

MATERIAL S235/S355 and Plascore honeycomb

OVERALL L / W / H (mm) 2750 / 1400 / 1150

WHEELBASE (mm) 1670

TRACK (Fr / Rr) (mm) 1200 / 1149

WEIGHT WITH 68kg DRIVER (Fr / Rr) 137 / 200

SUSPENSION doble unequal length full aluminum A-arms with Pushrod actuated suspension struts (coil over), adjustable in bounce and rebound / low and high speed

TYRES (Fr / Rr) 205/55 R13

WHEELS (Fr / Rr) 6x13, 24mm offset, 1pc Al-Rim / 8x13, -8mm offset, 1pc Al-Rim

ENGINE Modified Honda CBR 600 RR (PC37)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67,0mm / 42,5mm / 4 cylinders / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM stock fuel rail system with 4 primary and 4 secondary injectors

FUEL 95 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE modified gear box, Chain with X-Ring

DIFFERENTIAL clutch pack limited slip with defined preload

COOLING regulator controlled electric waterpump and fan, one sided radiator in left sidepod

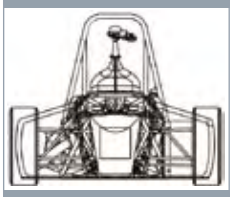
BRAKE SYSTEM 4-Disk sytem with wave brake discs 220mm diameter, dual piston brake calipers, adjustable brake balance

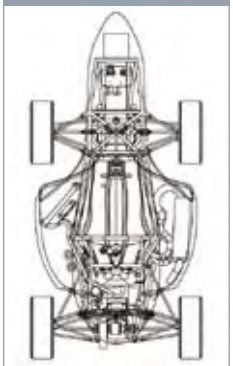
ELECTRONICS Electropneumatic Shifting System and delayed ignition cut-off

Karlsruhe
University of Karlsruhe

KA-RaceIng e.V., the Formula Student team of the KIT (Karlsruhe Institute of Technology) has been founded in late 2006. It currently consists of 58 engineering and business students working towards a common goal: to establish KA-RaceIng among the top teams of the field. After a very successful first season, resulting in the best newcomer award in Hockenheim, we are proud to present our newest entry to the competition: the KIT08. The completely new design car is an improvement to the KIT07 in almost every aspect. All main goals during development, especially significant reduction of weight, higher serviceability and increased driver ergonomics have been achieved. This was, besides constant striving for the best technical solution, only possible by maintaining a high level of communication and teamwork throughout the development process. We would like to thank our supporters in the industry and at the university - their engagement has been crucial to the success of our project.

Car 10





Germany

FRAME CONSTRUCTION Tubular steel space frame with composite members

MATERIAL 15CDV6, Clubman 500 and T45 steel round tubing, CFRP tube

OVERALL L / W / H (mm) 2780 / 1400 / 1112

WHEELBASE (mm) 1600

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 135 / 155

SUSPENSION Pushrod-actuated unequal length A-Arms with adjustable horizontally-oriented springs and dampers with semi-active torsion-type anti-roll bar

TYRES (Fr / Rr) Goodyear D2692 20.0x7.0-13 R075 front and rear

WHEELS (Fr / Rr) 7x13, 22mm offset, one-piece Aluminum Rim front and rear

ENGINE 2003 Honda CBR600F (PC35)

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

COMPRESSION RATIO 13:1

FUEL SYSTEM Student des/built fuel injection system using Bosch MS 4.4 ECU, fully sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE pretensioned 520 chain

DIFFERENTIAL Drexler clutch pack limited slip differential, torque sensitive

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

BRAKE SYSTEM 4-disk system, 220mm rotors, monoblock calipers, brake balance adjustable, ABS system

ELECTRONICS Fully integrated wiring harness, live telemetry via WLAN, multifunctional steering wheel, semi-automatic pneumatic shifting system

Kempten
University of Applied Sciences Kempten

TOMSOI I - top of the mountains, source of infinity - is the name of our car, which is the first one the Infinity Racing Team has ever designed. We are proud of our car as it combines our passionate work and creativity to build a substantial base for our first experiences at the German Formula Student Event. Our Team exists of more than thirty students of the University of Applied Sciences in Kempten (Allgäu region) and stands for grounded friendships, passion and enthusiasm. Together with our partners, who give us their full support, resources and knowledge we realised this great project. Our car represents a grounded base but also includes some technical highlights. One of them is surely our engine management. We determined the characteristic diagram of our engine which helps us to adjust our engine performance. Moreover we built in a board computer for data recording, recalculation and display on a steering wheel mounted LCD-display to be able to control all parameters at any time.

Car 28

FRAME CONSTRUCTION Steel spaceframe with different diameter of tubes

MATERIAL S355 steel round tubing 25x2,5mm; 25x2,0mm; 20x1,5mm

OVERALL L / W / H (mm) 2800 / 1500 / 1050

WHEELBASE (mm) 1750

TRACK (Fr / Rr) (mm) 1370 / 1350

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 210

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

TYRES (Fr / Rr) 195/500-R13, Continental

WHEELS (Fr / Rr) 195/500-R13, Continental

ENGINE 2003 Yamaha R6 4 cylinder

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

COMPRESSION RATIO 12,4:1

FUEL SYSTEM Original fuel system from a Yamaha R6 motorcycle

FUEL gasoline fuel 95/100 Octane

MAX POWER DESIGN (rpm) 9600

MAX TORQUE DESIGN (rpm) 9000

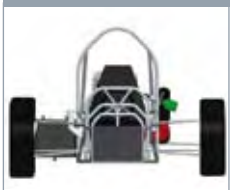
DRIVE TYPE Enuma 520 MRD5 reinforced chain

DIFFERENTIAL sealed, Fiesta based, parallel axle differential, grease filled, torque controll

COOLING One side mounted radiator with electronic controlled high performance electric fan

BRAKE SYSTEM X20Cr13, mounted on nave, 230mm outer diam., 164 inner diam.

ELECTRONICS Completely refitted engine electronics, advanced live-telemetry and logging system, high-speed CAN, multifunctional steering wheel



Germany

Kiel
University of Applied Sciences Kiel

RACEYARD Kiel was founded in August 2005 and quickly grew to about 15 members. After taking a long time to build the right team, the first car was designed and built in only four months (T-KIEL-A 06)! After winning the award for the best Newcomer at FSG 2006 in Hockenheim the team continued to grow, reaching 30 members. The team further established its skills and talent winning the 1st place in the acceleration competition. In 2008 RACEYARD Kiel grew to 40 members, all of whom are extremely motivated to continue the team's success and secure one of the top places at FSG in Hockenheim 2008.

Car 53

FRAME CONSTRUCTION Tubular space frame

MATERIAL 25CrMo4 steel round tubing, 12mm to 25mm diameter

OVERALL L / W / H (mm) 2965 / 1417 / 1023

WHEELBASE (mm) 1680

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 149 / 169

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

TYRES (Fr / Rr) 190/530 R13 AVON A15

WHEELS (Fr / Rr) three-part aluminum, Schmidt Revolution, 13"x7" ET 18

ENGINE Honda CBR600RR (2003,PC37)

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

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Walbro, fuel injection, sequential

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12500

MAX TORQUE DESIGN (rpm) 8300

DRIVE TYPE chain drive

DIFFERENTIAL torque biasing differential. Selfmade housing based on Quaife differential

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM Floating brake disks, Front: 4 piston calipers, Rear: 2 piston calipers, adjustable brake balance bar, brake proportional valve

ELECTRONICS wiring harness, Multifunctional Steering Wheel, electric Shifting System

Germany

Köln

University of Applied Sciences Köln

After competing with the first car in 2007, the Team of UAS Cologne went home, full of great ideas for the new car. Some of them were discarded, but most of them made it to the CC08. The lighter and stiffer frame and the specially designed dampers are some of the highlights. The gas exchange of the new Yamaha R6 engine was recalculated and new camshafts were ground. Former mistakes, like the undersized cooling system or the very high weight of the car were eliminated by clever ideas and recalculation of most of the parts. With this evolutionary redesigned car, we are much more of a competition this year. The team has grown both in number and skill and is eager to prove that the new concepts are capable of bringing us among the top ranking teams. We would like to thank our many supporters and sponsors for sticking with us and without whom this new and beautiful racecar would not have been possible.

Car 90

Germany

FRAME CONSTRUCTION Tubular steel space frame, varying wall thicknesses, fiber carbon body

MATERIAL 1.7734 steel round tubing .7“ to 1.181“ dia. / .4“ thck wet lay-up cfk sheet

OVERALL L / W / H (mm) 2696 / 1326 / 1027

WHEELBASE (mm) 1550

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 172

SUSPENSION Front and Back: Double unequal length A-Arms. Pull rod actuated efficiently orientated spring and damper

TYRES (Fr / Rr) 20.5x6.0-13, Hoosier R25B / 6x13, 10,8mm offset, BBS 3 piece Aluminium rim

WHEELS (Fr / Rr) 20.5 x 7.0-13, Hoosier R25B / 7x13, -1,9mm offset, BBS 3 piece Aluminium rim

ENGINE Modified 2005 Yamaha R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 66mm / 45mm / 4 cylinders / 600cc

COMPRESSION RATIO 12.4:1

FUEL SYSTEM Sequential fuel Injection

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11800

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE Standard Transm., 25mm x 7mm cogged belt

DIFFERENTIAL Visco-Lock limited slip, 120 Nm preload, 2,6 torque bias ratio

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM Calipers: Fr.: 4 piston 25.4 mm diam., Re: dual piston 25.4mm, Discs: non-floating, iron, hub mounted, 200mm front and rear

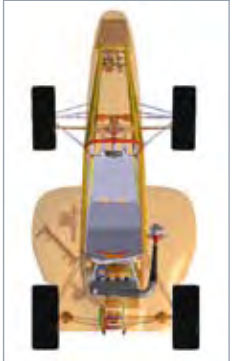
ELECTRONICS Electronic shifting system, all-round memotec data recording, trijekt engine management

Konstanz

University of Applied Sciences Konstanz

The Bodensee Racing Team of the University of Applied Sciences Konstanz was founded a good three years ago initiated by Florian Wagner. With Prof. Dr. Kuchar a patron was found and it didn‘t take long for students infected with racing fever to join the project. In the current season there are 37 students from all departments. At the beginning of May we celebrated our Rollout in an unusual location. On May 8th, 2008 we welcomed numerous sponsors, professors, department heads and other guests for the unveiling of the Iltis 08 on the ferryboat Fontainebleau on the Lake of Constance.The Iltis 08 is the consequent technical derivative of the Iltis 07 focusing on reliability and efficiency.The components used have all proven themselves to be reliable and highly functional in the field and the engine used has been optimized on our test bench for the Formula Student races, forming the solid foundation on which future Iltisses will be built.

Car 34



Germany

FRAME CONSTRUCTION Tubular space frame / CNC rear section Al 7075

MATERIAL St37 round tubing with 25mm OD x 2.5mm/1.75mm/1.5mm Wall / 34mm thk Al sheet

OVERALL L / W / H (mm) 2630 / 1320 / 1240

WHEELBASE (mm) 1570

TRACK (Fr / Rr) (mm) 1180 / 1210

WEIGHT WITH 68kg DRIVER (Fr / Rr) 156 / 156

SUSPENSION Double unequal length A-Arm. Pull rod actuated diagonally oriented airdamper

TYRES (Fr / Rr) front: 20x6x13, Hoosier R25A rear: 20x8x13, Hoosier R25A

WHEELS (Fr / Rr) front: 6x13, 50mm offset, 3 pc AlMg Rim; rear: 8x13, -75mm offset, 3 pc AlMg Rim

ENGINE Suzuki GSX-R 600 K1-K3

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

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Student des/built ,fuel injection, sequential

FUEL 95 octane

MAX POWER DESIGN (rpm) 12200

MAX TORQUE DESIGN (rpm) 8700

DRIVE TYPE 06B-03 Triple chain

DIFFERENTIAL Clutch pack limited slip differential, Drexler Motorsport special SAE unit

COOLING Single side pod mounted radiators with thermostatic controlled electric fan

BRAKE SYSTEM Floating, steel, hub mounted, 246mm outer diam., 170mm inner diam., Ap Racing 14mm bore front-14mm bore rear adjustable by bar

ELECTRONICS Walbro ECU-A1/FSAE Application, fully programmable, 3-D map, RPM and Throttle position, 40 deg BTDC max advance

Lisboa
Technical University of Lisbon - IST

The Projecto FST team will participate for the first time in FSG this year, with the FST-03. To our 10 team members that built the car we add 6 new team members that will go to the competition to gain experience for the next generation of the team. Our team worked hard through this year so that we can build the FST-03. One of our objectives is to have a reliable car and at the same time lighter than it´s predecessor. For the first time the team will have electronic modules that were developed by our team, in areas like engine, data/telemetry, a dash panel and an electronic system for the gearshifts. Since our team is small, we tried to focus every member on projects and let the organizational level handle all non-technical issues. Along with the construction of the new car the team has been very active on several events in order to satisfy sponsors and promote formula student among the incoming generations. Finally we want to thank our sponsors for all their support.

