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Formula Student Germany 2007

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in cooperation with SAE INTERNATIONAL

Hockenheim, August 8th – 12th 2007

Programme | FORMULA STUDENT GERMANY

Formula Student Germany

| International Design Competition |

Programme

Formula Student Germany 2007
Hockenheim

August 8th – 12th 2007

| www.formulastudent.de |

| Creating a future for engineers |

Greetings

At almost fifty universities in Germany students today build their own race cars – only two years ago there were barely ten. The first Formula Student Germany last year motivated lots of young engineers to get involved alongside their studies – we are on the right path.

Sixty teams participating and further nine teams on the waiting list reflect the great demand. Beside several German and European universities there are also universities from the USA, Russia, India and Iran. In 2006 already 40 teams with 660 students came to Germany, this year there will be 1.200 students travelling to the Hockenheimring. Fifty percent more teams and cars will indeed need more time to run all disciplines but this will not change anything about our policy of high quality. Safety and fairness have top priority.

Formula Student Germany participates actively in changing the regulations with revised rules on the Cost Analysis Event. The discipline is now designed more realistically and emphasizes more on understanding the processes. The new Cost Report makes sure that no longer only the car but also arising expenses for tools have to be included. This way we stimulate the holistic comprehension.

We are looking forward to an exciting and fair competition and thank all our sponsors and supporters as well as the numerous volunteers. We wish all teams success and a unique experience and all the visitors an exciting insight into the world of motivated, young engineers.

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

Grußwort

An knapp fünfzig deutschen Hochschulen bauen Studierende heute ihre eigenen Rennwagen – noch vor zwei Jahren waren es kaum zehn. Die erste Formula Student Germany im vergangenen Jahr hat zahlreiche junge Ingenieure zum Engagement neben dem Studium motiviert – wir sind also auf dem richtigen Weg.

Sechzig teilnehmende Teams und weitere neun auf der Warteliste spiegeln die große Resonanz. Darunter neben vielen deutschen und europäischen auch Hochschulen aus den USA, Russland, Indien und Iran. Kamen 2006 bereits vierzig teilnehmende Teams mit 660 Studierenden an den Hockenheimring, so reisen in diesem Jahr 1.200 Jungingenieure zum Wettbewerb an. Fünfzig Prozent mehr Teams und Fahrzeuge beanspruchen zwar mehr Zeit für die Durchführung der Disziplinen, an unseren Grundsätzen für die gleichbleibend hohe Qualität ändert das aber nichts. Sicherheit und Fairness haben weiter höchste Priorität.

Mit überarbeiteten Regeln zum Cost Analysis Event beteiligt sich die Formula Student Germany aktiv an den Regelwerkänderungen. Die Disziplin wurde realistischer gestaltet und legt mehr Wert auf das Verstehen von Prozessen. Der neue Cost Report sorgt dafür, dass nicht mehr nur das Fahrzeug, sondern auch anfallende Kosten für Werkzeuge berücksichtigt werden. Damit fördern wird das ganzheitliche Verständnis

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 Einblick in die Welt motivierter, junger Ingenieure aus der ganzen Welt.

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

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Formula Student Germany – an introduction

Concept

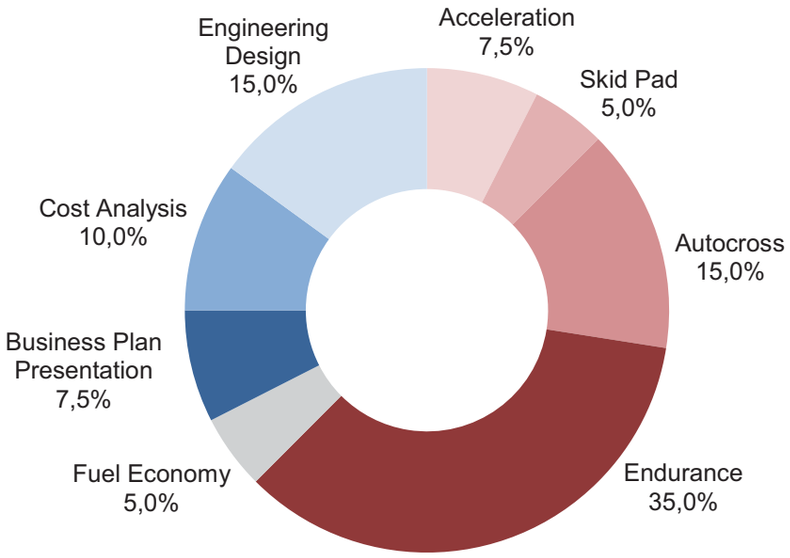
Students build a single seat formula racecar with which they can compete against teams from all over the world. The competition is not simply won by the team with the fastest car, but rather by the team with the best overall package of construction, performance, and financial and sales planning. To succeed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

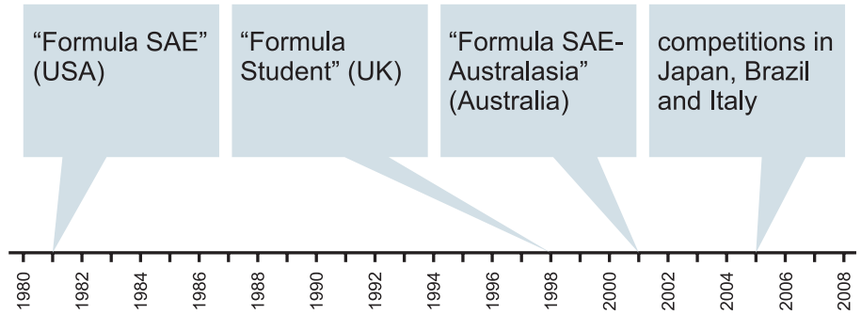
Der Wettbewerb

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.

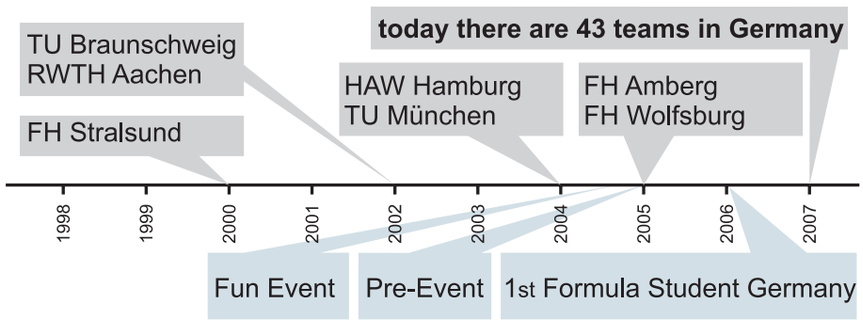
Competition in the automobile nation of Germany
Since 2006 the Verein Deutscher Ingenieure (VDI) is holding the „Formula Student Germany“ competition. Students from all over the world will meet every August for five days at Hockenheim to measure their designs and performance with each other in a Formula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

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 2006 Australia held the sixth „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



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

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 2006 rund dreißig Teams zur sechsten „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

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 learn and discuss technical, economical and organisational subjects concerning Formula Student.
Die Motivation der Studenten, einen Rennwagen zu bauen, ist so groß, dass sie zu Hunderten freiwillig zu eintägigen Workshops anreisen. Dort werden technische, wirtschaftliche und organisatorische Themen rund um die Formula Student vermittelt und diskutiert.

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.

Studenten. Sowohl zu den Förderern des 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.

The disciplines at a glance

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.*

Die Disziplinen im Überblick

Statische Disziplinen

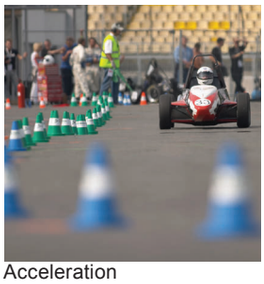
Engineering Design: *Im Design Report halten die studentischen Konstrukteure ihre konstruktiven Lösungen und deren Vorteile fest. Acht Seiten Text und Fahrzeugzeichnungen sollen die Juroren von den Konstruktionen und ihren Vorzügen für die Zielgruppe des nicht-professionellen Wochenendrennfahrers überzeugen. 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

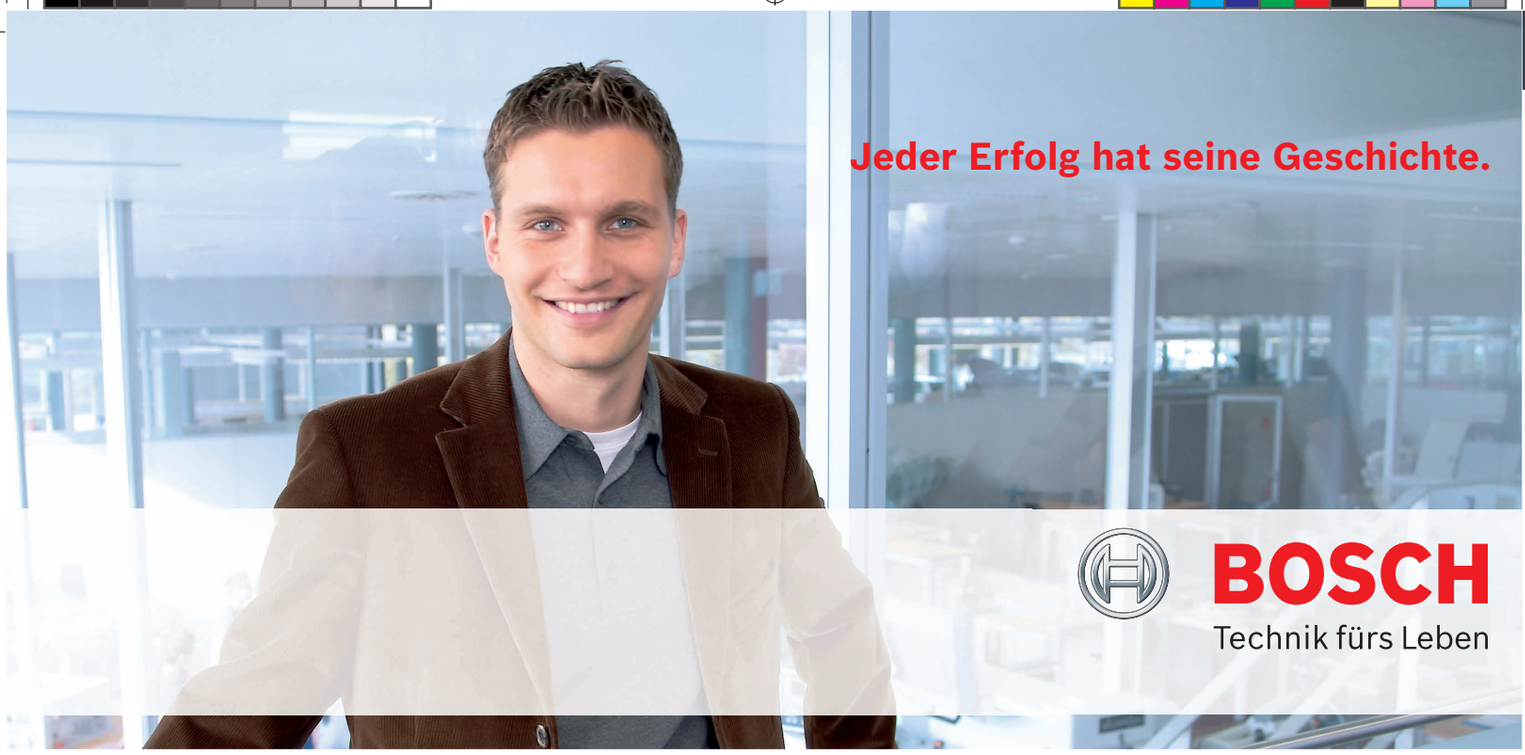
In den dynamischen Disziplinen müssen die Fahrzeuge die Praxistauglichkeit der studentischen Konstruktionen auf der Rennstrecke unter Beweis stellen. Die Disziplinen erfordern dabei unterschiedliche Eigenschaften. Bei jeder Disziplin starten zwei Fahrer mit je zwei Versuchen (bis auf den Endurance). 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 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. Farmington Hills/USA oder Yokohama/Japan) engagierte Verstärkung.

Applikateure w|m

Ihre Aufgabe: ► Anpassung von Motorsteuerungssystemen für Diesel- oder Ottomotoren, Bremsregel- und Chassissysteme sowie für den Bereich Bosch Motorsport ► Systeminbetriebnahme vor Ort, beim Kunden oder auf Erprobung ► Entwicklung, Simulation und Parametrierung neuer Funktionen am Simulator und im Fahrzeug ► Optimierung von Emissionen und Fahrverhalten ► EGAS und OBD II Applikation ► Durchführung von Versuchen an Versuchsfahrzeugen ► Ansprechpartner für Kunden **Ihr Profil:** ► Diplom-Ingenieur (w/m) Maschinenbau, Mechatronik, Elektrotechnik, Physik, Naturwissenschaften ► Möglichst Erfahrung mit Motorsteuerungen oder Fahrzeugen ► Teamfähigkeit ► Englische Sprachkenntnisse

Funktions- und Software-Entwickler w|m

Ihre Aufgabe: ► Funktions- und Softwareentwicklung für Diesel- und Ottomotoren, Bremsregel- und Chassissysteme sowie für den Bereich Bosch Motorsport ► Klärung technischer Anforderungen mit Kunden ► Entwurf, Simulation und Codierung neuer Funktionalitäten ► Planung und Durchführung von Reviews und Tests am Simulator und im Fahrzeug ► Integration von Funktionen in neue SW-Stände ► Erstbedatung und Inbetriebnahme von SW-Ständen im Zielsystem ► Präsentation, Diskussion und Abnahme der Ergebnisse mit Kunden ► Bei Bedarf Unterstützung bei Kundenerprobungen (Sommer/Winter/Höhe) ► Begleitung der Arbeitspakete von Planung bei Projektbeginn bis zum Serieneinsatz beim Kunden **Ihr Profil:** ► Diplom-Ingenieur (w/m) Maschinenbau, Mechatronik, Elektrotechnik, Naturwissenschaften ► Berufserfahrung im Bereich Funktions- und SW-Entwicklung von Motorsteuerungen bei OEM, Dienstleistern oder Automobil-Zulieferern von Vorteil ► Begeisterung für die Verknüpfung von elektronischen Steuerungssystemen und Motoren- bzw. Fahrzeug-Technik ► Kenntnisse in Mikrocontrollerprogrammierung, C, Echtzeitprogrammierung, Unix, Testmethodik, Requirements- und Changemanagement ► Flexibilität, Arbeitssorgfalt, effiziente Arbeitsweise ► Kundenorientierung, Interesse am Umgang mit internationalen Kunden ► Gute Englischkenntnisse, weitere Sprachen von Vorteil ► Bereitschaft für gelegentliche Auslandseinsätze bei Kundenbesprechungen und Erprobungen

Systementwickler w|m Regelungstechnik

Ihre Aufgabe: ► System-/Softwareentwicklung zur Unterstützung von ESP-Projekten ► Kundenspezifische Anpassung der Reglersoftware für Bremsregelsysteme ► Unterstützung der Applikateure bei der Analyse von Versuchsergebnissen und bei der Parametrisierung der Regler ► Analyse von Kundenforderungen ► Validierung und Freigabe der Reglersoftware ► Eigenverantwortliche Betreuung der Projekte vom Start bis zur Serienfreigabe **Ihr Profil:** ► Diplom-Ingenieur (w/m) Elektrotechnik, Kybernetik, Maschinenbau ► Vertiefung in Regelungstechnik, Systemtheorie und -dynamik ► Programmiererfahrung, Kenntnisse in C, Matlab/Simulink und Ascet ► Gute Kommunikationsfähigkeit ► Teamfähigkeit und Kundenorientierung ► Bereitschaft zur Teilnahme an Fahrversuchen im In- und Ausland

Systementwickler w|m Energiebordnetze

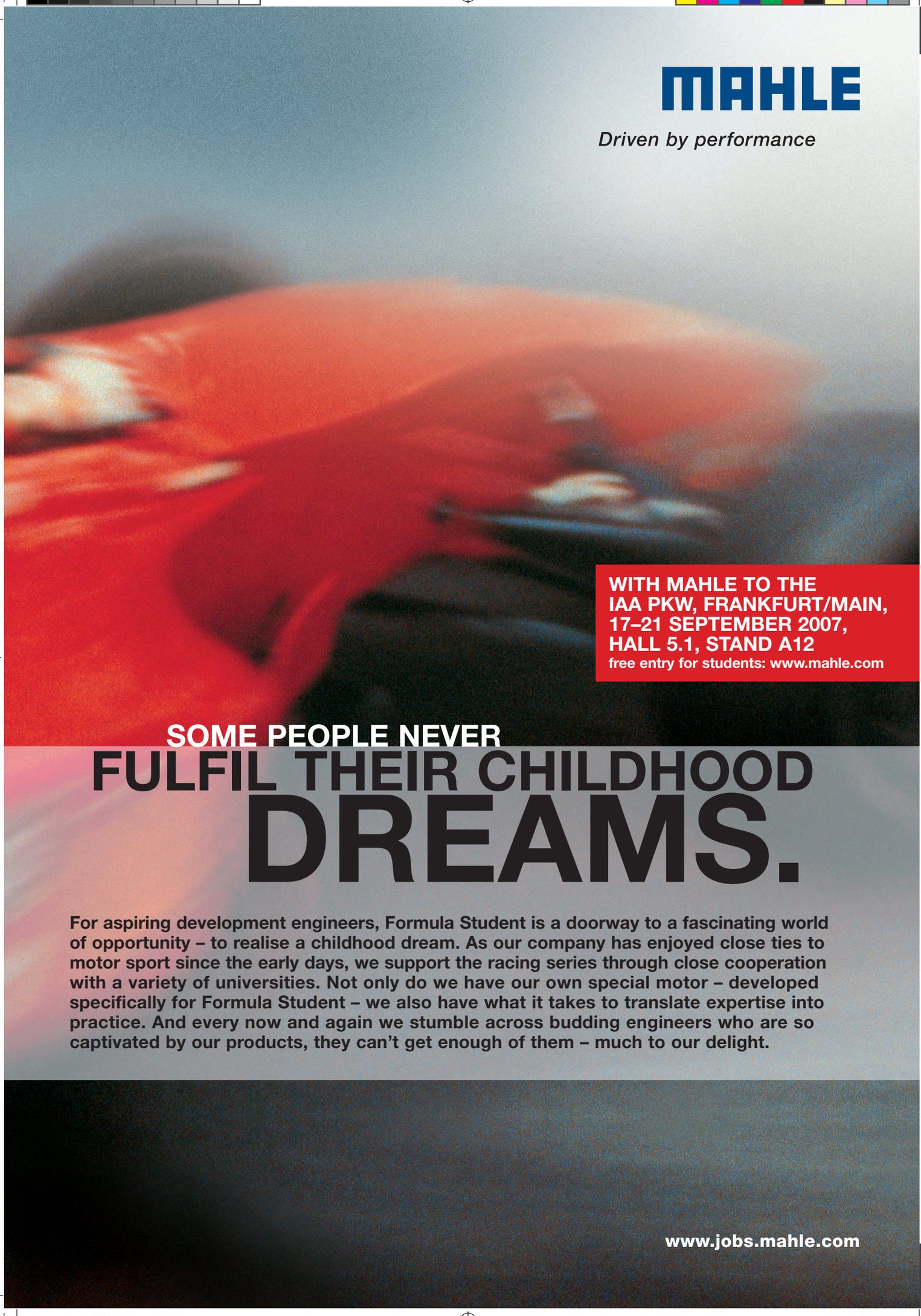
Ihre Aufgabe: ► Modellentwicklung/-verbesserung ► Validierung durch Versuche mit Komponenten und Fahrzeugen ► Durchführung von Konzeptstudien mit zukunftsweisendem Charakter: z. B. Energiemanagement, Reduktion des Kraftstoffverbrauchs ► Eigenverantwortliche Bearbeitung von Kundenprojekten ► Projektmanagement ► Klärung technischer Anforderungen mit Kunden ► Präsentation, Diskussion und Abnahme der Ergebnisse mit Kunden **Ihr Profil:** ► Studium der Elektro- oder Fahrzeugtechnik, Schwerpunkt: elektr. Antriebs-, Energie-, Regelungstechnik oder Leistungselektronik ► Gute Kenntnisse im Bereich Simulationsmethoden und -verfahren ► Erfahrung mit den Tools Matlab/Simulink, Saber oder Simplorer ► Eigeninitiative, selbständige Arbeitsweise, analytisches Denkvermögen sowie systematische Vorgehensweise ► Kreativität und Teamfähigkeit ► Englische Sprachkenntnisse

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

www.bosch-engineering.de

Awards 2007
Preise 2007

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	
1st place Overall Dynamic Events powered by SAE International	
Best Newcomer Award powered by FISITA	
Formula Student Germany Sportsmanship Award	
Style Award	
Best use of Electronics Award powered by Bosch Engineering GmbH	
Best Drivetrain Award powered by BMW Group	
Best Suspension Design Award powered by ZF Group	
Best Lightweight Design Award powered by AUDI AG	
High Horsepower Award powered by Bosch Engineering GmbH	



Schedule 2007

Zeitplan 2007

Wednesday, 8th of August 2007

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, 9th of August 2007

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	in front of 7
20:00 – 21:00	Reception for Faculty Advisors, Team Captains & Judges powered by Bosch Engineering GmbH	3 FSG forum

Friday, 10th of August 2007

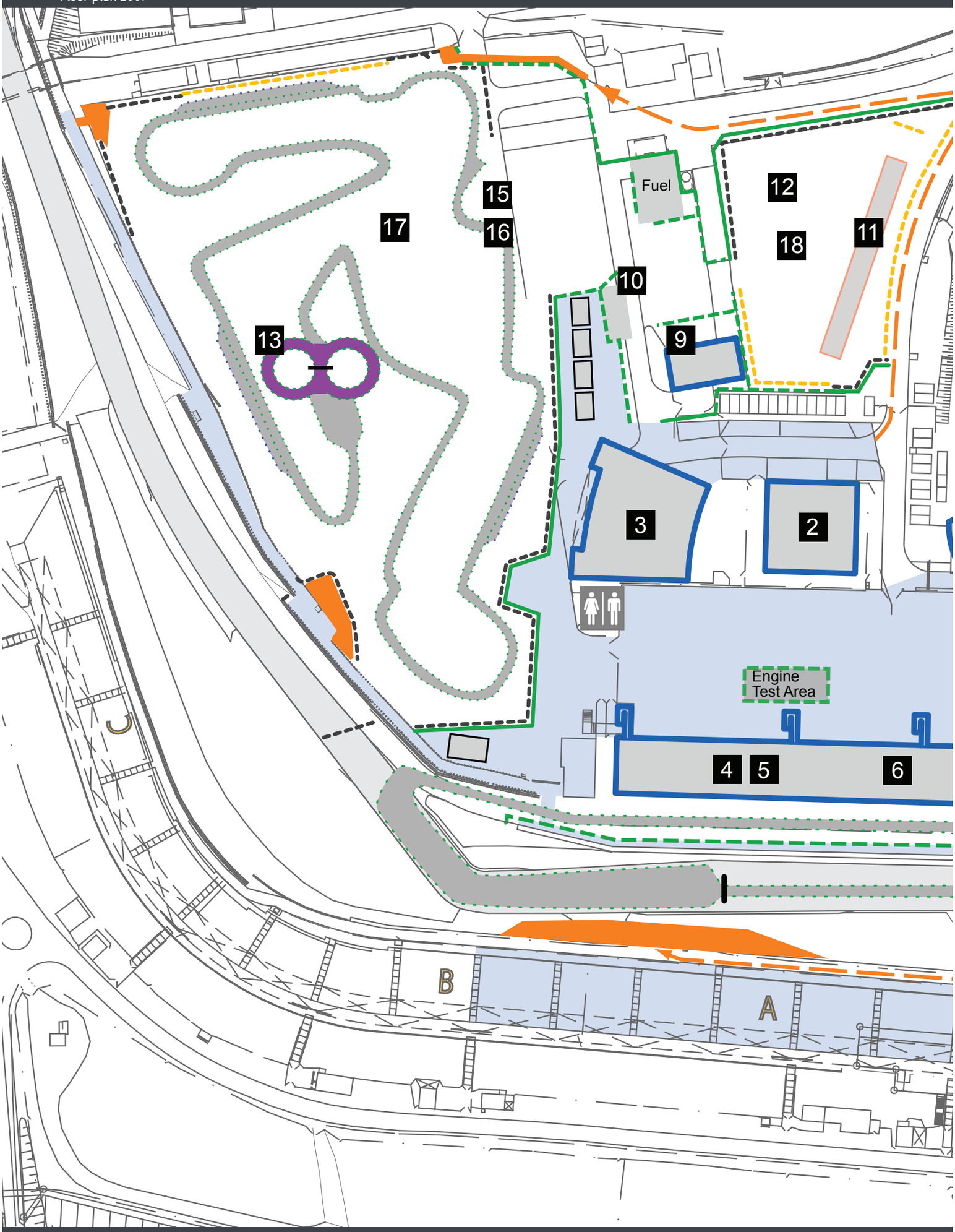
07:30 – 19:00	Ticket Center	1 Ticket Center
08:00 – 08:30	Team Briefing	5 Marquee above pits
08:30 – 19:00	Scrutineering	9 Scrutineering
09:00 – 18:00	Tilt table, Break test, Noise test	10 Tilt table 11 Brake test 12 Noise test
09:00 – 18:00	Engineering Design, Cost Analysis, Business Plan Presentation	6 Engineering Design & Cost Analysis 7 Business Plan Presentation Event
09:00 – 18:00	Test tracks open	17 Test track (10th of August)
19:00	Business Plan Presentation Finals	5 Marquee above pits
20:00	Awards Ceremony – Part I	5 Marquee above pits
21:00	Get together powered by Siemens VDO Automotive AG	5 Marquee above pits

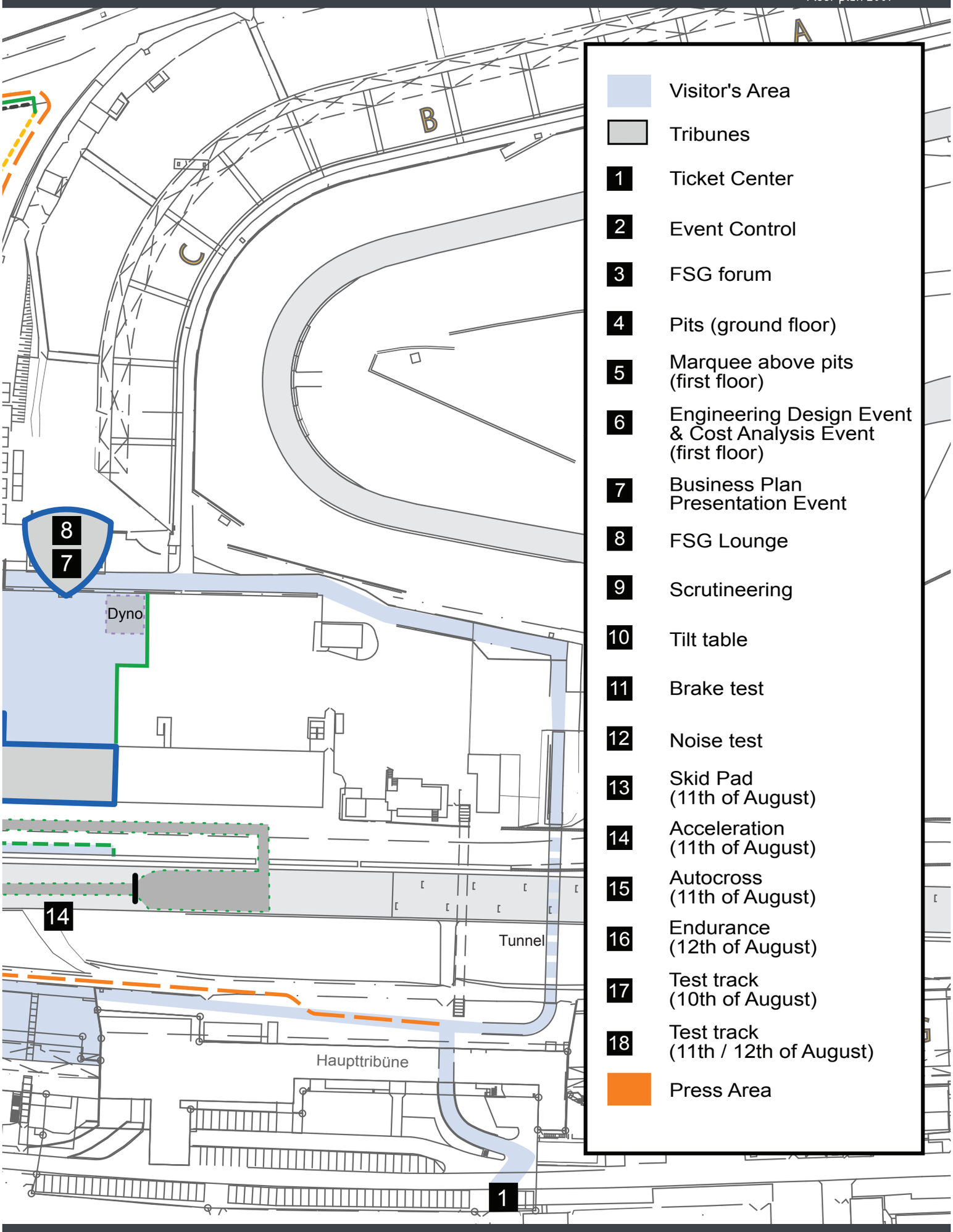
Saturday, 11th of August 2007

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

Sunday, 12th of August 2007

07:30 – 18:00	Ticket Center	1 Ticket Center
08:00 – 08:30	Team Briefing	5 Marquee above pits
09:00 – 17:00	Endurance	16 Endurance
09:00 – 18:00	Test track open	18 Test track (11th / 12th 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





- 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 (11th of August)
- 14 Acceleration (11th of August)
- 15 Autocross (11th of August)
- 16 Endurance (12th of August)
- 17 Test track (10th of August)
- 18 Test track (11th / 12th of August)
- Press Area

VDI-Campus

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All our efforts are channelled towards you: the designers of tomorrow, the future engines of economy. We accompany and support you during your studies and give answers to your questions:

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Become a member and benefit from information and consultation: as the largest technical-scientific organisation in Germany, the VDI doesn't only help you concerning education but also represents your interests and wishes.