Car 50

FRAME CONSTRUCTION Tubular Space Frame

MATERIAL AISI 4130

OVERALL L / W / H (mm) 2827 / 1450 / 1214

WHEELBASE (mm) 1650

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 132 / 161

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

TYRES (Fr / Rr) 20.0“x7.2“ R13, Avon A45

WHEELS (Fr / Rr) 8.2“x13“, 14 offset, Carbon Fiber Rims with an 7050 Aluminium Center

ENGINE 2001 Honda CBR 600 F4i

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 43mm / 4 cylinders / 599cc

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Student designed/built tank & fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8000

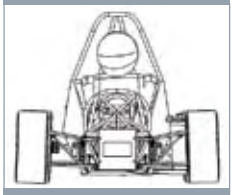
DRIVE TYPE 520 chain

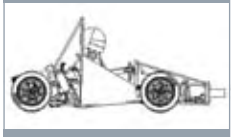
DIFFERENTIAL Torsen Differential FSAE Special, 4:1 bias ratio

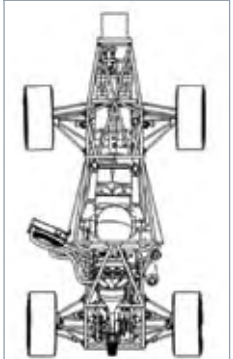
COOLING Single radiator mounted in the sidepod, with electric fan actuated automatically or manually

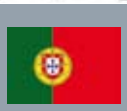
BRAKE SYSTEM 3-Disk System,Fixed,Stainless Steel, hub mounted, 220mm o.diam.;rear Fixed, Stainless Steel, diff. mounted, 240mm o.diam.

ELECTRONICS Data/telemetry Self developed, an module that controls injection table, dash panel and a electronic shifting









Portugal

Loughborough
Loughborough University

LUMotorsport is entering its 6th year of competition and is now established as a consistent top ten finisher within Formula Student UK. The LUMotorsport team comprises 15 highly dedicated students, for which both vehicle design and construction falls outside of the requirements of academic study. This structure is supported by many sponsors and partners, who’s efforts are greatly appreciated. The design of LFS08 is focused upon optimisation rather than invention, tuning the strengths of LFS07, whilst addressing the weaknesses. Consequently, vehicle dynamics have been modified to suit the ever tighter tracks of recent events, through adjustments to both wheelbase and front track. Furthermore, LFS08 sees a shift to the use of structural composite materials within the wheels and wishbones, enhancing the teams knowledge in preparation for increased adoption on future vehicles. It is with LFS08 that LUMotorsport believes that success can be achieved within both FS UK & Germany.

Car 12

FRAME CONSTRUCTION Tubular spaceframe, with glass fibre stiffening panels

MATERIAL T45-Steel of varying OD and thickness, epoxy bonded pre-preg glass fibre panels

OVERALL L / W / H (mm) 2800 / 1520 / 1165

WHEELBASE (mm) 1575

TRACK (Fr / Rr) (mm) 1300 / 1130

WEIGHT WITH 68kg DRIVER (Fr / Rr) 136 / 162

SUSPENSION Carbon fibre unequal length A-Arms. Pullrod actuated 3-way adjustable Reiger damper units with Hyperco springs

TYRES (Fr / Rr) 20.5x7.0-13 Hoosier R25A / 20.0x7.5-13 Hoosier R25A

WHEELS (Fr / Rr) Custom manufactured 2-piece carbon fibre, 8.0 x 13, -45mm offset

ENGINE Honda CBR600RR

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

COMPRESSION RATIO 12:1

FUEL SYSTEM Powercommander, 4 injector sequential system, housed within a custom plenum

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 4000

DRIVE TYPE Chain

DIFFERENTIAL Quaife QDF7ZR Torsen style differential

COOLING Single side mount custom high flow radiator with fan assist and glass fibre duct

BRAKE SYSTEM 4-disk system, floating bell (0.5mm float) mounted rotors 229mm dia front / 204mm dia rear, outboard Brembo 2-pot calipers

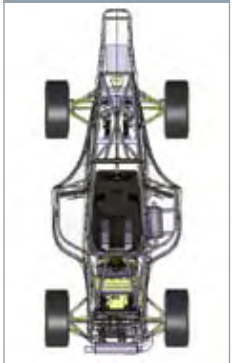
ELECTRONICS Custom loom, PCB mounted fuses and relays, self diagnostic housed in waterproof GFRP enclosure, multi-function steering wheel

United Kingdom

Mittweida
University of Applied Sciences Mittweida

In 2007 influenced by the spirit of famous automotive pioneers who studied at the University of Applied Science Mittweida once, a group of dynamic and highly motivated students came together in order to put themselves and their skills to the test, by facing the challenge of automotive engineering at this old-established university. Thenceforward the team has undertaken every effort to realise their ideas and visions. The will to prove the ability to compete with other collegiate racing teams from all over the world is reflected by the vehicle which is based on three main design objectives: safety, reliability and maintenance convenience. These aspects incorporate various innovative and seminal elements under consideration of the required regulations, thus building an excellent foundation for the upcoming event. So are you curious how the symbiosis of these objectives looks like? Then we would be pleased to welcome you in our pit at the Hockenheimring or at www.tm-motorsport.net.

Car 32



Germany

FRAME CONSTRUCTION Tubular space frame with carbon fibre body panels.

MATERIAL S235JR mild steel tube joint by use of TIG welding techniques.

OVERALL L / W / H (mm) 3430 / 1281 / 1200

WHEELBASE (mm) 1945

TRACK (Fr / Rr) (mm) 1044 / 1085

WEIGHT WITH 68kg DRIVER (Fr / Rr) 116 / 232

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

TYRES (Fr / Rr) Michelin 16/53 R13 / Michelin 16/53 R13

WHEELS (Fr / Rr) ATS 7,0x13 Al Rim / ATS 7,0x13 Al Rim

ENGINE Honda CBR 600 RR PC 37

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

COMPRESSION RATIO 12,0:1

FUEL SYSTEM Student des/built sequential fuel injection system controlled by trijekt ecu.

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 8120

DRIVE TYPE Chain drive

DIFFERENTIAL Self locking GKN Visco-Lok with limited slip.

COOLING Twin side pod mounted radiators with electric fans controlled by trijekt ecu.

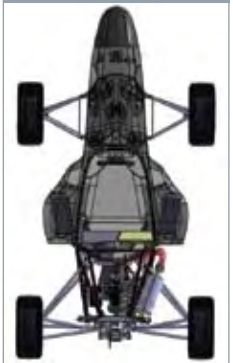
BRAKE SYSTEM 4-Disc Brake System featuring braking rotors with a 220 mm diameter, 2 brake actuators with bias bar and brembo 2-pot calipers.

ELECTRONICS Wiring harness sealed to trijekt ecu and Electromagnetic Shifting System.

Montreal
University of Québec - ETS

Our team is compromised of 15-20 engineering students. We take great pride in the fact that the entire vehicle is designed and fabricated by our team in our facilities in order to learn the most from the engineering experience. We are very well known in the world of FSAE for winning design events and making racecars with a high standard of quality, workmanship and attention to details.

Car 78



Canada

FRAME CONSTRUCTION Carbon Fiber / Epoxy Monocoque

MATERIAL Carbon fiber, Closed cell core

OVERALL L / W / H (mm) 2286 / 1422 / 1016

WHEELBASE (mm) 1530

TRACK (Fr / Rr) (mm) 1219 / 1219

WEIGHT WITH 68kg DRIVER (Fr / Rr) 105 / 115

SUSPENSION Double unequal length A-Arms. Push rod actuated Renton Springs/Cane Creek Double Barrel Dampers

TYRES (Fr / Rr) 6.0/18.0-10 Hoosier R25 / 6.0/18.0-10 Hoosier R25

WHEELS (Fr / Rr) 6.0x10, Aluminum 2 piece ETS Mags

ENGINE Yamaha WR 450 F

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 63mm / 1 cylinders / 450cc

COMPRESSION RATIO 12.5

FUEL SYSTEM Custom Injection System

FUEL 94 octane

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 7500

DRIVE TYPE Chain Drive

DIFFERENTIAL LSD

COOLING Side Pod mounted radiators

BRAKE SYSTEM Floating Rotors

ELECTRONICS ETS ECU

Tognum

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c) Oedipus

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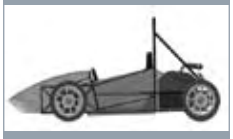
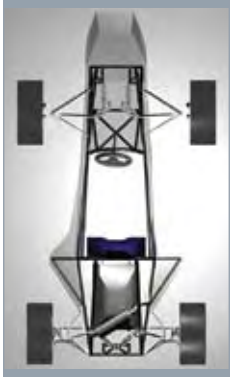
Moscow
Moscow State Technical University (MAMI)

FS-MAMI Team is a project started in early 2007 by Moscow Technical University MAMI to participate in Formula Student Series. FS MAMI Team consists of enthusiastic students from a variety of backgrounds including mechanical, design and electrical engineering as well as management and accounting students, each working in their specialized fields. The main aims of the team for the 2008 competition are to prepare our first car, to accumulate experience and to represent MAMI university by the worthy performance. However, we tried to apply technically skilful and efficient solutions during developing and building of our car both for engineering and design matters.

Car 55





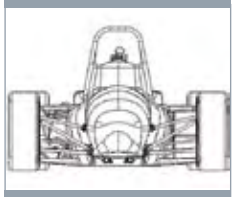
FRAME CONSTRUCTION Tubular space frame
MATERIAL High-strength steel
OVERALL L / W / H (mm) 2500 / 1500 / 1150
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1300 / 1150
WEIGHT WITH 68kg DRIVER (Fr / Rr) 122 / 182
SUSPENSION Double unequal length A-Arm. Fr: Push rod actuated horizontally oriented spring and damper; Rr: Direct acting inclined spring and damper
TYRES (Fr / Rr) 205x60 R13, Hoosier R25A / 235x60 R13, Hoosier R25A
WHEELS (Fr / Rr) 5.5x13, 35mm offset, 3 pc Al Forged / 5.5x13, 35mm offset, 3 pc Al Forged
ENGINE 2001 Honda CBR 600F4I 4 cylinder
BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 43.0mm / 4 cylinders / 599cc
COMPRESSION RATIO 12:1
FUEL SYSTEM Denso, high pressure fuel injection
FUEL 98 RON Optimax fuel
MAX POWER DESIGN (rpm) 9000
MAX TORQUE DESIGN (rpm) 7000
DRIVE TYPE Chain
DIFFERENTIAL Limited slip Torsen
COOLING One side pod mounted radiator with thermostatic controlled electric fan
BRAKE SYSTEM 4-Disk system with 230 mm drilled disks

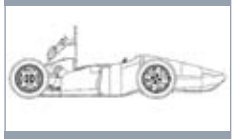
Russia

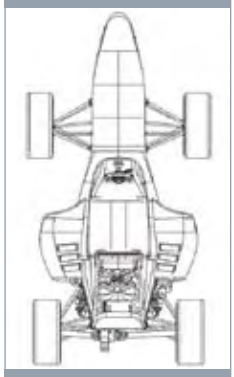
München
Technical University of München

The TUfast racing team was founded in 2002, therefore we are celebrating six years of TUfast and the fifth Formula Student race car. The next nb generation is the nb08. It combines lightweight and speed, exceptional handling characteristics as well as new data processing techniques. It is one of the few Formula Student Race Cars with carbon fiber Monocoque, carbon fiber rims and carbon ceramic brake discs, a self-made engine control unit using flex ray for data processing and a completely modified 4-cylinder Kawasaki engine. 50 students developed and build the nb08 within 9 months a short period of time for a great car. We are glad to present our work, feel free to visit us in our pit, we are pleased to answer your questions and discuss about the car.Enjoy the fascination of motorsports – we do!