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Verein Deutscher Ingenieure e.V. • Graf-Recke-Str. 84 • 40239 Düsseldorf • www.vdi-campus.de

Formula Student Germany Team

Formula Student Germany Team

Daniel Mazur

Chief Executive Event Manager

Ausführender Veranstaltungsmanager

Dr. Ludwig Vollrath

Secretary of the VDI Society for Automotive and Traffic Systems Technology

Geschäftsführer der VDI-Gesellschaft Fahrzeug- und Verkehrstechnik

Tim Hannig

Chair of the Steering Committee, Business Plan Presentation Event

Vorsitzender des Steering Committees, Business Plan Presentation Event

Frank Röske

Vice-chair of the Steering Committee, Engineering Design Event, Rules

Stellv. Vorsitzender des Steering Committees, Engineering Design Event, Regelwerk

Rainer Kötke

Member of the Steering Committee, Head of the Dynamic Disciplines

Mitglied des Steering Committee, Leiter der Dynamischen Disziplinen

Ulf Steinfurth

Member of the Steering Committee, Scrutineering

Mitglied des Steering Committee, Technische und Sicherheitsüberprüfung

Peter Jakowski

Member of the Steering Committee, Scoring, Time Keeping

Mitglied des Steering Committee, Punktevergabe, Zeitmessung

Jan Helbig

Member of the Steering Committee, Cost Analysis Event

Mitglied des Steering Committee, Cost Analysis Event

André Schmidt

Member of the Steering Committee, Scrutineering

Mitglied des Steering Committee, Technische und Sicherheitsüberprüfung

Birgit Pattberg

Public Relations, Vice Executive Event Manager

Öffentlichkeitsarbeit, Stellvertretende Veranstaltungsmanagerin

Daniel Ahrens

Event Control

Event Control

Leona Ehrenreich

Registration

Registrierung

Matthias Brutschin

Event Support

Veranstaltungsunterstützung

Thomas Ballschmieter

Pit Boss

Leiter der Boxengasse

Christine Baur

Public Relations

Öffentlichkeitsarbeit

Barbara Schlögl

Business Plan Presentation Event, Public Relations

Business Plan Presentation Event, Öffentlichkeitsarbeit

Judges 2007
Juroren 2007

Engineering Design Event

Alten, Hans	Heron
Bayer, Bernward	Continental Automotive Systems Division
Becker, Dietmar	Dr. Ing. h. c. F. Porsche AG
Borchardt, Jan	Andreas Stihl AG & Co.KG
Clarke, Pat	Hyundai Motor Company Australia
Could, David	Gould Engineering
Crosby, Paul	Crosby Composites Ltd
Daman, Paul	BMW AG
Daniel, Marc	Volkswagen AG
Deussen, Daniel	Weber Motor AG
Dittrich, Rudolf	BMW Motorsport
Erb, Thiemo	Dr. Ing. h. c. F. Porsche AG
Fischhaber, Günther	Audi AG
Fox, Steve	Powertrain Technology
Gesele, Frank	Audi AG
Gill, Adrian	Imperial College London
Goddard, Geoff	Goeff Goddard Engines
Hennig, Heiko	Audi AG
Herrmann, Jesko	Bertrand
Hickson, Alex	INSYS Limited
Hoefflin, Florian	Toyota F1
Hölzgen, André	Euro Engineering
Huber, Frank	Audi AG
Kleditzsch, Lars	Euro Engineering
Kock, Jörg	Continental AG
Kretzter, Bernd	2D Datarecording
Kube, Oliver	Kube GmbH Ingenieurbüro
Liebchen, Romolo	Audi AG
Matawa, Rob	TÜV Süd
Meid, Thomas	ZF Friedrichshafen AG
Meier, Thomas	Dr. Ing. h. c. F. Porsche AG
Michell, Ben	Dunlop
Nowicki, Daniel	BMW Motorsport
Pälmer, Oliver	DaimlerChrysler
Power, Craig	Power Control Service
Riefstahl, Dominique	BMW Motorsport
Rieke, Johannes	TU Braunschweig
Scharpe, Dieter	TÜV Süd
Schnaufer, Thomas	BMW M GmbH
Schneider, Thomas	Volkswagen AG
Schulz, Achim	Dr. Ing. h. c. F. Porsche AG
Speidel, Gerd	Thyssen Krupp Presta
Stammen, Kartsen	Volkswagen AG
Stanifort, Allan	Terrapian Services
Sturm, Michael	HSU Hamburg
Wartenberg, Knut	TÜV Süd
Wolf, Robert	Euro Engineering

Cost Analysis Event

Ankert, Detlef	Kautex Textron GmbH & Co. KG
Bantleon, Dieter	
Frommholz, Robert	Intelligement GmbH
Grundner, Harald	InnoVAVE
Hein, Michael	YAZAKI Europe Ltd.
Kaiser, Hartmut	Wilhelm Karmann GmbH
Lukoschek, Marian Paul	GME GmbH
Müller, Jens	Bombardier Transportation Germany GmbH & Co. KG
Pälmer, Reinhard	
Rauwerdink, Steven	
Schallner, Sascha	Festo AG & Co. KG
Scharff, Robert	DaimlerChrysler AG
Schmidt, Timo	LUK GmbH & Co. oHG
Schnabel, Matthias	D.O.K. GmbH
Schoon, Jürgen	TEC'n ECO
Steinmeier, Frank	Continental Automotive Systems Division
Supp, Udo	Linde AG
Unger, Herbert	WABCO Vehicle Control Systems
Werner, Sebastian	Festo AG & Co. KG
Wörz, Wolf	DaimlerChrysler AG

Business Plan Presentation Event

Bienert, Margo	FH Nürnberg
Bjekovic, Robert	DaimlerChrysler AG
Dechow, Dagmar	Linde AG
Dorfner, Barbara	DaimlerChrysler AG
Esser, Klaus	Kautex
Gampfer, Michael	CarboTech
Hannig, Peer	TXB Bank
Holz, Patrick	
Jagusch, Susanne	DaimlerChrysler AG
Koch, Sascha	Robert Bosch GmbH
Müller, Andreas	Kautex Textron GmbH & Co. KG
Neddermeyer, Claus	Maranova
Neichel, Andreas	CSC
Niemeyer, Reinhard	Air Liquide
Poscharsky, Nikolaus	FH Nürnberg
Preil, Cornelius	Deutz AG
Samak, Michael	Saatchi & Saatchi
Sendzik, Thomas	TRW
Schüssler, Onno	Linde AG
Senftleben, Daniela	VDI e.V.
Speth, Ralf	
Tiebing, Peer	Naspa
von Hugo, Christoph	DaimlerChrysler AG

Good reasons for supporting Formula Student Germany

In the automotive industry innovation is the driving force behind growth and success.

And this is precisely why AUDI AG is most delighted to give its backing to creative, innovative and committed up-and-coming talents, especially in the field of engineering.
The teams lining up for the race on this weekend have all come a long way, during which they have invested a great deal of work and emotion and experienced many intermediate successes, but have suffered setbacks 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 yearn to see in our employees. And anyone who succeeds in transferring our brand values of sportiness, progressiveness and sophistication to the race track is the right person for Audi.

Gute Gründe zur Unterstützung der Formula Student Germany

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.

Dipl. Ing. Markus Wollens
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 highly motivated and well educated students.

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

Bernhard Bihr
President *Geschäftsführer*
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 hochmotivierten und exzellent ausgebildeten Studenten ins Gespräch zu kommen.

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

brunel

The Formula Student Germany 2007 means for the project partner for technology and management Brunel support of young professionals on highest level. The participants demonstrate remarkable commitment and specialized knowledge in development of a single-seat formula racing car. In the content of this project work new generation engineers gain practical experiences and have to solve complex tasks in teamwork taking economic aspects into account as well. These characteristics exactly correspond to our profile, because Brunel specialists work out detailed solutions in the same way based on our customer requirements. Considering this, the formula student challenge is the event for Brunel and main reason for its commitment. Brunel offers qualified engineers and developers a challenging scope of duties with secure prospects and several opportunities for their professional and personal future.

Dipl.-Betriebswirt Carsten Siebeneich
General Manager *Geschäftsführer*
Brunel GmbH

Die Formula Student Germany 2007 bedeutet für den Projektpartner für Technik und Management Brunel Nachwuchsförderung auf höchstem Niveau. Die Teilnehmer demonstrieren außergewöhnliches Engagement und Fachwissen bei der Entwicklung eines einsitzigen Formelrennwagens. Die Nachwuchsingenieure sammeln im Rahmen dieser Projektarbeit praktische Erfahrungen und müssen in Teamarbeit komplexe Aufgaben unter betriebswirtschaftlichen Maßgaben lösen. Dies entspricht genau dem Profil der Brunel GmbH, denn die Spezialisten von Brunel erarbeiten exakt nach diesem System skalierte Lösungen auf Basis der vom Kunden gestellten Anforderungen. Dies ist auch der Grund für Brunel, sich für diese Veranstaltung zu engagieren. Brunel bietet qualifizierten Ingenieuren und Entwicklern ein spannendes Aufgabenfeld mit sicheren Perspektiven und breitem Raum für die eigene berufliche und persönliche Entwicklung.

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 provide us with an excellent infrastructure. DEKRA makes these test facilities available to individual teams. This year, the energy-absorbing structures for the crash boxes of the racing cars built by the Teams from Stralsund, Schweinfurt and Diepholz were tested. This way Formula Student offers the possibility to students to make their first personal contact 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 *Mitglied der Geschäftsführung*
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). Zudem haben wir mit dem DEKRA Technology Center eine ausgezeichnete Infrastruktur für den technischen Wettbewerb. DEKRA bietet einzelnen Teams diese Testeinrichtungen an. Dieses Jahr wurden hier die energieabsorbierenden Strukturen für die Crash-Boxen der Rennwagen der Teams aus Stralsund, Schweinfurt und Diepholz 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.

Around the world, our employees are working on new concepts and ideas for the mobile future.

Our target is, little by little, to improve the vehicles and production plants of tomorrow: technically, economically and emotionally.

Our claim makes clear this motivation for our projects for the international mobility industry: creating (e)motion.

Therefore we are delighted that, at Formula Student, teams which develop their own mobility ideas and then put them into practice are being formed.

We are glad to support Formula Student in this challenge of simply Creating Motion.

Christoph Horvath
Director of PR-Communication / Manager Public Relations
Leiter PR-Communication / Manager Public Relations
EDAG Engineering + Design AG

Weltweit arbeiten unsere Mitarbeiterinnen und Mitarbeiter an neuen Konzepten und Ideen für die mobile Zukunft.

Unser Ziel: Die Fahrzeuge und Produktionsanlagen von morgen stets ein stückweit zu verbessern: Technisch, wirtschaftlich und emotional.

Diese Motivation bei unseren Projekten für die internationale Mobilitätsindustrie wird in unserem Claim besonders deutlich: Creating (e) motion.

Daher freuen wir uns besonders, dass sich bei Formula Student Teams formieren, die proaktiv eigene mobile Ideen entwickeln und umsetzen.

Gerne unterstützen wir Formula Student bei dieser Herausforderung. Eben Creating Motion.

MAHLE

Driven by performance

For more than 80 years, MAHLE has played a crucial role in advancing the development of vehicle and engine technology and is continuously setting new standards. Driven by performance – MAHLE is known for exceptional enthusiasm for performance, precision, perfection and cutting-edge innovations.

MAHLE has a local presence in all important world markets. The Group has more than 40,000 dedicated employees in 110 production plants and seven research and development centers. Worldwide, nearly 2,300 development engineers and technicians work as partners for our customers on forward-thinking concepts, products and systems focused on the continuous development of the combustion engine. In 2006, the MAHLE Group generated sales in excess of EUR 4.3 billion (USD 5.8 billion), positioning the company among the top 30 automotive suppliers globally.

Eva Martinez
Human Resources Marketing (HMM)
MAHLE International GmbH

Seit über 80 Jahren treibt MAHLE die Entwicklung der Fahrzeug- und Motorentechnik entscheidend voran und setzt dabei immer wieder Maßstäbe. Driven by performance – MAHLE steht für überdurchschnittliche Begeisterung für Leistung, Präzision, Perfektion und hohe Innovationskraft.

In allen wichtigen Weltmärkten zeigt MAHLE Präsenz vor Ort. Mehr als 40.000 Mitarbeiter engagieren sich an 110 Produktionsstandorten und in sieben Forschungs- und Entwicklungszentren. Weltweit arbeiten circa 2.300 Entwicklungsingenieure und Techniker als Entwicklungspartner unserer Kunden an zukunftsweisenden Konzepten, Produkten und Systemen für die Weiterentwicklung des Verbrennungsmotors. 2006 erzielte der MAHLE Konzern einen Umsatz von über 4,3 Mrd. EUR (5,8 Mrd. USD) und zählt damit zu den 30 weltweit größten Automobilzulieferern.

SIEMENS VDO

Formula Student is an established and internationally renowned event for students with various specializations in automotive engineering.

This competition offers up-and-coming engineers a unique opportunity to transfer their theoretical knowledge into practical applications and expand their experience. Formula Student encourages interdisciplinary thinking, entrepreneurship and team spirit – important requirements for a successful career in the automotive industry.

As one of the world's leading suppliers of innovative automotive electronics and mechatronics, Siemens VDO attaches great importance to promoting and inspiring tomorrow's engineers to take part in the future of the automotive industry. The opportunities that Formula Student offers in this respect are excellent.

Alexander Müller
Head of Human Resources *Leiter Human Resources*
Siemens VDO Automotive AG

Formula Student hat sich zu einer international renommierten Veranstaltung für Studierende verschiedenster Fachrichtungen des Automobilbaus etabliert.

Der Konstruktionswettbewerb bietet angehenden Ingenieuren eine einzigartige Möglichkeit, das im Studium erworbene Wissen in die Praxis umzusetzen und zu vertiefen. Formula Student fördert interdisziplinäres Denken, leistungsorientiertes unternehmerisches Handeln und Teamgeist – wichtige Voraussetzungen für eine erfolgreiche Karriere in der Automobil- und Zulieferindustrie.

Als einer der weltweit führenden Zulieferer für innovative Automobilelektronik und -mechatronik betrachten wir es als wichtige Aufgabe, die Ingenieure von morgen zu fördern und für die Zukunft der Automobilindustrie zu begeistern. Und hierfür bietet Formula Student eine exzellente Plattform.

We are happy to support Formula Student Germany again. It's an excellent means for students to get prepared for their future working life while it provides a great recruiting opportunity for the industry.

And this is an important topic for SolidWorks as well. It is not only about equiping students with the best design tools but also have them gain valuable working experiences. I believe that the proactive support of young professionals has a top priority for Germany's economy. Who once saw the fantastic performances at Formula Student Germany, knows the potential of Germany's young talents and understands why SolidWorks is sponsoring this event.

Dipl.-Inform. Lutz Bettels
Business Manager Education Europe
SolidWorks Europe

Wir freuen uns, die Formula Student Germany auch in diesem Jahr wieder unterstützen zu können. Dieser Wettbewerb gibt Studenten eine hervorragende Möglichkeit, sich auf ihr späteres Berufsleben vorzubereiten. Gleichzeitig eröffnen sich der Industrie sehr gute Chancen im Hinblick auf das Recruiting von Nachwuchskräften.

Hierin sehen wir auch für SolidWorks ein wichtiges Thema. Dabei geht es nicht nur darum, Schülern und Studenten das beste Konstruktionswerkzeug an die Hand zu geben, sondern auch darum, dass sie nützliche Erfahrungen für ihr späteres Berufsleben sammeln können. Meiner Meinung nach hat die aktive Förderung von Berufseinsteigern für den Standort Deutschland oberste Priorität. Wer einmal die fantastischen Leistungen bei der Formula Student Germany gesehen hat, weiß um das Potential des deutschen Nachwuchses und versteht, warum SolidWorks diesen Wettbewerb sponsert.

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 per cent 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 *Zentralbereich 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 Thyssen Krupp frühzeitig Kontakt zu den Studierenden und unterstützt die Formula Student Germany.

TOYOTA MOTORSPORT GMBH (TMG) in Cologne/Germany is the wholly-owned subsidiary of Toyota Motor Corporation in Japan and responsible for its Formula One project. TMG started Toyota's World Rally Championship programme in 1972 and can look back on many years of successful motor racing with numerous wins and 7 WRC titles and a 2nd place in the Le Mans 24-hours race in 1999.
Toyota's Formula One project was announced in 1999 and TMG began to build up the team and its high-tech facility – changing from a Rally and Le Mans to a Formula One team. In 2002 Toyota had its debut in the Formula One World Championship. Today over 650 employees from 32 countries develop, produce and build the entire car. Toyota is one out of only two Formula One teams to build the complete car under one roof.
Young engineers who share our passion for new challenges are welcome to enforce our team.

Rob Leupen
General Manager Human Resources
Toyota Motorsport GmbH

TOYOTA MOTORSPORT GMBH (TMG) in Köln ist als Tochtergesellschaft der Toyota Motor Corporation in Japan für das Formel Eins Projekt verantwortlich. 1972 begann TMG mit dem World Rallye Championship Programm und kann auf eine langjährige Motorsporterfahrung mit zahlreichen Siegen und 7 WRC Titeln sowie einem 2. Platz beim 24-Stunden-Rennen von Le Mans in 1999 zurückblicken. 1999 wurde das Toyota Formel Eins Projekt gestartet und mit dem Aufbau des Teams und der HighTech Fabrik – basierend auf den Erfahrungen aus Rallye und Le Mans Projekt – begonnen. 2002 folgte das Debüt in der Formel Eins. Heute entwickeln, produzieren und bauen mehr als 650 Mitarbeiter/-innen aus 32 Nationen das gesamte Fahrzeug. Toyota ist eines von nur zwei Formel Eins Teams, die das komplette Fahrzeug an einem Standort entwickeln und bauen. Junge Ingenieur/-innen, die unsere Leidenschaft für neue Herausforderungen teilen, sind eine willkommene Verstärkung für unser Team.

ZF has been supporting Formula Student teams for 5 years already. ZF promotes not only teams from Germany but also from Sweden, India, and Japan.

Something we particular like is that the Formula Students work with their hearts, hands, and brains!

This is the kind of engineers we are looking for. Innovative spirit, team spirit, project management, competitive spirit.

These are skills you cannot acquire at universities – but with Formula Student!

ZF also enters the race with its own products. Many teams are equipped with ZF Sachs Racing dampers.

Frank Ross
HR Marketing *Personalmarketing*
ZF Group

ZF unterstützt Formula Student Teams bereits seit 5 Jahren. Neben deutschen Teams fördert ZF auch Teams in Schweden, Indien und Japan.

Was uns besonders gefällt:
Die Formula Students arbeiten hier mit Herz, Hand und Verstand.

Solche Ingenieure suchen wir.
Erfindungsgeist, Teamgeist, Projektmanagement, Wettkampfgeist.

Das lernt man nicht an der Hochschule – aber bei Formula Student!

ZF ist auch mit eigenen Produkten im Rennen. Viele Teams sind mit ZF Sachs Racing Dämpfern ausgestattet.

Pat's Corner: Starting a new team and building the first car – difficulties and challenges

I have been an observer of Formula Student and its twin competition FSAE for more than 10 years. In that time I have seen many new teams start out, some with success and some with heartbreak. I will try help new teams avoid the heartbreak.

It is easy for a team of enthusiastic young students to get carried away and design and build a car as they go along. Invariably, this is the first step on the road to heartache.

Basics of a team

The team must have a working plan. Formula Student is more an exercise in project management than it is in building a car. All successful teams have a strong and committed project leader – someone capable of making the hard decisions whilst holding the team together in times of crisis. These people are hard to find. The usual problem is that people have a need to be liked, and so have difficulty making those hard decisions.

All members of the team should have a hard copy of the rules and should study and understand them. So much heartbreak comes from teams failing at Technical Inspection because their car does not meet the rules.

At the first planning meeting, this person needs to start delegation. The first tasks I see are:

- Raising a budget
- Getting College and Industry support
- Setting out a basic plan

The budget task should be self explanatory. The University or College may contribute, especially if parts of the car design contribute to individual student achievements.

Sponsorship can be gained from companies who have something to gain from the project. I always recommend that teams do NOT use the word 'Racing' in their official logo or team name. Marketing managers all over the world are besieged by racers asking for money to spend on their racing with little or no benefit to the sponsor. These proposals invariably end up in the trash can. Your marketing/sponsorship proposal should emphasise the educational side of the project. Refer to FSG as an 'International Student Engineering Competition' or something similar as this will have more appeal.

Pat's Corner: Ein neues Team gründen – das erste Auto bauen

Ich beobachte Formula Student und FSAE schon seit mehr als 10 Jahren. In dieser Zeit habe ich viele neue Teams gesehen – manche mit Erfolg und manche ohne. Ich will versuchen, neuen Teams zu helfen, Misserfolge zu vermeiden.

Grundlagen des Teams

Das Team muss einen Arbeitsplan haben. Denn Formula Student ist eher eine Übung in Projektmanagement als in Automobilbau. Alle erfolgreichen Teams haben einen starken und engagierten Projektleiter – jemanden, der in der Lage ist, die schwierigen Entscheidungen zu treffen, und der das Team in Krisenzeiten zusammenhält. Solche Leute sind schwer zu finden. Die meisten Leute wollen gemocht werden und haben daher Schwierigkeiten, harte Entscheidungen zu treffen.

Alle Teammitglieder sollten eine Papierversion des Reglements haben, sie lesen und verstehen. Denn die Enttäuschung ist groß, wenn ein Team bei der technischen Abnahme durchfällt, weil das Fahrzeug nicht dem Reglement entspricht.

Beim ersten Planungstreffen muss der Projektleiter mit der Aufgabenverteilung beginnen. Die ersten Aufgaben sind aus meiner Sicht:

- *Aufbau eines Budgets*
- *Einholen von Unterstützung der Universität und der Industrie*
- *Ausarbeiten eines grundlegenden Konzepts*

Die Aufgabe „Aufbau eines Budgets" sollte selbsterklärend sein. Auch die Universität kann dabei helfen, besonders wenn Teile der Fahrzeugentwicklung zur Ausbildung einzelner Studenten beitragen.

Sponsorengelder können von Firmen kommen, die vom Projekt profitieren. Ich empfehle immer, dass Teams NICHT ‚Racing' oder ‚Renn-' in ihrem Logo oder Teamnamen nutzen. Marketing-Manager auf der ganzen Welt werden von Rennfahrern belagert, die Geld für ihre Rennen haben wollen und dem Sponsor

A word of warning! Sponsorship is not free money, there are strings attached. Sometimes these strings are impossible to meet, and so that sponsorship may need to be politely refused. I recall a sponsor offering a team money only if they built a diamond shaped car.

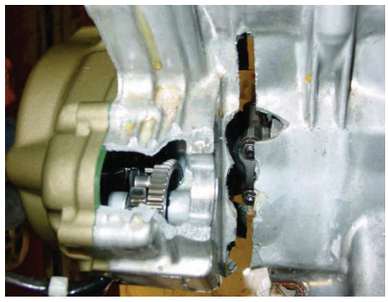
Look after your sponsors; they are a rare and fragile breed. A good sponsor can make or break a team. I would suggest that €10,000 would be a realistic figure to aim for in initial sponsorship, but more may well be needed later in the project.

Then there is the basic plan. What sort of car do you wish to build? There are choices in frame design, engine type, wheel size, tyre type. Some of these decisions may be made by your sponsor, for instance, a motorcycle manufacturer may donate your engine. Otherwise these decisions should be made in a pragmatic way.

As well as a basic plan, there should be a time line set. Markers should be set on this time line relating to various steps in the process up to and including the competition. The ultimate heartache is when a team does not get the project finished in time. It is the task of the project manager to ensure these markers are met. The designers will gain new knowledge during the project, and will want to include this knowledge in the design. This is okay as long as it does not delay the project. Ideas that will delay the project should go into next year's car!

Design decisions

Before designing anything, the team should research what is successful elsewhere. There are good reasons why the vast majority of these cars have a four cylinder engine mounted in a steel tube chassis and rolling on 13" wheels, and that is exactly the formula I would recommend to any new team.



Engine destroyed in testing
Beim Testen zerstörter Motor

Your research should be based on FS/FSAE cars, as their design requirements are unique. Formula 1 technology has developed to suit very different requirements. Aero performance is king in F1 whereas aero performance has little influence in an FSG car.

Engine testing on dynamometer
Motor beim Test auf dem Motorprüfstand

Obtain access to a real formula racing car and benchmark the ergonomics! It is amazing how many

wenig oder keinen Benefit bieten. Diese Anfragen wandern unbesehen in den Mülleimer. Eure Marketing- bzw. Sponsorenanfrage sollte den Ausbildungsaspekt des Projekts betonen. Verweist auf die FSG als ein ‚internationaler studentischer Konstruktionswettbewerb' oder Ähnliches, damit es mehr Anklang findet.

Vor einer Sache muss ich warnen! Sponsorengelder gibt es nicht umsonst, es sind Bedingungen daran gebunden. Diese Bedingungen sind manchmal unmöglich zu erfüllen, so dass eine Unterstützung auch mal freundlich abgelehnt werden muss. Ich erinnere mich an einen Sponsor, der einem Team Geld nur dann geboten hat, wenn sie ein diamantförmiges Auto bauen.

Kümmert euch um eure Sponsoren – sie sind ein seltenes und zerbrechliches Gut. Ein guter Sponsor kann für Erfolg oder Misserfolg eines Team entscheidend sein. Ich denke, dass 10.000 Euro ein realistischer Betrag sind, der für eine erste Unterstützung angestrebt werden kann. Es kann sein, dass ihr zu einem späteren Zeitpunkt mehr Geld brauchen werdet.