Car 31







FRAME CONSTRUCTION Carbon fibre monocoque
MATERIAL Carbon fibre
OVERALL L / W / H (mm) 2820 / 1464 / 953
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1260 / 1160
WEIGHT WITH 68kg DRIVER (Fr / Rr) 115 / 138
SUSPENSION Double unequal length A-Arm. Pullrod actuated cane creek double barrel dampers and Eibach springs
TYRES (Fr / Rr) 20.5x7.0-13 Hoosier R25B / 20.5x7.0-13 Hoosier R25B
WHEELS (Fr / Rr) Self designed carbon fibre rims, 13x6.0 / 13x7.0
ENGINE Modified Kawasaki ZX-6R 2007
BORE / STROKE / CYLINDERS / DISPLACEMENT 64.0mm / 63.0mm / 4 cylinders / 599cc
COMPRESSION RATIO 13.3/1
FUEL SYSTEM Self designed sequential fuel injection. Injection and ignition controlled by TUfast ECU
FUEL 100 octane unleaded gasoline
MAX POWER DESIGN (rpm) 12000
MAX TORQUE DESIGN (rpm) 10000
DRIVE TYPE Kawasaki ZX-6R Gearbox
DIFFERENTIAL rev sensitive self locking differential, adjustable preload
COOLING left side pod mounted radiators with electric fan
BRAKE SYSTEM Self designed carbon ceramic rotors, 220mm dia., 2x4/2x2 piston Brembo calpiers, APacing master cylinders, adjustable via bias bar
ELECTRONICS Wiring harness sealed to IP67, FlexRay-Bus communication for all TUfast developed control units: EMS, Datalogging & steering wheel

Germany

München

University of Applied Sciences München

The FHM Racing Team of the University of Applied Sciences Munich was founded in summer 2005 and is now consisting about 60 college members. We participate this year for the third time at the Formula Student Event in Hockenheim. Furthermore in September 20-22 we will take part at the Formula SAE Italy Event at the Ferrari Fiorano Race-track. In the last season we participated with our PW2.07 successfully at the Formula SAE Australasia Event with a good sixth place overall and we won the Acceleration-Event with a time of 4.02 sec. Our first racecar, the PW06 was built in in less than seven months and started its first race at the Formula Student Event in August 2006 in Hockenheim. Even as a newcomer, it was not necessary for our orange-black racer to hide from the competitors. This year with our PW3.08 we will try to maintain the success through our passion. With a new monocoque structure and other engineering techniques we reduce the total weight compared to the PW2.07. PASSION WORKS

Car 38

FRAME CONSTRUCTION Front: Carbon fibre mono-coque, Rear car section: Carbon fibre

MATERIAL Top layer SGL CE-8023-200-45; main structure DU CE-1222-255-37; core Nomex 6mm

OVERALL L / W / H (mm) 2764 / 1396 / 1010

WHEELBASE (mm) 1600

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

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

SUSPENSION Front: Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper, Rear: Double unequal length A-Arm. Push rod actuated spring and damper

TYRES (Fr / Rr) 160/530 R13 A15 Avon

WHEELS (Fr / Rr) 6.5x13, 10.8 mm offset, Al wheel center

ENGINE Modified Honda CBR600F (PC35)

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 43.0mm / 4 cylinders / 599cc

COMPRESSION RATIO 9:1

FUEL SYSTEM Student des./built fuel system, injection valves original Honda CBR 600 F, sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8000

MAX TORQUE DESIGN (rpm) 7500

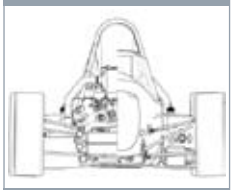
DRIVE TYPE 4 gear sequential with chain drive

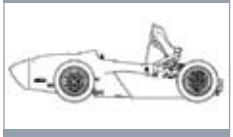
DIFFERENTIAL Drexler Formula Student clutch pack limited slip, adjustabe preload

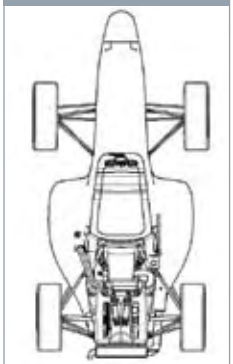
COOLING Single (right) side pod mounted radiator with ecu controlled electric fans

BRAKE SYSTEM 4-Disk system, floating, stainless steel, hub mounted Front: 220mm outer, 168mm inner diam., Rear: 200mm outer, 160mm inner diam.

ELECTRONICS wiring harness sealed to IP67, multifunct. steering wheel, electropneumatic gear shift, selfdes. telemetry syst., electr. relays







Germany

Mumbai

K. J. Somaiya College of Engineering

We have a dream, to take India to the podium of International Student Formula Racing. After the calm & prudent introduction in 2007, we wish to make a loud comeback in 2008. Inspire, Innovate & Integrate are principles that bind the soul of Orion Racing India. Breaking barriers of class-room teaching, FSG has given us a taste of the real world. Jug-gling classes by day & project by night, we've extracted the maximum from limited resources. After analysis & iterations, we've designed mechanical systems based on simplicity, economy & ergonomics. Sup-ported by companies like Honda, we've made relentless efforts to make this year's car a reliable, light & responsive racer. We have incorporated novel designs while sticking to basic engineering principles, includ-ing in-house advanced electronic systems like Paddle Shifting & Data Acquisition. Integrating the best & eliminating the worst of 2007, we represent a stronger, more confident team, ready to forge our mark on the race track!

Car 21

FRAME CONSTRUCTION Tubular Space Frame

MATERIAL AISI1020 steel round tubing 25.4 mm OD (2.65mm/1.8mmThickness)

OVERALL L / W / H (mm) 2350 / 1450 / 1125

WHEELBASE (mm) 1700

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 120 / 180

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

TYRES (Fr / Rr) 180x60 R13, Ultima XT Tubeless, JK Tyre

WHEELS (Fr / Rr) 7x13, +25mm offset, 3 pc Mag Rim

ENGINE 2001 Honda CBR 600 F4i

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

COMPRESSION RATIO 12:1

FUEL SYSTEM Stock Fuel Rail, Injectors. Batch Injec-tion

FUEL Octane 95 Unleaded Gasoline

MAX POWER DESIGN (rpm) 12500

MAX TORQUE DESIGN (rpm) 10500

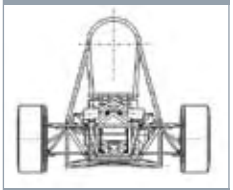
DRIVE TYPE DID 525 HV pitch 15.875mm Chain drive

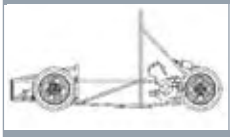
DIFFERENTIAL Zexel Torsen Limited Slip differential TBR: 4:1

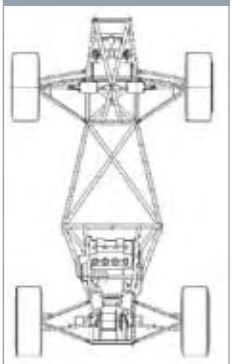
COOLING Twin side pod mounted radiators with electric fans

BRAKE SYSTEM 4-Disc System,self developed rotors with 230mm.dia,adjustable brake balance,front 4 piston fixed,rear 2 piston floating calipers

ELECTRONICS LCD display on steering wheel,Solenoid actuated Paddle Shifting of Gears, In-house Data Acquisition system.





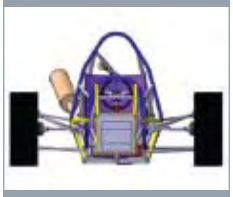


India

Nevers
Institute of Automotive and Transport Engineering

The ISAT University, which is the only university specialised in automotive and transport in France, is located at few kilometers from the Nevers Magny-Cours Circuit. The 2008 team is composed by 15 students in mechanical engineering split up into six main disciplines: Structure, Vehicle dynamics, Engine, Drivetrain, Electronics and Marketing. The Formula Student Challenge at ISAT University is taken up by the 3rd year engineering students and has to be completed in one year. This is the fifth year in a row that ISAT takes part in the challenge. Thanks to the former teams' feedback, we were able to establish our design and thoughts based on the errors made and results we have had in the past years. Thus, we hope, we managed to produce a single-seater car that will perform well in the different events during the competition at Hockenheim. Our basic strategy is one of steady evolution learning from our past mistakes and not revolution.

Car 58



France

FRAME CONSTRUCTION Alloy steel tube space frame with glass fibre body

MATERIAL BSEN 10210 Pt1 S355J2H alloy steel

OVERALL L / W / H (mm) 2855 / 1410 / 1135

WHEELBASE (mm) 1650

TRACK (Fr / Rr) (mm) 1250 / 1230

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 160

SUSPENSION Unequal length A-Arms. Direct acting combined Bos-engineering spring/damper units

TYRES (Fr / Rr) AVON 6.2/20.0-13 A45 compound

WHEELS (Fr / Rr) O.Z Racing aluminium 13"x6" - offset 12mm

ENGINE 2005 Yamaha WR450 single

BORE / STROKE / CYLINDERS / DISPLACEMENT 95.0mm / 63.4mm / 1 cylinders / 449cc

COMPRESSION RATIO 13.5:1

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

FUEL 100 octane petrol (Shell Optimax)

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE Chain (520 thread)

DIFFERENTIAL Limited slip differential Torsen T2 pignons, 2 half aluminium 7075 casings

COOLING One LIGIER car radiator mounted on the right side pod

BRAKE SYSTEM 4 Brake discs and rotors Beringer (193mm for break disc)

ELECTRONICS Screen behind the steering wheel

Offenburg
University of Applied Sciences Offenburg

The Black Forest Formula Team from UAS Offenburg founded in 2004, is working hand in hand with the BA Horb since last year. This year the team strength is about 20 members, distributed nearly equal to both locations. The UAS Offenburg and BA Horb offers the whole range of branches for a project like that, from mechanical engineering to business administration, media engineering just as well as electrical engineering. So we are in favour to have all competences that a team needs.The Black Forest Formula team which is now participating the fourth time, retains to its roots to build an absolutely reliable racecar, so the car for 2008 has also, untypical for Formula Student cars, long wheelbase in consequence of keeping the front suspension in front of the drivers' feet. We are looking forward to the events this year and hope to attract interest with our "unconventional" handsome racing car. At this point we want to thank all our sponsors for their support that make this possible!

Car 24

Germany

FRAME CONSTRUCTION Steel tube space frame with sandwich floor panels

MATERIAL EN 1.4301

OVERALL L / W / H (mm) 3000 / 1600 / 1100

WHEELBASE (mm) 2100

TRACK (Fr / Rr) (mm) 1400 / 1340

WEIGHT WITH 68kg DRIVER (Fr / Rr) 180 / 220

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper units. Adjustable in compression and in rebound range (low and high speed)

TYRES (Fr / Rr) TOYO Proxes R888 185/60 13, TOYO Proxes R888 205/60 13

WHEELS (Fr / Rr) BBS 6"x13", 10,8mm offset, 3pc Al Rim, BBS 8"x13", 10,8mm offset, 3pc Al Rim

ENGINE Suzuki GSX-R 600

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

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Student des/built ,fuel injection, sequential

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 10000

DRIVE TYPE chain

DIFFERENTIAL Torsen

COOLING right side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system with 256mm diameter, adjustable brake balance, Wilwood calipers

ELECTRONICS wiring harness sealed and modified for Walbro ECU

Osnabrück

University of Applied Sciences Osnabrück

The Ignition Racing Team at the UAS in Osnabrueck (IRT) was founded in June 2006 by 15 motor sport enthusiast students. Today the team comprises 64 students with degree courses in engineering and business sciences.This now is our second year in Formula Student and we again developed an exceptional vehicle. After our last year's success with our first car, the IR07-Red Diamond, the Team spent a lot of work and enthusiasm to make the IR08-Black Onyx become real. Alongside much manual work the most modern technologies, such as vacuum assisted processes were used to build the IR08-Black Onyx. To contract with our last year's car, we again made the structure of the Body according to the name – Black Onyx. On the one hand 'Onyx' is a material which is used for jewellery and on the other, the black mineral 'Onyx' is used for composites. Exactly like the car – a jewel and also a Carbon/ Aramid Sandwich.This year we are heading for a Top Ten position in the Formula Student Germany.

Car 67

FRAME CONSTRUCTION Monocoque with bolted roll hub / power train sub frame

MATERIAL Carbon- Aramid- Sandwich / CrNiMo 4 Steel

OVERALL L / W / H (mm) 2770 / 1390 / 960

WHEELBASE (mm) 1650

TRACK (Fr / Rr) (mm) 1220 / 1195

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

SUSPENSION Adjustable in compression; Front: Double unequal length carbon A-Arm. Push rod actuated horizontally oriented monoshock system with torsionbar; Rear: doubleshock with torsionbar

TYRES (Fr / Rr) 20.5 x 6.0 - 13 Hoosier R25A / 20.5 x 7.0 - 13 Hoosier R25A

WHEELS (Fr / Rr) BBS 6.0 x 13 Formula ADAC/ BBS 7.0 x 13 Formula ADAC

ENGINE SUZUKI GSX-R600K6 / Model 2006

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

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Original SUZUKI dual injection system

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 9000

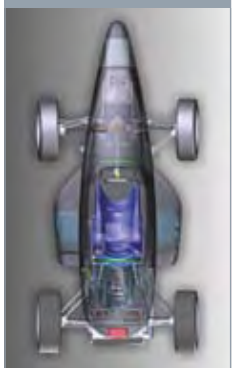
DRIVE TYPE Chain drive

DIFFERENTIAL Quaife Torsen limited slip differential

COOLING Twin side pod mounted radiators with electric fans, additional electric water pump

BRAKE SYSTEM Perforated Rotors with 220mm diameter, AP Racing 4 pistons front calipers, 2 pistons rear calipers, adjustable break balance

ELECTRONICS ECU Data logging, Elecrtomagnetic shifting system, WLAN, exhaust gast temperature control, Multifunctional carbon Steering Wheel



Germany

Oxford

Oxford Brookes University

The Oxford Brookes Racing (OBR) ISIS08 is an entirely different concept from previous cars, with a steel-carbon hybrid chassis and single cylinder engine making it the lightest car ever built by OBR. Extensive tyre development has been carried out with full back-to-back track testing using a FLIR infrared (IR) thermal-imaging camera. OBR's own in-house lap simulation facility has been used to set all major parameters based on performance indexing. A unique prop shaft arrangement has been employed allowing the engine to be mounted longitudinally. Suspension geometry has been analysed using both Susprog and ADAMS with recent studies conducted on a (K &C) test rig. A KTM 530 510cc single cylinder SI engine is used with an electronic fuel injection (EFI) conversion and exhaust modification. Magneti Marelli electronics system features a student-designed CAN-bus with FMEA (Backup system). Carbon fibre bodywork developed with CATIA V5 provides racing aesthetics.

Car 8

FRAME CONSTRUCTION Steel space frame with stressed carbon fibre panels

MATERIAL Mild steel tubing, panels with 12.7mm thick core and 1mm thick skins

OVERALL L / W / H (mm) 2649 / 1384 / 965

WHEELBASE (mm) 1530

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 111 / 130

SUSPENSION Double unequal length A-Arm. Push rod actuated spring and damper (coil over). Damper adjustable in compression and rebound. Adjustable front and rear anti-roll bars

TYRES (Fr / Rr) 20.0x7-R13 D2691 Goodyear Eagle / 20.0x7-R13 D2691 Goodyear Eagle

WHEELS (Fr / Rr) 3 pc Al Rim 7" x 13" -31mm offset / 3 pc Al Rim 7" x 13" -2mm offset

ENGINE KTM EXC-R 530 Single Cylinder

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

COMPRESSION RATIO 11.9:1

FUEL SYSTEM Magneti Marelli system, Inlet runner located injector. Submerged pump in ATL bladder

FUEL 100 Octane unleaded gasoline

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 7200

DRIVE TYPE Prop shaft from gearbox to differential.

DIFFERENTIAL Polaris spool differential from sportsman 800 ATV

COOLING Twin OEM radiators from KTM 530 motorcycle

BRAKE SYSTEM Outboard front and rear drilled discs with AP motorcycle calipers. Driver adjustable balance

ELECTRONICS Student designed CAN-bus featuring Magneti Marelli hardware, over 40 logged sensors

United Kingdom

Paderborn
University of Paderborn

The UPBracingTeam is proud to present its second year car the PX 208. Still our team is facing the requirements with students from different faculties. Thanks to this and a raised effort from everybody we are sure to top our last year's result. Other than our first vehicle this car features a 4-cylinder Suzuki GSR 600 engine which we modified to run on E-85. Several other modifications led us to a lowered mass center of the engine and we are optimistic to be a top player regarding the engines output. We were furthermore able to lower the weight from 316 kg to approx. 226kg by a lighter frame, lighter unsprung masses and an overall weight reduced construction. Regarding the performance this car is at least two steps in front of the PX 207. We are sure that we created a very competitive product that will turn some heads. We could not have realized this without our sponsors and supporters which raised their engagement even further. They help us living and creating our dreams.

Car 27

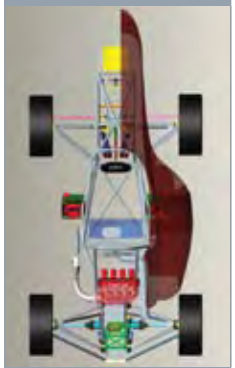
Germany

FRAME CONSTRUCTION tubular space frame
MATERIAL 15CDV6
OVERALL L / W / H (mm) 3060 / 1385 / 1071
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1250 / 935
WEIGHT WITH 68kg DRIVER (Fr / Rr) 131 / 168
SUSPENSION double wishbone; horizontally oriented Koni damper and J&R spring
TYRES (Fr / Rr) AVON 6 x 13, R225 / Avon 8 x 13, R225
WHEELS (Fr / Rr) BBS 6 x 13 / BBS 7.5 x 13
ENGINE Modified Suzuki GSR 600
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinders / 599cc
COMPRESSION RATIO 14.2/1
FUEL SYSTEM Open-Source MeagSquirt system
FUEL E - 85
MAX POWER DESIGN (rpm) 10000
MAX TORQUE DESIGN (rpm) 8000
DRIVE TYPE Chain drive
DIFFERENTIAL Drexler limited slip differential
COOLING side mounted racing radiator with fan
BRAKE SYSTEM 4-Disk system with 220mm diameter, adjustalbe brake balance, front 4 piston rear 2 piston AP Racing calipers
ELECTRONICS wiring harness by Phoenix Contact, multifunctional steering wheel, Electropneumatic Shifter, 2-D live-telemetry system

Padova
University of Padova

Ciao! We are the Race UP Team, from University of Padova, Italy. This is our first time out of our country and we are so proud about that. Our car MG0308 (number 16) is the evolution of the previous one, with an almost totally modified frame to increase torsional stiffness, a new brake system and lighter solutions in every part of the vehicle. As far as design concerns, we focused on the importance of data acquisition campaign to pertain loads in multiple stress conditions, in order to better dimension the suspension system; the cockpit has been designed following ergonomic solutions. Our 3 years old team is made of around 20 people with different skills - we work together everyday with one heart and one goal! Our secret is: trusting in each other and, above all, PASSION! We'd love to thank our sponsors and supporters: without them our work would be pointless and impossible. Race UP team is looking forward to meet new friends – come and visit at www.raceup.net! MIND THE SHARK !

Car 16



Italy

FRAME CONSTRUCTION Tubular steel frame with sheet metal mid section
MATERIAL 25CrMo4
OVERALL L / W / H (mm) 2686 / 1163 / 1279
WHEELBASE (mm) 1630
TRACK (Fr / Rr) (mm) 1260 / 1230
WEIGHT WITH 68kg DRIVER (Fr / Rr) 142 / 161
SUSPENSION Front: double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper. Rear: pull rod actuated, horizontally oriented spring and dumper.
TYRES (Fr / Rr) 6.2/20.0-13,A45, Avon / 7.2/20.0-13,A45,Avon
WHEELS (Fr / Rr) 7 inch wide, O-Z Racing - Aluminium/ 7 inch wide, O-Z Racing - Aluminium
ENGINE 2006 Kawasaki ZX-6RR 4 cylinder
BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 43.0mm / 4 cylinders / 599cc
COMPRESSION RATIO 13,5:1
FUEL SYSTEM Electonic injection.Variable intake manifold lenght.
FUEL 98 octane
MAX POWER DESIGN (rpm) 12000
MAX TORQUE DESIGN (rpm) 10000
DRIVE TYPE chain - pitch: 15,875 mm.
DIFFERENTIAL Torsen® self-locking differential F-SAE University Special - TBR: 2,6:1
COOLING Twin side pod mounted radiators with thermostatic controlled electric fans
BRAKE SYSTEM 4-Disks system, hub mounted rotors, 220 mm outer diameter, masters cylinders with driver adjustable bias wheel, 4 calipers
ELECTRONICS Multifunctional steering wheel

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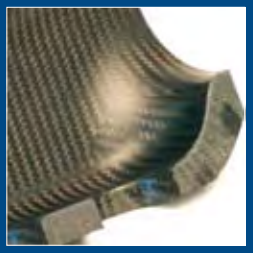

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Patras
University of Patras

This is the first participation of University of Patras Racing team to FSG competition. University of Patras is the first Greek university that has been involved into FSAE series competitions for six successive years now. Experience and know-how have been gained from all previous years that allow us to face the FSG competition. Our car's size, improved packaging and in combination with lower total weight, gives enhanced agility and adaptation to the requirements of the track. Simple and reliable solutions are promising successful completion of all the dynamic events. Our team seeks new experience from the strong competition of the FSG and explores new limits. We would like to thank University of Patras, Laboratory for Manufacturing Systems and Automation, along with our sponsors for their valuable technical and financial support.

Car 86

Greece

FRAME CONSTRUCTION Steel tubes space frame

MATERIAL Chromoly 4130H Steel

OVERALL L / W / H (mm) 2590 / 1574 / 1247

WHEELBASE (mm) 1530

TRACK (Fr / Rr) (mm) 1210 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 124 / 144

SUSPENSION Unequal length A-Arms. Fox DHX 5.0 spring/damper units installed above chassis, actuated via push-rods

TYRES (Fr / Rr) 160/530 R13 Silverstone FTZ Sport Slick/160/530 R13 Silverstone FTZ Sport Slick

WHEELS (Fr / Rr) 6x13,-6mm offset, AlSi7Mg aluminum alloy/ 6x13,-6mm offset, AlSi7Mg aluminum alloy

ENGINE Modified 2003 Yamaha XT600E (3AJ)

BORE / STROKE / CYLINDERS / DISPLACEMENT 95mm / 84mm / 1 cylinders / 595cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Haltech E6X, sequential injection, direct ignition

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE 5 speed sequential gearbox

DIFFERENTIAL Modified Torsen T1 LSD University Special

COOLING Air-cooled

BRAKE SYSTEM 2x220mm drilled rotors at front, 1x256mm differential-mounted drilled disc at rear, 3xBrembo 2-piston calipers, Tilton balance bar

ELECTRONICS Electromagnetic gear shifting system, Vapor Trail Tech dashboard

Ravensburg
University of Cooperative Education Ravensburg

„Ay caramba" – That's what a certain comic character might say looking at the all new BART08. Being the third racecar designed and manufactured in Ravensburg, once again major design and performance improvements could be realized. A tight schedule was applied, in order to hit the track long before the events, since testing knowledge and reliable driving skills can be the edge for the win. After the energetic appearance of the exhilarating cars body shell, the most eye-catching feature has to be the shiny aluminum rear frame, connected to the load bearing engine. Consistent use of carbon fibre and state of the art FEA tools throughout the package were a major goal to loose weight and still enhance the performance. The cars ambitious electronics include electro-pneumatic shifting, multifunctional steering wheel as well as real-time car data acquisition via WLAN to evaluate our cars performance. Considering the cars capabilities it's now up to our drivers to finish Top 10.

Car 25

Germany

FRAME CONSTRUCTION tube-frame with rear-structure and engine as load-bearing element

MATERIAL stainless steel main structure, aluminum rear structure

OVERALL L / W / H (mm) 2812 / 1431 / 1081

WHEELBASE (mm) 1600

TRACK (Fr / Rr) (mm) 1200 / 1100

WEIGHT WITH 68kg DRIVER (Fr / Rr) 151 / 158

SUSPENSION Double A-Arms (carbon/aluminum compound) with unequal length, front: pull-rods - back: push-rods. Cane Creek „Double Barrel" dampers adjustible in compression and rebound.