Erstellt ein grundlegendes Konzept, was für eine Art von Auto ihr bauen möchtet. Dazu gehören Entscheidungen zu Rahmenkonstruktion, Motorentyp, Reifengröße und Reifentyp. Manche Entscheidungen beeinflusst ein Sponsor, wenn z.B. ein Motorhersteller einen Motor stiftet. Ansonsten solltet ihr diese Entscheidungen pragmatisch treffen. Neben dem Basiskonzept solltet ihr auch einen Zeitplan erstellen. Darin sollten Meilensteine für den Fortschritt einzelner Prozesse bis zum und einschließlich des Wettbewerbs festgesetzt sein. Die größte Enttäuschung ist, wenn ein Team nicht rechtzeitig fertig wird. Der Projektleiter hat die Aufgabe, die Einhaltung aller Meilensteine sicherzustellen. Die Entwickler werden während des Projekts neue Erkenntnisse gewinnen und diese auch in die Entwicklung einbringen wollen. Das ist genau so lange in Ordnung, wie es das

FS cars are undriveable after a couple of laps because of ergonomic shortcomings! The relationship of seat, pedals, steering wheel and driver's eye line is important. So is sufficient room inside the car to operate properly! If the driver's shins are knocking against the steering rack or his elbow bangs the frame each time he changes gear, then he will be slow!

I always recommend 13" wheels to a new team. There are many reasons for this. There is more space inside the wheel to mount suspension, brake and steering components. The suspension loads are usually easier to feed into the chassis and there is a much better selection of tyres available. A valuable side effect of this is that when the competition is over and the car becomes a practice car for the next team, cheap used tyres from Formula BMW or similar can be used.

The tyre is, of course, the first and most important design decision. There is a Tyre Testing Consortium of teams who have paid to have suitable tyres tested. This data is available for a cost of about €500. I don't think it is necessary for a new team to buy this data. Common sense would show that the teams with experience and money have chosen the best tyre, so perhaps the best idea for a new team is to just copy what they are using and then learn about the tyre.

I have not mentioned the chassis yet for good reason. The chassis design comes late in the project, not at the beginning! I would recommend a new team build a tubular steel chassis rather than a composite monocoque structure. This

Student constructing a space frame chassis
Student beim Bau eines Gitterrohrrahmens

Testing a chassis for torsional stiffness
Ermittlung der Torsionssteifigkeit einer Karosserie

Measuring Polar Moment of Inertia
Messen des polaren Trägheitsmoments

Students constructing a monocoque chassis
Studenten beim Bau eines Monocoque-Chassis

Projekt nicht verzögert. Ideen, die das Projekt verzögern würden, sollten in das Auto für das nächste Jahr einfließen!

Konstruktive Entscheidungen

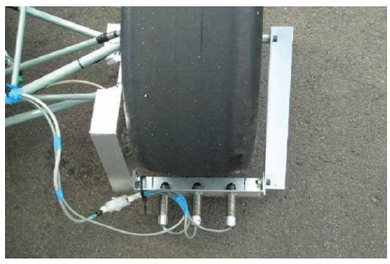
Vor der Konstruktion sollte das Team recherchieren, was anderswo bereits erfolgreich funktioniert. Es gibt gute Gründe, warum die meisten Autos einen Vierzylinder-Motor in einem Gitterrohrrahmen tragen und auf 13"-Reifen unterwegs sind, und genau das würde ich auch einem neuen Team empfehlen. Die Recherche sollte auf Formula Student bzw. FSAE-Fahrzeugen basieren, da sie eigene konstruktive Anforderungen haben. Die Technik der Formel 1 muss ganz anderen Anforderungen gerecht werden. In der Formel 1 ist die Aerodynamik entscheidend, bei einem FSG-Auto hat sie dagegen wenig Einfluss.

Verschafft euch einen Einblick in ein echtes Formelrennfahrzeug und nehmt seine Ergonomie als Maßstab! Es ist unglaublich, wie viele FS-Autos nach ein paar Runden wegen mangelnder Ergonomie unfahrbar sind! Die Anordnung von Sitz, Pedalen, Lenkrad und Augenhöhe des Fahrers ist wichtig. Genauso wie ausreichend Platz im Auto, um sich richtig bewegen zu können! Wenn die Schienbeine des Fahrers gegen die Lenkstange stoßen oder sein Ellbogen jedes Mal gegen den Rahmen schlägt, wenn er schaltet, dann wird er langsam sein!

Ich empfehle neuen Teams immer 13"-Felgen. Dafür gibt es viele Gründe: Es ist mehr Bauraum vorhanden, um Radträger, Bremse und Spurhebel unterzubringen. Die Fahrwerkslasten sind einfacher auf den Rahmen zu übertragen und es gibt eine größere Auswahl an Reifen. Ein positiver Nebeneffekt ist, dass nach dem Wettbewerb, wenn das Auto zum Testauto für das nachrückende Team wird, günstige gebrauchte Reifen z.B. aus der Formel BMW verwendet werden können.

Der Reifen ist die erste und wichtigste konstruktive Entscheidung. Es gibt einen

is because it is far easier to modify or repair a steel chassis after initial testing. All the suspension and steering lessons learned can be transferred to a composite chassis in the future if needed.



Measuring tyre temperatures
Messung von Reifentemperaturen

Once all the rules requirements, suspension points, driver controls etc are loaded into the computer, the chassis design becomes a matter of 'joining the dots' in an intelligent manner.

The car should be finished to a point where it can be tested at least one month before the competition. FSG is not where the team wants to find out the small problems that might prevent them from competing, nor is it the place to learn to drive the car.

Finally, and this is important! Write a great Design Report. This is the document that will tell the judges what you set out to achieve and how you went about it. It will become the record of your achievement along with the car.

Oh, one last thing, make sure you keep records to pass on to the next team so they do not have to start from scratch like you did.

Good luck with your project!

Zusammenschluss von Teams, die die Vermessung passender Reifen bezahlt haben. Diese Daten sind für etwa 500 Euro erhältlich. Für ein neues Team ist der Kauf dieser Daten nicht notwendig. Neue Teams können sich einfach an etablierten Teams orientieren, die mit Erfahrung und Geld den besten Reifen ausgesucht haben, diese Auswahl übernehmen und Erfahrungen damit sammeln.

Die Konstruktion des Chassis kommt erst spät im Projekt, nicht am Anfang! Ich empfehle neuen Teams einen Stahlrohrrahmen anstelle eines Monocoques aus Verbundwerkstoff. Ein Stahlrahmen kann nach ersten Tests einfacher modifiziert oder repariert werden. Erfahrungen zu Fahrwerk und Lenkung können ggf. später auf ein Verbundchassis übertragen werden. Wenn erstmal alle Regelanforderungen, Fahrwerkspunkte, Bedienelemente etc. in den Computer geladen sind, ist die Konstruktion des Chassis ein intelligentes ‚Verbinden der Punkte'.

Das Fahrzeug sollte so fertiggestellt werden, dass ihr vor dem Wettbewerb noch mindestens einen Monat testen könnt. Die FSG ist nicht der richtige Ort, um die kleinen Probleme zu finden, die eine Teilnahme am Wettbewerb verhindern können, oder um zu lernen, das Auto zu fahren.

Zum Schluss – und das ist wichtig – schreibt einen tollen Design Report! Das ist das Dokument, das den Juroren zeigt, was ihr anstrebt und wie ihr das erreichen wollt. Es wird zusammen mit eurem Fahrzeug der Beleg eurer Leistung sein.

Und: Hebt Aufzeichnungen für die nächste Teamgeneration auf, damit sie nicht wieder bei Null anfangen muss, so wie ihr es getan habt!

Viel Glück mit eurem Projekt!

Author
Pat Clarke gives advice to the teams as Technical Advisor for Formula Student Germany and is also one of the Design Judges.

Autor
Pat Clarke ist technischer Berater und Juror beim Design Event für die FSG.

Interview:
A safe competition needs a thorough Scrutineering

What is Scrutineering?
André Schmidt: Scrutineering is the inspection of the car regarding to compliance with the rules and safety. Cars passing the Scrutineering get a sticker. Before a car is allowed to enter the racetrack additional stickers for passing tilt table, noise and brake test are required.

Why do we need Scrutineering?
Ulf Steinfurth: Motorsport can be dangerous. The cars used at Formula Student aren't field tested mass-production vehicles – they are self-built prototypes. Furthermore, the drivers are students, who don't always react like a professional race driver. Thus, safety has an absolute priority at Formula Student Germany. We want to keep the risk of accidents and injuries as low as possible and this starts with the technical inspection of the cars during Scrutineering.

André Schmidt: This doesn't only affect the drivers. Also journalists, visitors as well as marshals on the racetrack must be protected for example from a wheel loosening and hitting somebody. Barriers for visitors and journalist areas are helpful but safety starts while building the car. And that's what we check.

Scrutineers agreeing about details to ensure that all scrutineering teams judge identically.
Die Scrutineers verständigen sich auf die Details, damit alle Prüfer-Teams gleich urteilen.

What exactly do the scrutineers check?
Ulf Steinfurth: We examine all components and accessories of the car being relevant for safety. It starts with the chassis, proceeds at the wheel suspension, steering, brakes and rims and finishes at the tyres. But we also check details like the placement of fuel lines, the fastening of the intake system, the correct operation of the emergency switch or the firewall protecting the driver in case of an engine fire.

Ein sicherer Wettbewerb braucht ein gründliches Scrutineering

Was ist das Scrutineering?
André Schmidt: Unter Scrutineering versteht man die Überprüfung des Fahrzeugs auf Regelkonformität und Sicherheit. Dafür gibt es dann eine Plakette, die auf das Fahrzeug geklebt wird. Kommen noch Plaketten für den bestandenen Noise Test, den Tilt Table und Bremstest dazu, darf das Fahrzeug auf die Rennstrecke.

Wozu dient das Scrutineering?
Ulf Steinfurth: Motorsport kann gefährlich sein. Die Formula Student Fahrzeuge sind keine tausendfach erprobten Serienfahrzeuge, sondern selbstgebaute Prototypen. Zudem sind die Fahrer Studenten, die nicht in jeder Situation die Souveränität eines Profi-Rennfahrers aufbringen. Daher hat bei der Formula Student Germany die Sicherheit absolute Priorität, um die Verletzungs- und Unfallgefahr für alle so gering wie möglich zu halten. Das fängt beim Scrutineering mit der technischen Überprüfung der Fahrzeuge an.

André Schmidt: Das betrifft nicht nur die Fahrer. Auch die Marshals am Streckenrand, Journalisten und Besucher müssen davor geschützt werden, dass sich zum Beispiel ein Reifen löst und jemanden trifft. Absperrungen für die Zuschauer und Areale für die Presse helfen da zwar, die Sicherheit fängt aber beim Bau des Rennwagens an. Und das überprüfen wir.

Was überprüfen die Scrutineers?
Ulf Steinfurth: Alle sicherheitsrelevanten Bau- und Zubehörteile des Rennwagens werden unter die Lupe genommen. Das beginnt bei der Rahmenstruktur, geht über Radaufhängung, Lenkung, Bremsen und Felgen bis hin zu den Reifen. Aber wir prüfen auch kleine und große Details wie die Verlegung der Kraftstoffleitungen, die Befestigung des Ansaugsystems, das korrekte Funktionieren der Notausschalter oder die Feuerschutzwand, die den Fahrer durch hitzeresistentes Material vor einem möglicherweise brennenden Motor schützt.

André Schmidt: Additionally a lot of safety equipment is needed in order to prevent accidents and injuries: racing overall, helmet and shoes made of fire-resistant material, flawless tyres and rims, a solid push bar which is used to move the car outside of the racetrack, a fire extinguisher ready for use and so on. Finally driver and car have to match each other. The tallest driver of each team must fit into the team's car (four drivers per team are allowed). For example, his head and hands must not contact the ground in any rollover situation. In case of fire the driver has to be able to exit the cockpit quickly, which is checked by the five-second emergency exit (egress test).

André Schmidt: Es gehört auch einiges an Ausrüstung zur Vermeidung von Unfällen und Verletzungen dazu: Fahreranzug, Helm und Schuhe aus speziellem feuerfestem Material, intakte Ersatzreifen und -felgen, ein stabiler Push-bar, mit dem das Fahrzeug geschoben wird, ein einsatzbereiter Feuerlöscher usw. Schließlich müssen Fahrer und Fahrzeug noch zusammen passen. Der größte Fahrer (vier dürfen pro Team eingesetzt werden) muss ins Fahrzeug passen. Beispielsweise darf sein Kopf nicht über die Linie hinausragen, auf der die Überrollbügel beim Überschlag aufsetzen. Und wenn es brennt, muss der Fahrer schnell aus dem meist schmalen Cockpit herauskommen. Das lassen wir uns beim 5-Sekunden-Ausstiegstest demonstrieren.

The Scrutineering Checklist – Main topics
Die Scrutineering-Checkliste – Hauptpunkte

- Driver's equipment and fire extinguisher
- Exterior: Push bar, Bodywork Jacking Point etc.
- Main frame structure
- Steering, suspension, brakes, wheel suspension
- Interior: driver restraint harness, firewall, driver's protection etc.
- Drive train: intake manifold, exhaust system, scatter shields, throttle body and restrictor (to name only a few)
- Fuel system: fuel tank and filler neck, fuel lines etc.
- Electronic devices: main switch, battery, brake light etc.

- *Fahrerbekleidung und Feuerlöscher*
- *Exterieur: Pushbar, Ansatzpunkt für Wagenheber u.a.*
- *Rahmenhauptstruktur*
- *Lenkung, Federung, Bremsen, Radaufhängung*
- *Interieur: Gurtsystem, Feuerschutzwand, Fahrerschutz u.a.*
- *Antriebsstrang: Ansaugsystem, Abgassystem, Kettenschutz, Drosselklappe und Restrictor, um nur einige zu nennen*
- *Kraftstoffsystem: Tank und Einfüllstutzen, Kraftstoffleitungen u.a.*
- *Elektrische Anlage: Hauptschalter, Batterie, Bremslicht usw.*

Can you describe the Scrutineering process?
Ulf Steinfurth: The scrutineers are going along a checklist. If we point out a mistake we give advice to the students how they can solve the problem. Thus, we avoid that the same mistakes will be made again with the next car. In effect, we try to offer our help so that the students learn something new at each Scrutineering and that they become aware of the safety aspects of the competition.

Wie läuft das Scrutineering ab?
Ulf Steinfurth: Die Scrutineers gehen nach einer Checkliste vor, damit nichts vergessen wird. Finden wir Fehler, geben wir den Studenten Hinweise zur Problembehebung. So vermeiden wir, dass die gleichen Fehler beim nächsten Fahrzeug noch mal gemacht werden. Wir spielen also mit offenen Karten, damit die Studenten bei jedem Scrutineering etwas dazu lernen und für den Sicherheitsaspekt des Events sensibilisiert werden.