TYRES (Fr / Rr) 178x54 R13 Hoosier

WHEELS (Fr / Rr) BBS Racing rim bed with custom designed center-lock rims

ENGINE 2003 Yamaha R6 4-stroke

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

COMPRESSION RATIO 12.4:1

FUEL SYSTEM genuine Yamaha sequential fuel-injection and single ignition system

FUEL 98 Octane gasoline

MAX POWER DESIGN (rpm) 10200

MAX TORQUE DESIGN (rpm) 6200

DRIVE TYPE chain drive

DIFFERENTIAL drexler motorsport multi-disc differential

COOLING heat exchange radiator mounted in right sidepod with additional electric fan

BRAKE SYSTEM 4-Disk system, fr: TRW rotors 240mm with Wilwood GP 320, re: „Braking" 220mm rotors with Brembo P32 G calipers, adj. brake-balance

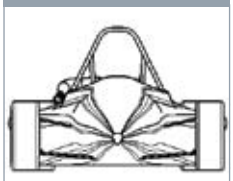
ELECTRONICS self designed gear-, steering wheel- and sensor-ECU´s, CAN-bus connected, electropneumatic shifting, real-time data exchange:W-LAN

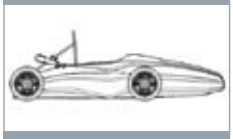
Regensburg
University of Applied Sciences Regensburg

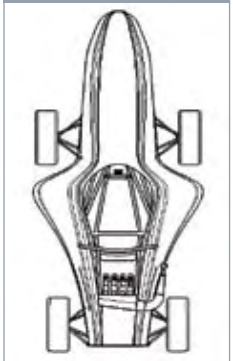
In January 2007 the dynamics e. V. was founded by three ambitioned students of the University of Applied Sciences Regensburg. Since then the team was growing up to 50 students from nearly all faculties. As a strong group our six sub teams have been working together on the finish of our first car. For the first season our main focus is to contest successful the endurance events. With this foundation we are convinced to place well under the newcomers.The design and the handling characteristics come more than up with the team name. The aggressive suspension geometry reminds on sitting in a rollercoaster by maximum safety requirements. The vehicle has a special rear suspension, an innovative gearshift and is sure a solid base for the future. RP 08 -a joint venture of handling and speed. We are looking forward to a successful debut and to show the result of our effort. Finally we want to thank our sponsors and our University for the great support.

Car 62

FRAME CONSTRUCTION Steel tube spaceframe
MATERIAL S235 steel tubing
OVERALL L / W / H (mm) 2953 / 1478 / 983
WHEELBASE (mm) 1655
TRACK (Fr / Rr) (mm) 1270 / 1090
WEIGHT WITH 68kg DRIVER (Fr / Rr) 152 / 196
SUSPENSION Front: Double unequal length A-Arm. Push rod actuated Rear: Double unequal length A-Arm. Vertical acting spring and damper actuated by a double push-rod solution
TYRES (Fr / Rr) 175/505R-13, Dunlop slick
WHEELS (Fr / Rr) 7x13, 30mm offset, 1 pc Al Rim OZ
ENGINE Honda CBR 600 RR
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mmmm / 43mmmm / 4 cylinders / 599cc
COMPRESSION RATIO 12,1:1
FUEL SYSTEM Student built, fuel injection, Kronenburg KMS MD35, semi sequential
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 11000
MAX TORQUE DESIGN (rpm) 8800
DRIVE TYPE Chain Drive
DIFFERENTIAL Drexler limited slip differential
COOLING single radiator with thermostatic controlled electric fans
BRAKE SYSTEM four piston caliper floating brake discs 220mm







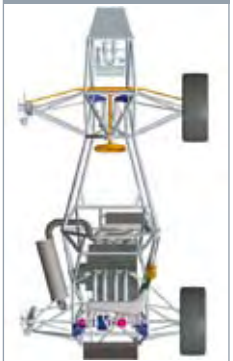
Germany

Rochester
Rochester Institute of Technology

The RIT Formula SAE Racing Team is a group of approximately 35 undergraduate university students from the Rochester Institute of Technology devoted to designing, fabricating, racing, and promoting a high performance formula-style racing vehicle. At the Formula SAE competition this past May in Brooklyn, Michigan, RIT joined 121 entrants from around the world and captured second place in cost and acceleration, and third place in skidpad and autocross. The team looks forward to carry this success into the third annual Formula Student Germany event, where the competition looks to be even tougher than in Michigan. A focus on craftsmanship and quality has allowed RIT to be a leader in Formula SAE throughout the world, garnering seventeen top-ten finishes at competitions in the United States, United Kingdom, and Australia. RIT's success would not be possible without the support of many industry partners who leverage the team's global name and reputation.

Car 5

FRAME CONSTRUCTION Tubular Steel Space Frame
MATERIAL 4130 Steel Round Tubing
OVERALL L / W / H (mm) 2692 / 1422 / 1067
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1270 / 1245
WEIGHT WITH 68kg DRIVER (Fr / Rr) 119 / 145
SUSPENSION Front: Double unequal length A-Arm. Pull rod actuated coil-over Ohlins damper
Rear: Double unequal length A-Arm. Push rod actuated coil-over Ohlins damper
TYRES (Fr / Rr) 178x53 R13(20.5 in x 7in – 13) / 178x53 R13(20.5 in x 7in – 13)
WHEELS (Fr / Rr) 6x13,117 mm backspace, 3 pc Al. Rim / 6x13,117 mm backspace, 3 pc Al. Rim
ENGINE Honda CBR 600
BORE / STROKE / CYLINDERS / DISPLACEMENT 66mmmm / 45mmmm / 4 cylinders / 609cc
COMPRESSION RATIO 14:1
FUEL SYSTEM RIT designed/built, multiport sequential injection, Motec ECU engine management
FUEL 100 Octane unleaded gasoline
MAX POWER DESIGN (rpm) 10500
MAX TORQUE DESIGN (rpm) 7500
DRIVE TYPE 520 Roller Chain, Single reduction
DIFFERENTIAL Torvec IsoTorque gearset, RIT designed differential carrier
COOLING Single U-pass radiator mounted behind car, thermostatic controlled fan
BRAKE SYSTEM 4-Disk system, self developed rotors with 230mm diameter, adjustable brake balance, RIT designed mono-block calipers
ELECTRONICS Electropneumatic shifting system with steering wheel mounted paddles and gear change ignition cut



United States

Saarbrücken
University of Applied Sciences Saarbrücken

After the FSG event in Hockenheim 2007 thirty Students from almost every course of study at the University of Applied Sciences Saarbrücken decided to push the „Saar Racing Team“ up to the next level.The nights were short, the days hard. Concepts were created, discussed and rejected.We optimised every part of the SRC01. Just optimised? We constructed every part of the car new. Nothing is identical to the SRC01. We tested our new ideas in the old car from August to February and changed a lot parts and elements. As a result of all our hard testing and improving the SRC02 is 80kg lighter and faster than our previous model. Last year we build up our car based on the rule: Keep it simple, make it safe.This year we changed our aim to: More innovative, lighter, faster. With 76hp and 230kg we are much faster than last year. We are looking forward to a successful competition in Hockenheim and want to thank our University and Sponsors for their great support. For more information see: www.saar-racing-htw.de

Car 60

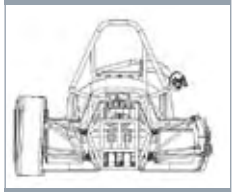
Germany

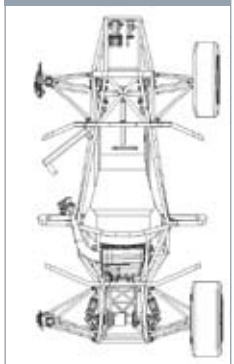
FRAME CONSTRUCTION Steel tube space frame
MATERIAL 25CrMo4
OVERALL L / W / H (mm) 2830 / 1427 / 1148
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1250 / 1150
WEIGHT WITH 68kg DRIVER (Fr / Rr) 144 / 160
SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented Eibach spring and Sachs damper. Adjustable in compression and in rebound range
TYRES (Fr / Rr) Dunlop 175/505R13/Dunlop 175/505R13
WHEELS (Fr / Rr) Braid, 7 inch wide, 2 pc Al Rim, 18mm offset
ENGINE Modified Aprilia SXV 550 (2007)
BORE / STROKE / CYLINDERS / DISPLACEMENT 80mmmm / 55mmmm / 2 cylinders / 553cc
COMPRESSION RATIO 12.5:1
FUEL SYSTEM Student designed/built fuel injection using Trijekt ECU ,half sequential
FUEL 100 octane unleaded gasoline
MAX POWER DESIGN (rpm) 11500
MAX TORQUE DESIGN (rpm) 10000
DRIVE TYPE chain DID 520
DIFFERENTIAL Drexler FSAE special limited slip differential, adjustable
COOLING left side pod mounted radiators with thermostatic controlled electric fans
BRAKE SYSTEM 4-Disk system, self developed rotors with 220mm diameter,adjustable brake balance, four piston calipers, fixed mount, 24mm dia

Schweinfurt
University of Applied Sciences Würzburg-Schweinfurt

Mainfranken Racing at University of Applied Sciences Würzburg-Schweinfurt is a second year competitor in FSG Season 2007/2008. The non-profit association, Mainfranken Racing e.V. was founded in September 2006. Born out of the idea of some motor sports enthusiastc students. The Team has about 26 active members at the moment. After participating in Formula Student Germany in 2007 we finished with 14th place overall and 1st runner up in the newcomer competition in Hockenheim. These results pushed our ambition to build an even better car. Faster, lighter and better engineered is our aim for 2008. Furthermore we want to provide a basis for future FSG-seasons at our university.

Car 97





Germany

FRAME CONSTRUCTION hybrid constr. (tubular steel-frame, CRP torsional tubes + shearpanels)
MATERIAL S235/S355, carbon fibre, aramid fibre, glasfibre, PVC foam
OVERALL L / W / H (mm) 2815 / 1400 / 1046
WHEELBASE (mm) 1700
TRACK (Fr / Rr) (mm) 1200 / 1180
WEIGHT WITH 68kg DRIVER (Fr / Rr) 145 / 178
SUSPENSION Double unequal length A-Arm. Pullrod actuated horizontally oriented spring and damper
TYRES (Fr / Rr) 175/505 R13 Dunlop 425
WHEELS (Fr / Rr) 7x13 Offset 10,8mm, 1pc Mg Rim
ENGINE modified Yamaha YZF-R6
BORE / STROKE / CYLINDERS / DISPLACEMENT 66.0mm / 44.5mm / 4 cylinders / 609cc
COMPRESSION RATIO 13,3:1
FUEL SYSTEM Bosch fuel pump, injection and valves from Yamaha YZF-R6, self made rail, fuel injection
FUEL 100 octane unleaded gasoline
MAX POWER DESIGN (rpm) 10500
MAX TORQUE DESIGN (rpm) 8200
DRIVE TYPE original sequential gearbox
DIFFERENTIAL limited slip differential
COOLING single, left side pod mounted radiator with regulated electric fan
BRAKE SYSTEM 4-disc system, self designed rotors 240/200mm (fr/rr), cockpit adjustable brake balance, Pretech/Brembo calipers (fr/rr)
ELECTRONICS wiring harness, multifunctional steering wheel, electro mechanic shifting system, selfdesigned live-telemetry system

Stockholm
KTH Royal Institute of Technology

KTH Racing 2007/2008 consists of about 25 students who have developed KTHR5 entirely in their spare time. The car has a good chance of competing with its predecessors as well as the other teams at the competition thanks to for instance the newly developed carbon fiber monocoque and the adjustable semi-active roll damping system. Another spectacular design feature is the variable intake manifold, which has been made using rapid prototyping. This has allowed the team to integrate a control unit in order to be able to adjust the intake geometry depending on engine speed. The brake calipers have also been designed and manufactured by a team member. Putting all of these factors together, the potential of KTHR5 becomes obvious. Hopefully the team members will be rewarded for their hard work and beat the result from Formula Student UK 2005, when they finished on third place.

Car 71

FRAME CONSTRUCTION Two piece carbon fiber monocoque with tubular steel roll bars

MATERIAL Carbon fiber, non-crimp weave, 20 mm DIAB Divinycell core/20mm end-grain balsa

OVERALL L / W / H (mm) 2805 / 1367 / 1115

WHEELBASE (mm) 1600

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 151

SUSPENSION Double unparallel unequal length A-Arms. Push rod actuated monoshock with roll damper (front) and push rod actuated bellcranks with adj. anti-roll bar (rear). 4 way adj. dampers

TYRES (Fr / Rr) 178x50 R13, Goodyear D2692 R075 / 178x50 R13, Goodyear D2692 R075

WHEELS (Fr / Rr) 6.0x13, 14 mm offset, 1 pc Mg Rim / 6.0x13, 14 mm offset, 1 pc Mg Rim

ENGINE Modified 2005 Suzuki GSX-R600

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

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Open-source VEMS system, sequential injection, fuel pressure gauge on rail

FUEL E-85 Ethanol

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 7000

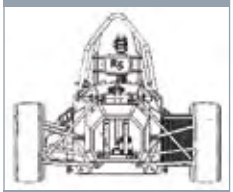
DRIVE TYPE Chain drive, 428 size chain

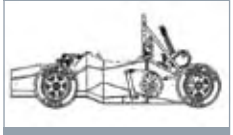
DIFFERENTIAL Clutch pack limited slip, externally adjustable preload

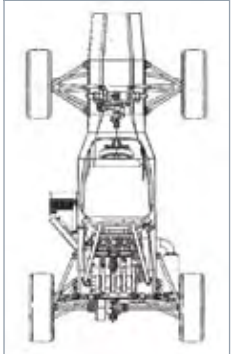
COOLING Single side pod-mounted radiator with electronically controlled water pump and 300mm fan

BRAKE SYSTEM 3-disc system, self developed rotors with 220mm diameter, adjustable brake bias, student designed 4-piston monoblock calipers

ELECTRONICS Electropneumatic shifting system, semi-active roll damping, variable intake manifold, wire-less data logging system







Sweden

Stralsund
University of Applied Sciences Stralsund

The Baltic Racing Team of the University of Applied sciences is Stralsund was the first Formula Student team founded in Germany in 1999. Since then we designed and constructed nine cars and experienced a lot in the field of automotive engineering. Our team consists of students from many different study courses so there is a diversity of ideas and imaginations existing in our everyday work. The overwhelming creativity which is produced in our offices and garages motivates us to put all our energy into this project. Our this year's goal was to build the „essential competitor“ - the TY2008. To reach this goal we took several facts into consideration. These are, the positive experience with the TY2007 just as extensive discussions based on data records and test results. We set our focus on the simplicity of maintenance and the cheap and high-quality production attributes. According to our maxim “One Team – One Mission” the entire team is standing together to create the TY2008!

Car 7

FRAME CONSTRUCTION tubular space frame with glued carbon-fibre floor panels

MATERIAL SAE4030+QT quenched and tempered steel tubes

OVERALL L / W / H (mm) 3015 / 1430 / 863

WHEELBASE (mm) 1700

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 121 / 132

SUSPENSION Unequal length A-Arms. Pull rod actuated X-Fusion Vector DH1 spring/damper units

TYRES (Fr / Rr) 20.0x7.0-13 R075 Goodyear

WHEELS (Fr / Rr) 20.0x7.0-13 R075 Goodyear

ENGINE 2001 Honda CBR600 F4i PC35

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

COMPRESSION RATIO 12.0 :1

FUEL SYSTEM student designed/built fuel injection system using Walbro ECU

FUEL 100 octane petrol

MAX POWER DESIGN (rpm) 10500

MAX TORQUE DESIGN (rpm) 7000

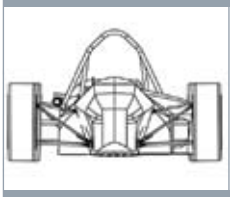
DRIVE TYPE Chain #520 MAD6

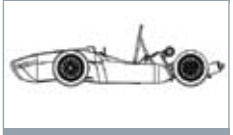
DIFFERENTIAL clutch pack limited slip

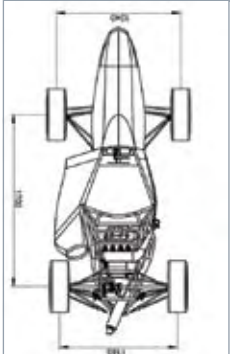
COOLING aluminium radiator and electric fan mounted in left sidepod

BRAKE SYSTEM 4-Disc system, floating rotors with 220mm/180mm, adjustable brake balance

ELECTRONICS Multifunctional Steering Wheel, Electronic Shifting System, extensive datarecording system





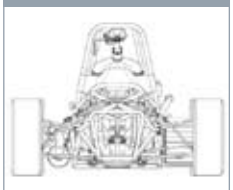


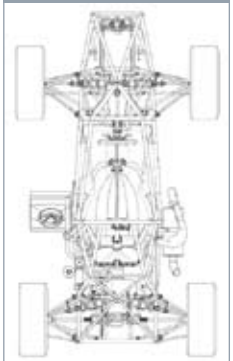
Germany

Stuttgart
University of Stuttgart

The Rennteam Uni Stuttgart competes its 3rd year in Formula Student Germany. After being the best German team 2006, the team finished 1st Overall in 2007. The second-year car „F0711-2B“ started in three other Formula SAE Events, bringing home impressive results: Silverstone: 3rd place. Italy: 1st place. Michigan, USA: 2nd place. The „F0711-2B“ therefore was a solid basis for designing the new car. In fact, most of our team members were satisfied with the existing solutions and therefore took a year off instead of working hard on improving an outstanding racing car. We just made little adjustments like a dry sump oil supply or carbon fibre rims. After that the car was sent out on the track for fitness improvements with two main goals: Reduce weight and gain power.The result is amazing: The achieved weight reduction adds up to 15 per cent whereas the engine power was increased by 13 per cent. The „F0711-3“ is looking forward to meeting its competitors, burning a lot of fuel and rubber.

Car 1





Germany

FRAME CONSTRUCTION Tubular space frame with carbonfibre sandwich floor panels

MATERIAL 25CrMo4 tubes, multiaxial carbonfibre sandwich floor panels

OVERALL L / W / H (mm) 2665 / 1415 / 1005

WHEELBASE (mm) 1650

TRACK (Fr / Rr) (mm) 1214 / 1172

WEIGHT WITH 68kg DRIVER (Fr / Rr) 129 / 139

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper. Adjustable in compression and in rebound range.

TYRES (Fr / Rr) front and rear: 178x54 R13, Hosier R25A

WHEELS (Fr / Rr) front and rear: 7.0x13, 28 mm offset, custom-made carbonfibre rim with Al-inlays

ENGINE Modified Honda CBR600RR (PC37)

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

COMPRESSION RATIO 12,8:1

FUEL SYSTEM MoTeC M 400 ECU with self-designed fuel injection, fully sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10300

MAX TORQUE DESIGN (rpm) 10100

DRIVE TYPE 4-speed sequential gearbox

DIFFERENTIAL Drexler Clutch Pack Limited Slip Differential, TBR 7:1 in drive, 1,66:1 in coast

COOLING Custom-made single radiator, mounted in left sidepod, ECU and thermostatic controlled fan

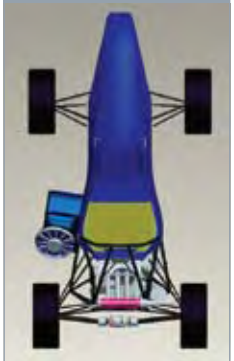
BRAKE SYSTEM 4-disk system, floating, custom-made, hub mounted rotors (diam. front: 220mm/diam. rear: 190 mm), adjustable brake balance

ELECTRONICS Steering wheel with shifting pedals and display, electropneumatic shifting system, custom-made live-telemetry system

Toronto
University of Toronto

Founded in 1997, the University of Toronto Formula SAE Racing Team has developed into a strong competitor in the FSAE-Formula Student series. The team holds three Championship titles at FS UK and top ten finishes at FSAE East. The team has grown to 15 engineering students who design and fabricate over 95% of all components themselves. UofT‘s debut in FS Germany comes with large advancements in vehicle design including its first monocoque tub, a student-written vehicle dynamics simulation, and engine research through simulation and dynamometer validation. A thorough dynamic track testing program allows the team to tune the suspension setup and a track-adjustable differential for different events. The UofT FSAE Team is also a strong promoter of collaboration between Universities and hosts the largest student run FSAE competition - The UofT Shootout. As Canada‘s leading team, we are proud to represent our country to our honourable FSAE colleagues from Germany and around the world.

Car 13



Canada

FRAME CONSTRUCTION Monocoque front section / Rear tubular space frame

MATERIAL 1-6mm thk carbon skin w/ 6-19mm Nomex + Rohacell core / Steel tube (rnd + sq)

OVERALL L / W / H (mm) 2616 / 1359 / 1054

WHEELBASE (mm) 1664

TRACK (Fr / Rr) (mm) 1194 / 1168

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

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

TYRES (Fr / Rr) 178x50 R13 (20x7.0-13) Goodyear D2692 / 178x50 R13 (20x7.0-13) Goodyear D2692

WHEELS (Fr / Rr) 6.5x13

ENGINE 2001 Honda CBR 600 F4i

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 43.0mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.0:1

FUEL SYSTEM Student designed and built, direct port injection

FUEL 93 octane

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain drive, #420 chain

DIFFERENTIAL Clutch pack differential; 2.8 Nm preload; 2.0, 3.0 or 4.0 TBR (adjustable)

COOLING Single side mounted radiator integrated into duct, computer controlled fan, aluminum hardline

BRAKE SYSTEM Tilton MCs; 4 Brembo calipers; Self developed rotors

ELECTRONICS 26 channel data acquisition system, ECM with sequential ignition, Custom dash panel

Turin

Polytechnic University of Turin

4 Seasons, 4 Cars, 4 Strengths. Stiffness Simulation Setup Suppleness. The SC08 wants to be the highest expression of a steel tube structure, but it is also the joint with the future which will probably be a carbon fibre monocoque. In fact the key element of our ‚08 chassis is the structural cockpit made from carbon fibre. It gives a massive contribute to stiffness and it includes all the attachments of cockpit accessories. The SC08 has also been upgraded on the engine&drivetrain compartment: we introduced the oil dry sump, the continuous variable intake system and the gear and shifter controls to the steering wheel. The development of the car accomplished by using the most refined software: CAD 3D design, FEM analysis and FEM structural optimization and/or CAD 3D design refinement. Thanks to all these improvements and a refined project we managed to reduce weight, improve stiffness and give the car an impressive handling.

Car 46

FRAME CONSTRUCTION Tubular space frame, carbon-fibre struct. cockpit, AA welded rear box

MATERIAL 25CrMo4 tubes,

OVERALL L / W / H (mm) 2795 / 1300 / 1005

WHEELBASE (mm) 1650

TRACK (Fr / Rr) (mm) 1300 / 1290

WEIGHT WITH 68kg DRIVER (Fr / Rr) 121 / 147

SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper (coil-over). Adjustable in compression and in rebound range

TYRES (Fr / Rr) 152x62 R13, Hoosier R25B / 178x48 R13, Hoosier R25B

WHEELS (Fr / Rr) Magnesium alloy 13“ x 6“,29 mm offset/Magnesium alloy 13“ x 7“ ,41.7 mm offset

ENGINE Honda CBR600RR

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

COMPRESSION RATIO 13,1:1

FUEL SYSTEM Designed/built fully sequential phased PFI system using Magneti Marelli Motorsport EI.nics

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 7500

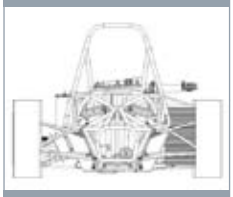
DRIVE TYPE Chain transmission

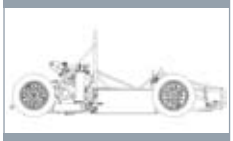
DIFFERENTIAL Frameless limited slip helical gears differential, custom-made end bells and sp

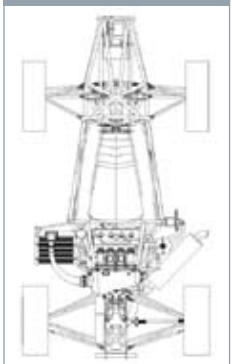
COOLING Rear mounted single-side radiator, electric fan, carbon-fibre conveyor

BRAKE SYSTEM 4 disk system, BREMBO, 218 mm OD, 158mm ID, mild steel thickness 4 mm, adjustable brake balance, mono block Brembo Calipers

ELECTRONICS Multifunctiona steering wheel, Live telemetry System







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Team-Profile
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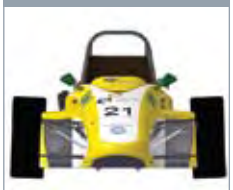
Ulm
University of Applied Sciences Ulm

Now that we as Einstein Motorsport can look back on three years of experience and three cargenerations, we are already able to bring in distinct innovations, new design features and knowledge not exclusively based on theoretical studies but on on-the-job-training and fieldtesting. In our newest car AI08 almost everything was revised, restructured and reconstructed. Only some components like tires, engine, differential and shifter stayed the same. With many students from our university we started research projects concerning framereconstruction, chassis and drive train as well as studies on improvement of the use of our Bosch ECU. Our brakes, the steering gear and wheel also bettered as a result of dedicated studies.Besides developing a safer car the main goals for us to accomplish are a lowering of the retailcost and a decrease in weight. In addition we lowered the gravity center, bettered the engine-power, relocated and improved the cars cooling system.