The Scrutineering in Germany is known to be very strict. Why?
André Schmidt: Scrutineering in Germany isn't stricter than anywhere else. Many of our scrutineers have built cars for competitions themselves. Because of their experience they know about weak points and they know where they need to take a closer look. Therefore, we aren't stricter but maybe we are more precise.

Die Überprüfung in Deutschland gilt als besonders streng. Wieso?
André Schmidt: Das Scrutineering ist in Deutschland nicht strenger als anderswo. Viele unserer Scrutineers haben im Studium aber selber Rennwagen für andere Wettbewerbe gebaut. Daher wissen wir aus Erfahrung eher, wo wir genauer hinschauen müssen und wo Schwachpunkte sind. Dadurch sind wir vielleicht nicht strenger, wir können aber genauer sein.

Ulf Steinfurth: Within the steering committee we decided that having the best and safest event is our first priority. In order to achieve this we need to have high safety requirements. If a driver, track marshals, the audience or any other person gets hurt in consequence of an incomplete Scrutineering, we will have failed. Maybe some teams think that a strict Scrutineering is done in order to annoy them.

Ulf Steinfurth: Im Organisationskomitee haben wir das Leitziel vereinbart, den besten und sichersten Event durchzuführen. Dazu zählen auch sehr hohe Sicherheitsanforderungen. Wenn durch ein „lasches" Scrutineering Mängel übersehen werden und deshalb im schlimmsten

But: We do the same thing with all teams. Let's name it once more: Sticking to the rules and minimizing the risk of injuries and accidents has first priority!

In this context we released some specific rules concerning for example the design of the firewall, the push bar with an integrated fire extinguisher and the crash box. Hair-raising designs without any function or effect will no longer be accepted. The students will have to prove the functionality by carrying out a test or presenting calculations.

The scrutineers inspect the race cars thoroughly. In the picture (left): André Schmidt. The car receives a sticker for each safety inspection station it has passed (right photo). It is only allowed to enter the race track if it has all four stickers.
Die Scrutineers überprüfen die Fahrzeuge gründlich. Hier im Bild (links): André Schmidt. Für jede bestandene Station der Sicherheitsüberprüfung bekommt das Fahrzeug einen Aufkleber (Bild rechts). Nur mit allen vier Aufklebern darf es auf die Rennstrecke.

What can a team do to pass Scrutineering without any problems?
André Schmidt and Ulf Steinfurth: Read the FSG-rules carefully before (!) you start designing your car!

Ulf Steinfurth: Read the rules – understand the rules – follow the rules! Also, while designing and manufacturing the car, you should always ask yourself whether you would feel safe driving the car or not.

André Schmidt: If there are any questions during the designing process we gladly offer our help.

Ulf Steinfurth: Preparation is important to pass Scrutineering without any difficulties and to get closer to driving your car on the track. We drafted a paper with all the important issues and provide it on our FSG-homepage so that every team can scrutineer its own car ahead of time.

Interviewees
André Schmidt and Ulf Steinfurth are responsible for scrutineering issues within the Formula Student Germany Steering Committee.

Fall Fahrer, Streckenposten oder sogar Zuschauer verletzt werden, hätten wir unser Ziel verfehlt. Möglicherweise fassen einige Teams ein straffes Scrutineering als Schikane auf, weil wir wirklich sehr genau hinsehen. Aber: Das tun wir bei allen Teams. Und es sei nochmal betont: Die Einhaltung des Reglements und die Minimierung des Verletzungs- und Unfallrisikos haben oberste Priorität! Daher haben wir bei der Formula Student Germany auch einige besondere Regeln eingeführt. Zu nennen wären die besondere Ausführung der Feuerschutzwand, die Gestaltung eines Push-bar mit integriertem Feuerlöscher und der Frontalaufprallschutz. Für die Crashbox zum Beispiel haben wir früher abenteuerliche Lösungen gesehen – sechs verschweißte Faxe-Dosen sollten da einen Aufprall aufhalten können. So etwas wollen wir hier nicht sehen.

Was kann ein Team tun, um problemlos zu bestehen?
André Schmidt und Ulf Steinfurth: Das Reglement vor (!) dem Bau des Fahrzeugs sorgfältig lesen!

Ulf Steinfurth: Reglement lesen – Reglement verstehen – Reglement befolgen! Und man sollte sich schon beim Bau des Fahrzeugs die Frage, ob man selbst mit dem konstruierten Bauteil fahren würde, immer bejahen können.

André Schmidt: Bei Fragen helfen wir den Studenten übrigens auch schon in der Konzeptionsphase gerne weiter.

Ulf Steinfurth: Gute Vorbereitung ist die halbe Miete, um die Hürde Scrutineering sicher zu meistern und den eigenen Flitzer an den Start zu schicken. Auf die Website haben wir ein Formblatt mit allen wichtigen zu überprüfenden Punkten gestellt, so dass jedes Team vorab sein eigenes Scrutineering durchführen kann.

Im Interview
André Schmidt und Ulf Steinfurth steuern im Formula Student Germany Steering Committee das Thema Scrutineering.

Interview: The Cost Analysis Event – cost-conscious design of marketable cars

Why does a design competition need a Cost Analysis Event?
Jan Helbig: Formula Student Germany aims at giving students practical schooling for their future, most of the time in the occupational field of engineering. This does not only include construction, manufacturing and testing but also the interaction with costs. Today the development costs of a prototype and the serial production are significant for the decision whether a car is built. It is assumed that 80% of the costs which will occur during the serial production are already set during development.

At the Formula Student ten percent of the total score can be gained at the Cost Analysis Event. These 100 points are significant for the overall results and can even swing the decision about the overall winner.

What is imperative?
Jan Helbig: It is essential that the students look into the subject of "costs". This includes a duly preparation (layout/structure), the price and the understanding of complicated manufacturing processes. It is important to use the right tools in order to build a racing car cost-effectively.

What is most important concerning the written form?
Jan Helbig: Completeness and structure. All parts, all bills of purchased items, all outlines and pictures of self-constructed parts should be included in the Cost Report. A well structured format makes it easier for the judges to handle the up to 300 pages of the report and it helps the teams in their discussions which are based on the report.

The new Cost Analysis Event at a glance
Der neue Cost Analysis Event im Überblick

Goals
- more practical and closer to the later working life
- better acceptance by the students
- young engineers should keep the costs in mind during the process of development

Changes
- annihilation of the price limit of 25000 dollar and therefore the annihilation of the double mark-up penalty
- changed scoring, particularly only 10 points for the low price
- deduction of points for wrong prices or incorrectly revealed processes
- extension of the "event discussion" with the "real-case-situation": task in advance is to optimise the costs of a component part
- including the tool costs

Ziele
- *mehr Praxisnähe für Bezug zu späterem Berufsleben*
- *bessere Akzeptanz durch die Studenten*
- *Jungingenieure sollen Kosten stärker im Entwicklungsprozess berücksichtigen*

Änderungen
- *Aufhebung der Preisobergrenze von 25.000 Dollar, damit auch Wegfall von doppeltem Preisaufschlag als Strafe*
- *Umgewichtung der Punkte, v.a. nur noch 10 Punkte für niedrigen Preis*
- *Punktabzug für falsch angegebene Preise oder falsch dokumentierte Prozesse*
- *Ergänzung der „Event discussion" um „Real-Case-Situation": Aufgabe vorab, die Kosten eines Bauteils zu optimieren*
- *Einberechnung der Werkzeugkosten*

Der Cost Analysis Event – kostenbewusst marktfähige Autos bauen

Wieso braucht ein Konstruktionswettbewerb einen Cost Event?
Jan Helbig: Die Formula Student Germany zielt auf die praxisnahe Ausbildung von Studenten für ihr zukünftiges, meist ingenieurwissenschaftliches Berufsfeld ab. Das umfasst nicht nur Konstruktion, Fertigung und Testen, sondern auch den Umgang mit Kosten.

Die Kosten für Prototypenentwicklung und Serienfertigung sind heute maßgeblich für die Entscheidung verantwortlich, ob ein Auto gebaut wird. Es wird davon ausgegangen, dass 80% der Kosten, die während der Serienfertigung entstehen, bereits in der Entwicklung festgelegt werden. Bei der Formula Student können zehn Prozent der Gesamtpunktzahl mit dem Cost Analysis Event gewonnen werden. Diese 100 Punkte sind für die Gesamtplatzierung bedeutsam und können für einen Gesamtsieg entscheidend sein.

Worauf kommt es an?
Jan Helbig: Im Cost Report kommt es darauf an, wie sich die Studenten mit dem Thema „Kosten" auseinandersetzen. Dazu gehört eine ordentliche Aufbereitung (Layout/Struktur), der Preis und natürlich das Verstehen von komplizierten Fertigungsverfahren. Wichtig ist es, die richtigen Tools anzuwenden, um kosteneffizient einen Rennwagen bauen zu können.

Was ist bei der schriftlichen Form besonders wichtig?
Jan Helbig: Vollständigkeit und Struktur. Alle Teile, alle Rechnungen zu Kaufteilen und alle Skizzen und Bilder von selbstgefertigten Teilen sollten im Cost Report enthalten sein. Eine klar strukturierte Aufbereitung erleichtert den Juroren das Handling der bis zu 300 Seiten starken Berichte und hilft den Teams bei der Diskussion, für den der Report die Grundlage darstellt.

Was zählt bei der Diskussion?
Jan Helbig: Die Diskussion gliedert sich ab 2007 beim deutschen Event in zwei Teile – die „Real-Case-Situation" und

What is important at the discussion?
Jan Helbig: Starting at the German event 2007 the discussion is divided into two parts – the “real-case-situation” and the “event discussion”. For the “real-case-situation” the teams receive a specific task, for example how the cost of a component can be lowered, four weeks ahead of the event. They prepare a ten minute presentation which they present to the judges. During the “event discussion” the submitted Cost Report is compared with the car the students built in detail.

Where do the teams usually have problems?
Jan Helbig: At a design competition the Cost Event as well as the Business Plan is not a well accepted discipline what influences the intensive critical examination of the rules negatively. The future engineers focus their view on the construction and production of the race car. In doing so they forget that the Cost Report provides ten percent of the total number of points. In addition the teams have a lack of time (in most cases the Cost Report is generated simultaneously to the manufacturing process of the race car). The lack of time leads to communication problems in the team. Surely this doesn’t apply to all teams! Last year we experienced some good discussions and this year we received high-quality Cost Reports.

Who are the cost judges?
Jan Helbig: Predominantly, the cost judges come from the automotive and supplying industry and consultant firms. These people are experienced cost analysts, who have a closer look on costs for manufacturing processes daily.

The work of the students is judged by experts from the industry. Here the judge teams of the Cost Analysis Event adjust their standards for a fair judgement.
Die Arbeit der Studenten wird von Experten aus der Wirtschaft beurteilt. Hier stimmen sich die Jurorenteams für den Cost Analysis Event für eine faire Bewertung ab.

Last year many of the judges took part at a Cost Analysis Event for the first time – and they did well! I would have loved to undergo such a Cost Event during my active time as a team member. This year we will have a few new judges on board who will support our last year’s judges.

die „Event discussion“. Als „Real Case“ erhalten die Teams vier Wochen vor dem Wettbewerb eine spezifische Aufgabe, sich zu überlegen, wie z.B. eine Baugruppe um einen bestimmten Prozentsatz kostenoptimiert gefertigt werden kann. Die Lösung legen sie den Juroren in einer zehnminütigen Präsentation dar. In der „Event discussion“ wird der eingereichte Cost Report mit dem gebauten Fahrzeug im Detail verglichen.

Womit tun sich die Teams schwer?
Jan Helbig: Cost Event und auch Business Plan sind beim Konstruktionswettbewerb wenig anerkannte Disziplinen, was die intensive Auseinandersetzung mit dem Reglement negativ beeinflusst. Die zukünftigen Ingenieure fokussieren ihren Blick verstärkt auf die Konstruktion und Fertigung des Rennwagens. Dabei fehlt das Bewusstsein, dass der Cost Report zehn Prozent der Gesamtpunktzahl liefert. Hinzu kommt, dass Zeitnot (der Cost Report wird meist parallel zur Fertigung des Rennwagens erstellt) zu Kommunikationsproblemen in den Teams selbst führt.

Das gilt natürlich lange nicht für alle Teams! Im letzten Jahr haben wir einige gute Diskussionen erlebt und in diesem Jahr erhielten wir qualitativ hochwertigere Cost Reports.

Wer sind die Cost Juroren?
Jan Helbig: Die Cost Juroren kommen vorwiegend aus der Automobil- und Zulieferindustrie und von Beraterfirmen. Es handelt sich um erfahrene Wertanalytiker, die täglich Kosten unter die Lupe nehmen und sich hervorragend mit Fertigungsprozessen auskennen. Im vergangenen Jahr haben viele Juroren zum ersten Mal bei einem Cost Analysis Event mitgewirkt – und sie haben ihre Sache sehr gut gemacht! Einen solchen Cost Event hätte ich zu meiner aktiven Zeit als Teammitglied auch gern erlebt. In diesem Jahr haben wir einige neue Juroren mit an Bord, die unsere erfahrenen Juroren gut unterstützen werden.

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The team of the TU Graz arranged display panels to facilitate the discussion. A student explains the cost-efficient design of the car to Jan Helbig.
Das Team der TU Graz stellte 2006 zur Unterstützung der Diskussion Stellwände auf. Jan Helbig lässt sich die kostenoptimierte Gestaltung des Fahrzeugs erklären.

What are the reasons for the new rules at the Cost Analysis Event in Germany?
Jan Helbig: In our opinion the traditional rules are no longer up to date. Last year we listened to the teams and judges and gathered feedback. “Not practicable…”, “Photoshop-competition…” or “only four of the cars cost less than 25000 dollars for real…” were the main criticisms. After the event we proposed a solution for these problems to the steering committee and discussed it. The results are the new valid rules for Germany. Through technical innovation and the better potentials of the teams a cost limit of 25000 dollars doesn’t make sense anymore. I hope that the new rules will be more accepted by the teams – but this we will see at the event.

What are the changes?
Jan Helbig: First of all we balanced the scoring. There are ten points each for a good layout of the Cost Report and a low price. Another eighty points can be scored at the event. New is the earlier mentioned “real-case”. The price limit of 25000 dollars is dropped and therefore there is no double mark-up penalty. Also expenses for tools have to be stated now.

What are the goals for the future?
Jan Helbig: First of all, the closeness to reality through the new rules has to be proved feasible and therefore the acceptance by the students needs to be gained. If the new rules are accepted by the teams and judges in a positive way we would like to aim for the same rules at all competitions worldwide.

Was sind die Gründe für die neuen Cost Event Regeln in Deutschland?
Jan Helbig: Das traditionelle Reglement ist aus unserer Sicht nicht mehr zeitgemäß. Wir haben den Juroren und den Teams letztes Jahr zugehört und das Feedback gesammelt. „Nicht praxistauglich…“, „Photoshop-Wettbewerb…“ sowie „nur vier Fahrzeuge liegen real unter 25.000 Dollar…“ waren die hauptsächlichen Kritikpunkte. Nach dem Event haben wir dann einen Lösungsvorschlag erarbeitet und im Steering Committee diskutiert. Das Ergebnis ist jetzt als Reglement für Deutschland gültig. Durch technische Innovationen und bessere Möglichkeiten der Teams macht eine Preisobergrenze von 25.000 Dollar keinen Sinn mehr. Ich hoffe sehr, dass die neuen Regeln mehr Akzeptanz bei den Teams hervorrufen – aber das werden wir erst nach dem Event sehen.

Welche Änderungen gibt es?
Jan Helbig: Als erstes haben wir die Punkte anders gewichtet. Jeweils zehn Punkte gibt es für die Aufbereitung des Cost Reports und für einen geringen Preis. Weitere 80 Punkte kann man beim Event erreichen. Neu ist dabei der schon genannte „Real Case“. Die Preisobergrenze von 25.000 Dollar entfällt und es gibt keinen doppelten Preisaufschlag als Strafe mehr. Auch müssen jetzt Werkzeugkosten angegeben werden.

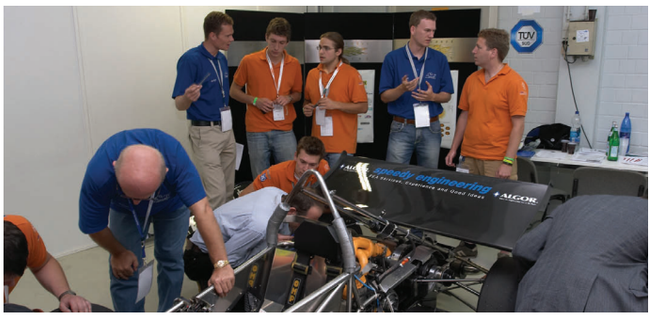
Was sind die Ziele für die Zukunft?
Jan Helbig: Erstmal soll sich die größere Praxisnähe durch die neuen Regeln bewahrheiten und somit Akzeptanz bei den Studenten erlangen. Wenn die neuen Regelungen von den Teams und Juroren positiv aufgenommen werden, streben wir ein einheitliches Reglement aller Wettbewerbe weltweit an.

Interviewee
Jan Helbig is responsible for the Cost Analysis Event at the Formula Student Germany Steering Committee.

Im Interview
Jan Helbig ist im FSG Steering Committee für den Cost Event verantwortlich.

Formula Student Germany 2006 – Impressions

Formula Student Germany 2006 – Impressionen






















Our special thanks goes to Harald Almonat, Frank Bramkamp and Felix Rühland for the amazing photos of the FSG 2006.
► More pictures on http://www.formulastudent.de/events/event-2006/gallery/

Unser spezieller Dank gilt Harald Almonat, Frank Bramkamp und Felix Rühland, die diese Impressionen von der FSG 2006 in großartigen Bildern festgehalten haben. ► Mehr Bilder unter http://www.formulastudent.de/events/event-2006/gallery/

Participating teams 2007 at a glance

Teilnehmende Teams 2007 auf einen Blick

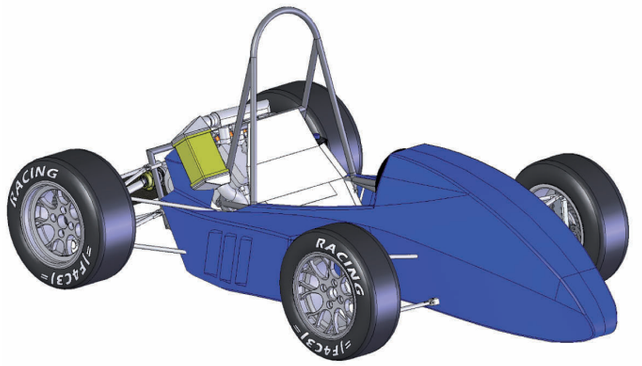
Car no.	University	City	Country	Pit no.	Page
1	Graz University of Technology	Graz	Austria	1	59
2	Helsinki Polytechnic Stadia	Helsinki	Finland	7	62
3	Delft University of Technology	Delft	Netherlands	13	54
4	Oxford Brookes University	Oxford	United Kingdom	19	72
6	University of Stuttgart	Stuttgart	Germany	25	76
7	Technical University of Braunschweig	Braunschweig	Germany	31	52
9	University of Applied Sciences Stralsund	Stralsund	Germany	37	75
10	University of Strathclyde	Glasgow	United Kingdom	43	58
12	Rochester Institute of Technology	Rochester	United States	49	73
13	Esslingen University of Applied Sciences	Esslingen	Germany	35	57
14	Isfahan University of Technology	Isfahan	Iran	14	62
15	University of Karlsruhe	Karlsruhe	Germany	26	63
16	University of Applied Sciences Offenburg	Offenburg	Germany	22	70
17	K. J. Somaiya College of Engineering	Mumbai	India	10	69
18	Aalborg University	Aalborg	Denmark	38	46
20	Berlin School of Economics	Berlin	Germany	17	50
21	Ulm University of Applied Sciences	Ulm	Germany	44	78
22	University of Cambridge	Cambridge	United Kingdom	33	53
23	University of Applied Sciences Amberg-Weiden	Amberg	Germany	23	47
24	University of Dortmund	Dortmund	Germany	3	56
25	Ravensburg University of Cooperative Education	Friedrichshafen	Germany	59	58
27	Darmstadt University of Technology	Darmstadt	Germany	48	53
31	Technical University Munich	München	Germany	12	68
33	Swiss Federal Institute of Technology Zurich	Zürich	Switzerland	60	80
34	University of Applied Sciences Konstanz	Konstanz	Germany	34	66
35	University of Applied Sciences Braunschweig/Wolfenbüttel	Wolfsburg	Germany	4	79
40	Eindhoven University of Technology	Eindhoven	Netherlands	56	56
42	RWTH Aachen University	Aachen	Germany	8	46
44	University of Bayreuth	Bayreuth	Germany	2	48
45	R.V. College of Engineering	Bangalore	India	40	47
46	Politecnico di Torino	Turin	Italy	5	78
47	University of Paderborn	Paderborn	Germany	32	73
50	University of Applied Sciences of the Saarland	Saarbrücken	Germany	39	74
53	University of Applied Sciences Kiel	Kiel	Germany	53	64
54	University of Wuppertal	Wuppertal	Germany	9	80
57	Swansea University	Swansea	United Kingdom	52	76
58	Institute of Automotive and Transport Engineering	Nevers	France	6	70
59	University of Birmingham	Birmingham	United Kingdom	30	52
66	University of Applied Sciences Berlin	Berlin	Germany	50	50
67	University of Applied Sciences Osnabrück	Osnabrück	Germany	28	72
69	Hamburg University of Applied Sciences	Hamburg	Germany	24	60
71	KTH Royal Institute of Technology	Stockholm	Sweden	36	75
75	Moscow State Automobile & Road Technical University (MADI)	Moscow	Russia	20	67
77	Technical University of Berlin	Berlin	Germany	29	50
85	Technical University of Freiberg	Freiberg	Germany	47	57
88	Karlsruhe University of Applied Sciences	Karlsruhe	Germany	21	63
90	Loughborough University	Loughborough	United Kingdom	42	66
96	University of Applied Sciences Dortmund	Dortmund	Germany	16	54
97	University of Applied Sciences Würzburg-Schweinfurt	Schweinfurt	Germany	41	74
99	Cologne University of Applied Sciences	Köln	Germany	51	64
103	University of Wisconsin-Madison	Madison	United States	54	67
107	University of Applied Sciences of Zwickau	Zwickau	Germany	46	81
111	University of Applied Sciences Joanneum Graz	Graz	Austria	18	60
113	University of Bath	Bath	United Kingdom	45	48
135	University of Ulster	Belfast	United Kingdom	27	50
207	Munich University of Applied Sciences	München	Germany	55	69
666	Brunel University	Uxbridge	United Kingdom	11	79
777	Moscow State Technical University (MAMI)	Moscow	Russia	57	68

Aachen
RWTH Aachen University, Germany

The EAC04, evolution meets innovation. At the 2007 Formula Student Germany Event the RWTH Aachen's Formula Student Team Ecurie Aix will present its fourth car to the judges. The EAC04 makes use of a unique transmission concept, the CVT, in a magnesiumhousing. Following the idea of lightweight construction the frame is designed as a CFK monocoque. The engine is specially designed for the use in the Formula Student and comes close to the limits given by the rules.
For most members of the team the FSG 2007 will be their first experience in competition. With both, young and experiencend team members Ecurie Aix strives to perfom at high level this season.

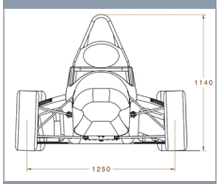
Finally we would like to thank our partners. First and foremost the Gesellschaft für Industrieforschung Aachen, which together with students from the team realized the powertrain, the Mahle GmbH, the ZF Friedrichshafen, dSpace and the district Nordrhein-Westfalen.

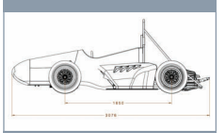
Aalborg
Aalborg University, Denmark

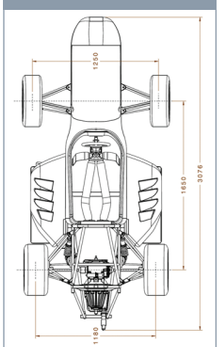


Unicorn Racing Team at Aalborg University is a mix of seasoned and new team members, of which 11 members are mechanical engineering students and 4 are electronic engineering students. Last year the team competed for the first in the English and Australian branches of Formula SAE with first generation Unicorn racer "G1". The goal for this year is to compete in the English and German branches.
The development of the second generation Unicorn racer "G2" is based entirely on students dedicating their spare time for the project - most of the team members are new to Formula SAE and the process of building a racing car. However, this has also sparked fresh design ideas and new ways of designing a race car. Most of the elements from "G1" has either been modified or completely redesigned, based on the experiences gained. Couple that with a super-charged Honda CBR 600 RR engine and the Unicorn "G2" racer could be one of the most powerful racers in the starting grid.

Car 42

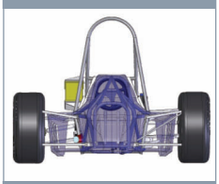


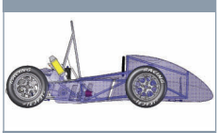


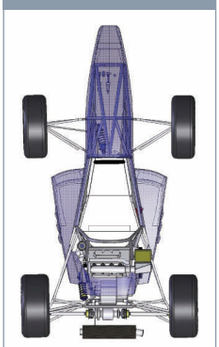


FRAME CONSTRUCTION Hybrid-Design of CFK Monocoque and Steelspace rearframe
MATERIAL CFK & Steel (ST 37)
OVERALL LENGTH / WIDTH / HEIGHT (mm) 3076 / 1450 / 1140
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1250 / 1180
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 148 / 222
FRONT SUSPENSION Multilink suspension. Push rod actuated horizontally oriented mono shock and rollspring
REAR SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper
TYRES (Fr / Rr) 1920.5x7.0-13 Hoosier / 20.0x7.5-13 Hoosier
WHEELS (Fr / Rr) 6 inch wide, 3 pc Al Rim, no offset/ 8 inch wide, 3 pc Al Rim, -13 mm offset
ENGINE 2007 Mahle V1K
BORE / STROKE / CYLINDERS / DISPLACEMENT 74.2mm / 46.9mm / 3 cylinder / 608 cc
COMPRESSION RATIO 12:1
FUEL SYSTEM Student des/built, fuel injection valves (Bosch), fuelfilter (LOUIS), pressure regulator (wiltec)
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 9000
MAX TORQUE DESIGN (rpm) 7500
DRIVE TYPE Cone-ring CVT
DIFFERENTIAL GKN Visco Loc limited slip
COOLING Radiator designed by student +Fan mounted in left sidepod
BRAKE SYSTEM 4-Disk system, self developed rotors with 240mm diameter, adjustable brake balance, monobloc calipers

Car 18







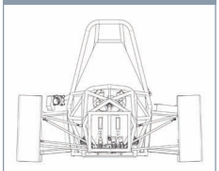
FRAME CONSTRUCTION Tubular space frame, semi stressed engine
MATERIAL Steel S355
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2390 / 1275 / 1010
WHEELBASE (mm) 1603
TRACK (Fr / Rr) (mm) 1196 / 1170
WEIGHT WITH with 68kg DRIVER (Fr / Rr) - / -
FRONT SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper
REAR SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper
TYRES (Fr / Rr) 20x6.5-13 Avon / 20x7.0-13 Avon
WHEELS (Fr / Rr) 6.5 inch wide, 3 pc Al Rim / 7.5 inch wide, 3 pc Al Rim
ENGINE Honda CBR600RR, Rotrex C15 supercharger and intercooler
BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0mm / 42.5mm / 4 cylinder / 599cc
COMPRESSION RATIO 12:1
FUEL SYSTEM Student modified/built MegaSquirt fuel injection, sequential
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 9500
MAX TORQUE DESIGN (rpm) 7000
DRIVE TYPE Chain
DIFFERENTIAL Torsen limited slip, Custom aluminum housing
COOLING One side pod mounted radiator with thermostatic controlled electric fan. One side pod mounted oil cooler
BRAKE SYSTEM 4-Disk system, adjustable brake balance

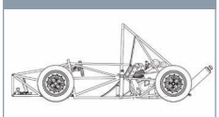
Amberg
University of Applied Sciences Amberg-Weiden, Germany

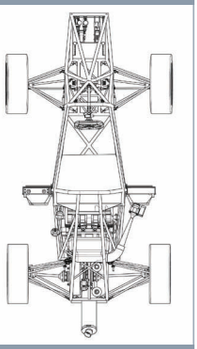
The Running Snail Racing Team was established in August 2004. For the coming racing seasons, there are 40 high motivated students from several departments of the University getting involved with the project. The intention of the Running Snail Racing Team is to construct and build an improved race car, to participate in international competitions and to assert our top 10 positioning among all German teams.
Our previous achievements: Best Newcomer 2005 (Formula Student); 3rd Place at the Slalom Race in Bayreuth (2005); 4th Place at the Formula ATA (2005); 2nd Place at the “Pursuit Competition” (Formula ATA 2005); 5th Place at Formula ATA (2006); 1st Place Fuel Economy (Formula ATA 2006); 1st Place at the Michelin Challenge (2007).
We incorporated the experiences, we made during constructions and races with the RS05 and RS06 in the construction of the RS07. The most important changes are an increased stiffness, a reduction of weight and less component parts.