Car 17



Germany

FRAME CONSTRUCTION Front and rear Tubular space frame

MATERIAL 25CrMo4 Steel

OVERALL L / W / H (mm) 3073 / 1424 / 1320

WHEELBASE (mm) 1675

TRACK (Fr / Rr) (mm) 1230 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 138 / 162

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

TYRES (Fr / Rr) 175/535R13 Slick S04 662 Radical Dunlop

WHEELS (Fr / Rr) BBS 6.5x 13‘‘, 20mm offset, 3 pc Al Rim, Mg-Core

ENGINE 2006 Aprila SXV/RXV 5.5

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

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Student des/built, fuel injection, sequential

FUEL unleaded Fuel, 98 ROZ

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 11000

DRIVE TYPE 20mm x 15mm Chain

DIFFERENTIAL limited slip,80% lock impact

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4-Piston, 22,6 mm dia., Opposing piston, fixed, Floating, steel, hub mounted, 205mm outer diam.,145mm inner diam., vented

ELECTRONICS Electromagnetic Shifting, Wireless Tyre Temp./Press. Sensors, Steering wheel integrated Display, Bosch MS4 Sport Engine ECU

Uxbridge
Brunel University

Brunel Racing is participating in FSG for the second year in a row. They achieved success in 2007 by finishing in all events and being the highest placed team running on E85. This year the team’s goal is to break into overall top 10 placing and continue their successful use of E85. This year sees a number of changes to the car and team structure. A steel spaceframe chassis is once again utilised, but the addition of structural steel plates increases the structural rigidity while complying with safety rules regarding the fire wall. An exhaust system with a single silencer was chosen over the dual silencer system of last year to assist with the noise regulations. The 2008 team comprises of 2 final year MEng student reading in Motorsport Engineering as Team Principal and Technical Director along with numerous level 3 students that have taken on the responsibility of system designs and manufacture. Brunel Racing hope that FSG 2008 with be as exciting and rewarding as that of 2007.

Car 68

United Kingdom

FRAME CONSTRUCTION steel spaceframe with the addition of steel sheets

MATERIAL 4130 AISI tubular steel and sheet

OVERALL L / W / H (mm) 2848 / 1500 / 1216

WHEELBASE (mm) 1595

TRACK (Fr / Rr) (mm) 1344 / 1313

WEIGHT WITH 68kg DRIVER (Fr / Rr) 152 / 153

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

TYRES (Fr / Rr) 7.0/20.0 R13, Avon

WHEELS (Fr / Rr) 7.0/20.0 R13, Avon

ENGINE Modified 2005 Yamaha YZF-R6

BORE / STROKE / CYLINDERS / DISPLACEMENT 66mm / 45mm / 4 cylinders / 599cc

COMPRESSION RATIO 13.4:1

FUEL SYSTEM Fuel injection, sequential firing, primary and secondary injectors in parallel

FUEL E85

MAX POWER DESIGN (rpm) 9000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE chain #520

DIFFERENTIAL Chain-drive sealed Quaife ATB Helical LSD differential

COOLING Single left side pod mounted radiators with thermostatic controlled electric fan

BRAKE SYSTEM Floating,hub mounted discs, 200mm outer diam., 120mm inner diam., vented.

ELECTRONICS Custom designed loom

Wien

Technical University of Wien

Vienna, city of waltz and baroque architecture, most of the time sleeping and silently dreaming of long-gone times as residence of kings and queens. Someone had to wake up the capitol of Austria, and it was TUW-Racing's all new first-season-car, the edge, that rudely yelled its loud message into the blue skies of a stunned town: Born in the outback of the laboratories, designed by a young generation of engineers to present a strong message of progressiveness and a statement of innovativeness. But in all of his newness lies also a bit of the heritage that surrounds every spot of the city. The spirit of greatness in terms of the usage of new materials and the sense for perfection, that centuries ago led architects to their best performances nowadays inherits the makers of edge and let them restlessly bring in their best ideas to succeed in completing the most comprehensive task they've ever started with: To present a fast and full of character car to the eyes of Vienna and the world.

Car 41

FRAME CONSTRUCTION Tubular space frame

MATERIAL Mild steel and CFRP tubes

OVERALL L / W / H (mm) 2600 / 1390 / 940

WHEELBASE (mm) 1600

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 124 / 144

SUSPENSION Double unequal length A-Arm. Double unequal length A-Arm. Push rod actuated, in line oriented spring and damper.

TYRES (Fr / Rr) 195/500 R13 Continental

WHEELS (Fr / Rr) 195/500 R13 Continental

ENGINE KTM LC4 690 Evo

BORE / STROKE / CYLINDERS / DISPLACEMENT 105mm / 70.4mm / 1 cylinders / 610cc

COMPRESSION RATIO 10,6:1

FUEL SYSTEM Two injector operated sectional, mounted in intake manifold.

FUEL E85

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 6500

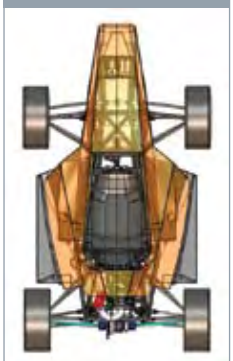
DRIVE TYPE Engine integrated 3 gear drive

DIFFERENTIAL Automatic torque beasing helical LSD differential (preloaded)

COOLING Dual side mounted radiator and electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 210/190mm, Magura radial calipers

ELECTRONICS Wiring harness sealed to IP67, multi-functional steering wheel with electronic shift system



Austria

Wiesbaden

University of Applied Sciences Wiesbaden

The Racing Team by FH Wiesbaden proudly presents its first Formula Student Racing-Car at the 2008-event in Hockenheim. From the idea of participation to the finished car it has taken almost two hard years. Our goals for the first year were to build a car which will pass all requirements and endure the event until the last day. Basis of our racer is a rigid, FEA-optimized steel tube frame which we have manufactured ourselves. The power serves a 4 cylinder 600ccm GSX-R engine. All inner moveable parts have been coated to increase the degree of efficiency. Together with our own developed GRP-airbox and an injection concept with 8 fuel injectors the engine has almost 100HP. Compared to other teams our car has big differences in the chassis concept. The shock absorbers are mounted at the frame underside and are pull rod actuated. All important parameters like camber angle, toe in or caster are completely adjustable.To all competitors and visitors we wish a successful and funny event!

Car 65

FRAME CONSTRUCTION FE analysed and MIG-welded, rigid steel tube frame. Approx. 40kg

MATERIAL E235 and S350, Aluminium Fire Wall

OVERALL L / W / H (mm) 2975 / 1385 / 1125

WHEELBASE (mm) 1700

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 158 / 192

SUSPENSION Double unequal length Control-Arm. Pull rod actuated, horizontal oriented spring and damper mounted underside the frame. Fully adjustable caster, toe-in & camber angle

WHEELS (Fr / Rr) BBS 7x13, 23,3 mm offset, 3 pc Al Rim

ENGINE Suzuki GSXR 600,fully teflon coated

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

COMPRESSION RATIO 12,2:1

FUEL SYSTEM Injection System with 8 Fuel Inlectors(near & far), sequencial injection,

FUEL 95 octane gasoline

MAX TORQUE DESIGN (rpm) 8000

DIFFERENTIAL Wet multi-plate type, by Drexler

COOLING Side mounted, self-designed aluminium radiator

BRAKE SYSTEM 4-Disk, fixed, hub mounted, outer dia. 220, inner dia 165

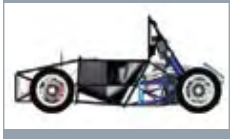
ELECTRONICS Electrical shifting system -pro shift- actuated by on steering wheel mounted levers

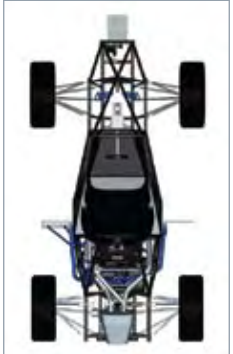
Germany

Wolfenbüttel
University of Applied Sciences Braunschweig/Wolfenbüttel

The wob-racing team was founded in 2003 as a project of the University of Applied Sciences Braunschweig/ Wolfenbüttel. The Team's headquarter is Wolfsburg, one of Europe's most important towns in the automotive industry. The team consists currently of 30 members and is sponsored by 22 partners. After one year of development we presented the WR04 at Wolfsburg's Mobile Life Campus in July 2008. The WR04 represents an evolutionary step forward in designing a racing car. Compared to its predecessor it contains a WLAN telemetry system, a variable air intake system and a specifically developed titan exhaust. Moreover we could reduce the weight and simultaneously improve the stiffness of the frame. Our aim is to improve our last year's results and let this season become the best one we ever had. To achieve this goal our maxim is not to act as 28 members and 22 partners, but as one team.

Car 35





Germany

FRAME CONSTRUCTION Front and rear Tubular space frame

MATERIAL E355, E275, E420

OVERALL L / W / H (mm) 2800 / 1328 / 1127

WHEELBASE (mm) 1700

TRACK (Fr / Rr) (mm) 1200 / 1175

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 172

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

TYRES (Fr / Rr) Hoosier 20.5 x 6.0-13 R25A/Hoosier 20.5 x 7.0-13 R25A

WHEELS (Fr / Rr) 6 inch wide,3 pc Al Rim,35mm neg. offset/7inch wide,3 pc Al Rim,25mm neg. offset

ENGINE Modified Honda CBR600F (PC35)

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

COMPRESSION RATIO 13.0:1

FUEL SYSTEM MPI, injection valve Bosch EV6 with spray angle 15°, pressure regulator Bosch FPR 14-50

FUEL Super Premium (98 octane)

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Chain drive, chain 5/8

DIFFERENTIAL Torsen T1, 3.2:1 bias ratio in student designed aluminum housing

COOLING Twin side pod mounted radiators with oil radiator behind left one, add. electronic water pump

BRAKE SYSTEM Rotors(F/R): 228mm/220; Calipers(F/R): 34mm/25,4mm Master Cylinders(F/R): AP CP 5855 dia. 22,20/AP CP 5855 dia.17,14

ELECTRONICS Highspeed CAN bus; bidirectional WLAN Telemetry System; proprietary MMC card logging system; electro-mechanical gearbox & clutch

Wuppertal
University of Wuppertal

In 2007, Petrolhead Racing Team of Wuppertal University participated for the first time at the Formula Student Germany event. The PHR 07 car did not race last year due to minor technical flaws in several areas that added up to failing the scrutineering. Despite this setback, we decided to continue our engagement.This year, our aim is to design and build a car that passes the scrutineering and all other tests and finally race it on the track. To achieve this, we decided to improve on last years design rather than creating a completely new car. We identified last years failures and adapted our design accordingly, bearing in mind our experiences from 2007. This lead to the PHR EVO II car which is improved in several areas, for example the frame, the suspension system and the intake manifold.We are sure that this car enables us to competitively participate at the Formula Student Germany event and look forward to racing the PHR EVO II in August.

Car 54

Germany

FRAME CONSTRUCTION Spaceframe

MATERIAL 24CrMo4

OVERALL L / W / H (mm) 2750 / 1390 / 1170

WHEELBASE (mm) 1667

TRACK (Fr / Rr) (mm) 1170 / 1200

WEIGHT WITH 68kg DRIVER (Fr / Rr) 157 / 192

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

TYRES (Fr / Rr) 16/53-13

WHEELS (Fr / Rr) 16/53-13

ENGINE Suzuki GSXR600 K5

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

COMPRESSION RATIO 12,5

FUEL SYSTEM Student des/built, fuel injection, sequential

FUEL 100 octane

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE Chain

DIFFERENTIAL Drexler, clutch pack limited slip

BRAKE SYSTEM 4-Disk system, 260mm diameter,adjustable brake balance, 4 Strock calipers

ELECTRONICS Dynojet + Quickshifter

Zürich
Swiss Federal Institute of Technology Zurich

During the successful debut-season 2007 the only Swiss team gained practical experience with their first racecar “albula”. The acquired know-how enabled the team to realize some major improvements in lightweight construction, ergonomics, material technology and electronics. In his second season the Academic Motorsportsclub Zurich (AMZ) of the Swiss Federal Institute of Technology (ETH Zurich) follows the tradition of naming their car after a famous Swiss alpine pass. The core of the new racecar “maloja” is the carbon-fiber-monocoque with full integrated engine. Both, the focus on lightweight construction and the use of modern composite materials allowed a weight-reduction of about 20% compared to the first built car. Further developments are the aerodynamically optimized undertray, the carbon fiber A-arms, the magnetic gear shifting system, the barrel throttle and not at last the eye-catching design. We feel confident that “maloja” is going to make us proud!

Car 33

FRAME CONSTRUCTION CFRP full length monocoque with semi-stressed engine

MATERIAL CFRP sandwich with 10 mm Dyvincell foam core

OVERALL L / W / H (mm) 2764 / 1403 / 1005

WHEELBASE (mm) 1625

TRACK (Fr / Rr) (mm) 1200 / 1160

WEIGHT WITH 68kg DRIVER (Fr / Rr) 124 / 150

SUSPENSION CFRP double length A-Arm, pullrod (Fr)/ pushrod (Rr) actuated, Cane Creeck Double Barrel spring and damper unit

TYRES (Fr / Rr) Goodyear D2692 20.7.0-13 / Goodyear D2692 20.7.0-13

WHEELS (Fr / Rr) 7.0x13 Self des/built CFRP rim / 7.0x13 Self des/build CFRP rim

ENGINE Suzuki GSX-R 600 K4/K5

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

COMPRESSION RATIO 13.0:1

FUEL SYSTEM Self des/built fuel injection with constant pressure, sequential

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 8750

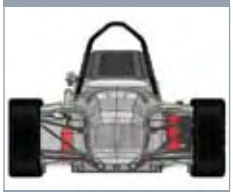
DRIVE TYPE Chain 520 norm

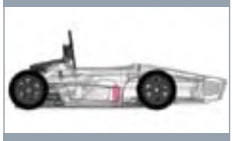
DIFFERENTIAL FSAE Drexler limited slip differential with friction plates, adjustable

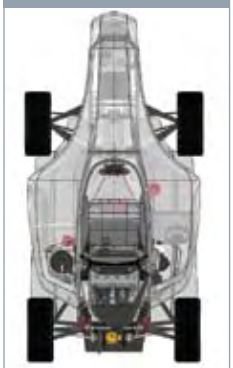
COOLING right side mounted radiator with thermostaticly controlled electric fan

BRAKE SYSTEM 4 Disk system, floating, milled iron, 220 mm / 212 mm (Fr)/(Rr), Magura 4 piston (Fr), AP-Racing 2 poston (Rr), Tilton 77 MC

ELECTRONICS Self des/built wiring harness, board-computer, magnetic shifting system, multifunctional steering wheel and telemetry system







Switzerland

Zwickau
University of Applied Sciences Zwickau

The style of our 2nd car - the FP208 - refers to a long tradition. We transfered distinctive elements of the famous Auto Union racing cars to the FP208: a slender form and small side cases. Of course, the style has been advanced – more modern, dynamic and racy. Especially the colour scheme differs completely from the former Type C legends and even from what today‘s racing cars usually look like: our car has striking colours with unique foil stickers added. Undoubtedly, the technology of the FP208 is innovative. We succeeded in producing a car body of special plastic comb structure between the laminated plies of GRP, as light as made of CFRP but at a much lower cost. We designed an ECU customized to our particular needs and a transmission CU that is completely electronic. An central electrical system is applied which supersedes any fuses and mechanical switches. Furthermore, we implemented a progressive drive train concept that uses a belt drive and an electro-pneumatic clutch system.

Car 96

FRAME CONSTRUCTION tubular steel frame

MATERIAL 26Mn5

OVERALL L / W / H (mm) 2783 / 1400 / 1068

WHEELBASE (mm) 1650

TRACK (Fr / Rr) (mm) 1100 / 1100

WEIGHT WITH 68kg DRIVER (Fr / Rr) 140 / 172

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

TYRES (Fr / Rr) 175/505R13 C55XX 425 Dunlop

WHEELS (Fr / Rr) 6x13, 10.8mm offset, 3 pc Al Rim

ENGINE 2002 Honda CBR 600 FS

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

COMPRESSION RATIO 11,0:1

FUEL SYSTEM student des/built, fuel injection, half-sequential, injectors Honda CBR

FUEL ROZ 100 unleaded

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 8600

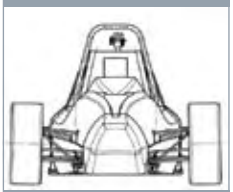
DRIVE TYPE belt drive with POLY CHAIN GT2 tooth sys

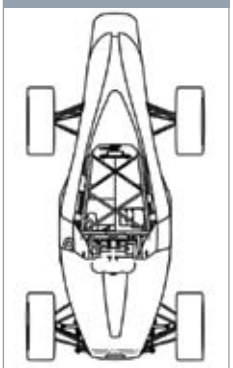
DIFFERENTIAL limited slip differential from Drexler with six setups

COOLING twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4 discs, selve developed floated rotors with OD/ID 220/168mm, AP Racing Master cylinders and calipers, adjustable brake balance

ELECTRONICS selfdesigned ECU, Transmission Control Unit,Telemetry System, Semiconductor Supply System and Multifunctional Steering Wheel with



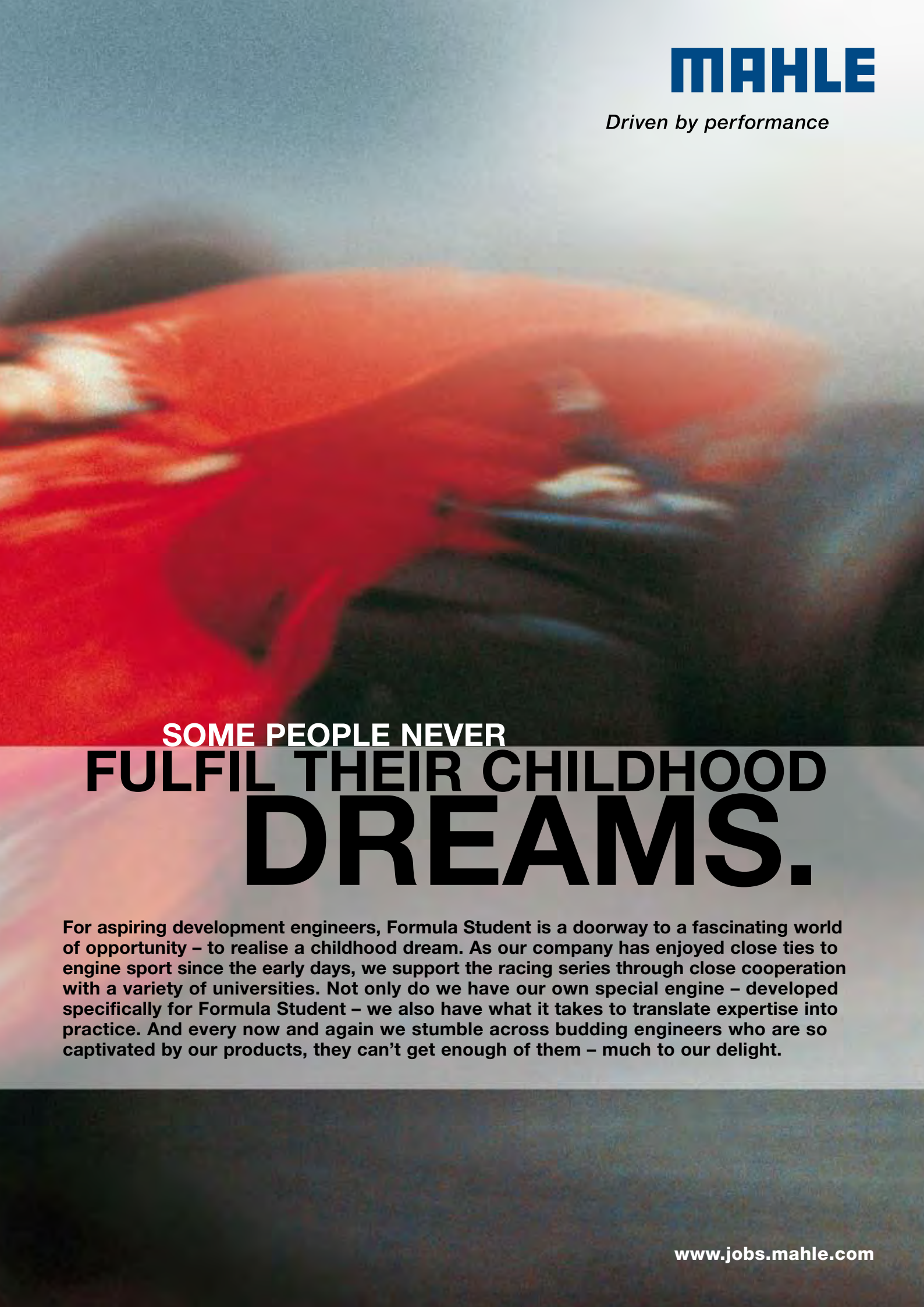


Germany

Dictionary of frequently used terms

Wörterbuch häufig verwendeter Begriffe

acceleration	*Beschleunigung (siehe Seite 11)*
accessories	*Zubehörteile*
angle	*Winkel*
autocross / sprint	*eine schnelle Runde auf dem Rundkurs (siehe Seite 11)*
bearing	*Lager*
bodywork	*Verkleidung*
bolt	*Bolzen, Schraube*
bore	*Bohrung*
brake	*Bremse; bremsen*
business plan	*Geschäftsplan (siehe Seite 10, 34-36)*
business model	*Geschäftsmodell*
caliper	*Bremssattel*
camber	*Sturz*
camshaft	*Nockenwelle*
carbon fibre	*Kohlefaser*
chain	*Kette*
chassis	*Fahrwerk, Fahrgestell, Rahmen bzw. Monocoque*
clutch	*Kupplung; kuppeln*
component	*Bauteil*
composite materials, composites	*Verbundwerkstoffe*
compression ratio	*Verdichtungsverhältnis*
cooling	*Kühlung, Kühlsystem*
crankshaft	*Kurbelwelle*
cylinder	*Zylinder*
damper	*Dämpfer*
dashboard	*Armaturenbrett*
design	*Entwurf, hier: Konstruktion; konstruieren*
differential	*Differential*
displacement	*Hubraum*
drive shaft	*Antriebswelle*
drive train	*Antriebsstrang*
egress test	*5-Sekunden-Ausstiegstest*
electronic control unit (ecu)	*elektronisches Steuergerät*
emergency switch	*Notaus-Schalter*
engine	*Motor*
executive summary	*Zusammenfassung des Geschäftsplans*
exhaust	*Auspuff*
exhaust system	*Abgasanlage*
endurance	*Ausdauer, hier: Langstreckentest (siehe Seite 11)*
evaluation	*Bewertung*
fire extinguisher	*Feuerlöscher*
firewall	*Feuerschutzwand*
force	*Kraft*
frame	*Rahmen*
fuel consumption	*Kraftstoffverbrauch*
fuel injection	*Kraftstoffeinspritzung*
gear	*Gang*
gearbox	*Getriebe*
glass fibre	*Glasfaser*
glue	*Klebstoff; kleben*
handling	*Fahrverhalten*
hub	*Nabe*
intake manifold	*Ansaugleitung*
intake system	*Ansaugsystem*
jack	*Wagenheber*
judge	*Juror, Jurymitglied; bewerten*
lap	*Runde*
lateral forces	*Seitenkräfte*
manufacture	*Fertigung, Herstellung; fertigen*
marshal	*Streckenposten*
monocoque	*Karosserie in Schalenbauweise*
nut	*Mutter*
peak power design (rpm)	*Entwicklungszieldrehzahl für Spitzenleistung*
peak torque design (rpm)	*Entwicklungszieldrehzahl für Spitzendrehmoment*
penalty	*Strafe*
piston	*Kolben*
pit	*Box*
power design (rpm)	*→ peak power design (rpm)*
push bar	*hier: Vorrichtung zum Schieben des Fahrzeugs*
push rod	*Druckstab, insbesondere an der Radaufhängung*
restrictor	*Restriktor, Luftmengenbegrenzer*
rim	*Felge*
rivet	*Niet; nieten*
rocker arm	*Umlenk-, Kipphebel*
rpm	*U/min*
scatter shields	*Kettenschutz*
scrutineering	*technische und Sicherheitsüberprüfung*
shift	*schalten*
Skid Pad	*Skid Pad, Befahren einer Acht (siehe Seite 11)*
slick	*profilloser Reifen*
spaceframe	*aus Profilen zusammengesetzter Rahmen*
spring	*Feder*
sprint	*→ autocross*
steel tube space frame	*Gitterrohrrahmen aus Stahl*
steering	*Lenkung*
steering lever	*Spurhebel*
steering wheel	*Lenkrad*
stiffness	*Steifigkeit*
strenght	*Festigkeit*
stroke	*Hub*
suspension	*Fahrwerk, insb. Federungssystem*
suspension arms	*Fahrwerksstreben*
suspension loads	*Fahrwerkslasten*
tie rod	*Spurstange*
throttle	*Drosselklappe; drosseln*
technical inspection	*technische Abnahme*
toe	*Vorspur*
torque	*Drehmoment*
torque design (rpm)	*→ peak torque design (rpm)*
track	*Spurweite*
traction control	*Traktionskontrolle*
tyre	*Reifen*
valve	*Ventil*
weld line	*Schweißnaht*
wheel	*Rad*
wheelbase	*Radstand*
wing	*Flügel, Spoiler*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