Car 23

FRAME CONSTRUCTION Steel space frame with glued carbon fibre floor panels
MATERIAL H 1.0570
OVERALL LENGTH / WIDTH / HEIGHT (mm) 3080 / 1408 / 1070
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1200 / 1200
WEIGHT with 68kg DRIVER (Fr / Rr) 135 / 165
FRONT SUSPENSION Unequal length A-Arm. Pull rod actuated Manitou spring/damper units
REAR SUSPENSION Unequal length A-Arm. Push rod actuated Fox Vanilla RC spring/damper units
TYRES (Fr / Rr) 7.0 /20 x 13 diagonal ply tire / slick
WHEELS (Fr / Rr) 7 inch wide, 10 mm offset
ENGINE 1998 Yamaha FZS 600 Fazer Engine
BORE / STROKE / CYLINDERS / DISPLACEMENT 62mm / 52mm / 4 cylinder / 509cc
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) 7500
DRIVE TYPE D.I.D double o-sealing-ring chain
DIFFERENTIAL limited slip differential (torque modulated)
COOLING Two pod mounted aluminum radiators with thermostatic controlled electric fans
BRAKE SYSTEM 3-Disk system, adjustable brake balance, Front: 220 x 4, Rear: Student designed, laser cut H 1.4021, diff mounted 245 x 4





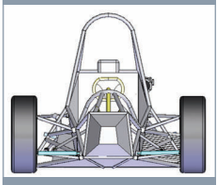


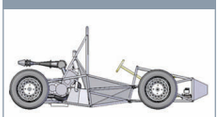
Bangalore
R.V. College of Engineering, India

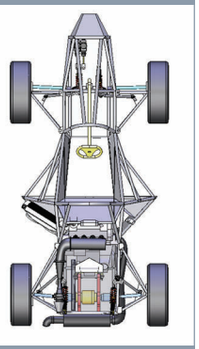
ashwa RACING is a team of young passionate minds from RV College of Engineering, Bangalore, INDIA; which thrives with the aim of “..exploring Engineering Evolution..” Having successfully participated at FSAE-A for the last 2 years, we are pleased to take this project to the next level, by participating in the FSG. The ashwa RZ06 is a progressive development of the previous prototypes & incorporates racing specific components which have been successfully tested on the race-car. The focus this season has been the extensive use of design- analysis software like ANSYS which has helped us optimize our designs. Also the integration of the MoTec engine management system is an important development this racing season. ashwa RACING is confident of performing well at FSG in both the static as well as the dynamic events thanks to the technical advancements made by the team due to the support of our several technical, component & most importantly our financial sponsors who have enabled us to participate at the FSG07.

Car 45

FRAME CONSTRUCTION Steel tube space frame
MATERIAL Mild Steel tube
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2540 / 1321 / 1117
WHEELBASE (mm) 1727
TRACK (Fr / Rr) (mm) 1168 / 1117
WEIGHT with 68kg DRIVER (Fr / Rr) 143 / 174
FRONT SUSPENSION Unequal length A-Arms. Push rod actuated spring/damper unit.
REAR SUSPENSION Unequal length A-Arms. Push rod actuated spring/damper unit.
TYRES (Fr / Rr) 20x6 -13 R25A HOOSIER / 20x6 -13 R25A HOOSIER
WHEELS (Fr / Rr) BBS Alloy 13” x 200mm,38mm offset, 3 pc Al / BBS Alloy 13” x 200mm,38mm offset, 3 pc Al
ENGINE 2003 HONDA F4i 600cc 4-cylinder.
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinder / 599cc
COMPRESSION RATIO 12:1
FUEL SYSTEM Student des/built, fuel injection, sequential
FUEL 95octane unleaded gasoline
MAX POWER DESIGN (rpm) 9000
MAX TORQUE DESIGN (rpm) 7200
DRIVE TYPE Chain
DIFFERENTIAL Torsen(LSD)- University SAE type Bias ratio 5:1
COOLING One side pod mounted radiator with thermostatic controlled electric fan
BRAKE SYSTEM 4-Disk system, Self offset rotors made of 1040 steel, hub mounted, 240mm dia., adjustable brake balance, Wilwood PS1- Dual Piston



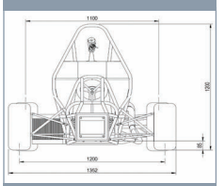


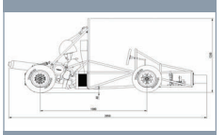


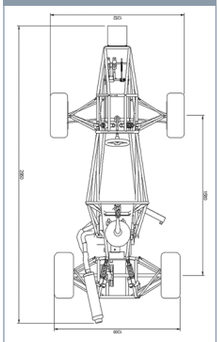
Bath
University of Bath, United Kingdom

The 2007 car is the University of Bath's lightest ever car, seeing a 40kg reduction over the 2006 design. This mass reduction has been realised through careful engineering during the design phase and rigorous testing of components on the 2006 vehicle. The car is built around Hoosier R25A 10" tyres due to their lower mass and inertial characteristics when compared to the 13" counterparts. Final drive is effected through an AP racing suretrac® differential which boasts significant mass reduction and improved performance over the previous Audi-Torsen installation. The chassis exhibits carbon fibre composite inserts in a chromolly space frame, exploring the contrast between the ease of manufacture associated with chromolly space frames with the weight saving advantages of using carbon composites. The team comprises just 10 members of the mechanical and automotive strains of the University of Bath degree, but boasts significant experience from industrial placements.

Car 113







FRAME CONSTRUCTION Steel spaceframe with aircraft fabric and glass fibre bodywork

MATERIAL chromolly 4130

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2950 / 1352 / 1200

WHEELBASE (mm) 1580

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 130 / 135

FRONT SUSPENSION Non parallel unequal length A arms. Pushrod actuated Nitron spring damper units.

REAR SUSPENSION Non parallel unequal length A arms. Pushrod actuated Nitron spring damper units.

TYRES (Fr / Rr) 18.0 x 6.0 -10 Hoosier R25A / 18.1 x 7.5 -10 Hoosier R25A

WHEELS (Fr / Rr) 6 inch wide, 3 pc Al Rim, no offset / 8 inch wide, 3 pc Al Rim, -5 mm offset

ENGINE YZF R6

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

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Student des/built, fuel injection, sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10,500

MAX TORQUE DESIGN (rpm) 10,500

DRIVE TYPE Taylor race tripod joint

DIFFERENTIAL AP racing Suretrac limited slip

COOLING One side pod mounted radiator

BRAKE SYSTEM 3-Disc system, wavy discs 190mm front 220mm rear, adjustable brake balance, wildwood calipers

Bayreuth
University of Bayreuth, Germany

In spring 2004 engineering students at University of Bayreuth's youngest faculty founded Elefant Racing. The name is derived from the Faculty of Applied Sciences' abreviation FAN which shares its letter string with the clever and powerful animal. At the university the project is not officially integrated with studies, so students working on it act on a completely voluntary base while fully continuing their academical training. Nevertheless the relatively small team feels like a big family with great team spirit. After a very successful debut in 2006, we presented our second vehicle in May 2007: the FR7 Aquila. The design forces to take the key concept spaceframe/4-cylinder/13inch to a progressive level. Thus it features an unconventional chassis and a range of innovations comprising FSAE tech premieres in the domains of powertrain, electronics and driver security. One of our general aims is to not only design and build a competitive racecar but also to create a desirable product.

Car 44

FRAME CONSTRUCTION Two-part tubular spaceframe with fully supporting engine

MATERIAL Mild steel S355N

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2775 / 1420 / 1100

WHEELBASE (mm) 1650

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 139 / 151

FRONT SUSPENSION Unequal length double wishbones, pullrod actuated horizontally oriented racing shocks Sachs RD 36-2

REAR SUSPENSION Unequal length double wishbones, pullrod actuated horizontally oriented racing shocks Sachs RD 36-2

TYRES (Fr / Rr) 16/53-13 Michelin S5 radial slick

WHEELS (Fr / Rr) 6x13 BBS 3-part aluminium rims with CFRP rim-bases

ENGINE Modified Honda CBR600F (PC35)

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

COMPRESSION RATIO 13.0:1

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

FUEL RON 100

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE Chain #520, Enuma

DIFFERENTIAL Zexel Torsen University Special, modified, Bias ratio 2.6:1

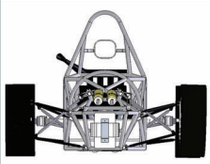
COOLING Two side pod mounted radiators with OBC-controlled electric fans

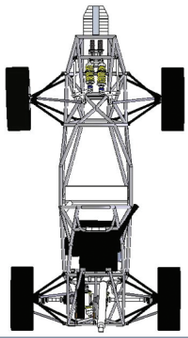
BRAKE SYSTEM 4-disk system, student designed floating rotors with 208mm OD, adjustable brake balance, Brembo 4/2-piston calipers

Belfast
University of Ulster, United Kingdom

The University of Ulster Jordanstown racing team is entering its 6th year of the formula student competition. The 9 member team encompasses a core structure of Mechanical Engineering undergraduates led by final year MEng and Phd students. Team members share a common interest in Motorsport with some of our members involved in pro/amateur motorcycle and sidecar racing. For the first time, knowledge gained from previous years and competitions, including Formula Student Germany 06, has been advanced and integrated into the design spec for each component of this car. Philosophies developed from the 2006 experience have inspired our team motto “a heavy car might finish the race, but a heavy car wont win the race.”
Being a small team, during both the design and manufacture of the car, allowed decisions to be made and implemented quickly. This however required a dedicated work ethic from all of the team members to ensure that the high quality design was carried through to reality.

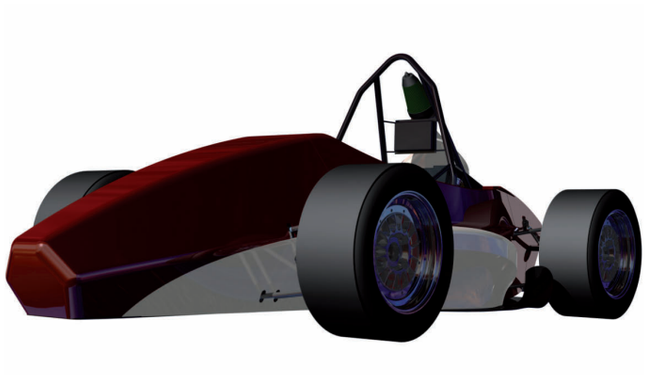
Car 135





FRAME CONSTRUCTION Complete tubular steel space frame chassis
MATERIAL TIG welded BS4 T45 steel round tubing
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2677 / 1422 / 1016
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1200 / 1150
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 127 / 170
FRONT SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper
REAR SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented spring and damper
TYRES (Fr / Rr) 7.2/20.0-13 A45 Avon / 7.2/20.0-13 A45 Avon
WHEELS (Fr / Rr) 8 inch wide, 3 pc Al Rim, / 8 inch wide, 3 pc Al Rim,
ENGINE 2004 Yamaha YZF R6
BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinder / 599cc
COMPRESSION RATIO 12.4:1
FUEL SYSTEM DTA Pro8 ECU, Multi-point fuel injection
FUEL 98 - 100 octane unleaded gasoline
MAX POWER DESIGN (rpm) 12000
MAX TORQUE DESIGN (rpm) 8000
DRIVE TYPE Chain
DIFFERENTIAL Quaife Universal ATB limited slip
COOLING One side pod mounted radiator with thermostatic controlled electric fan
BRAKE SYSTEM 4-Disk system, EBC rotors with 220mm diameter, adjustable brake balance, AP Racing 4-pot Calipers Front, twin-pot Calipers rears

Berlin
Technical University of Berlin, Germany

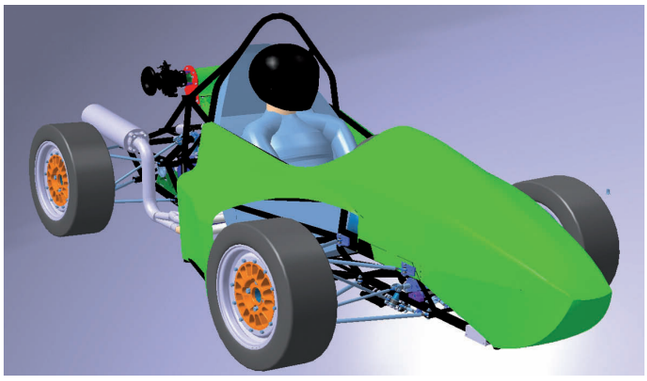


30 students shape and represent FaSTTUBe – the Formula Student Team of the Technical University of Berlin. As one of currently three teams situated in Germany’s capital this Team with a capital “T” builds their second vehicle for the Formula Student Germany event: The FT2007 greatly benefits from the team’s own new engine-dynanometer, new manufacturing facilities, enthusiastic and kind supporting sponsors and above all the experience from their last year’s event participation. One of the many highlights of the new car is the rotating-cylinder-throttle-system, allowing undisturbed airflow through the intake. Handmade carbon-fibre bodywork, electronic shifting, composite-multifunctional steering wheel, carbon-fibre seat and integrated firewall, CNC-machined oil sump, three high-performance lightweight racing brakes are some more attributes that define FaSTTUBe’s 2007 model. Representing the TU-Berlin the team is proud and well prepared for Hockenheim 2007 – so watch out for car No 77!

Car 77

FRAME CONSTRUCTION Tubular steel space frame
MATERIAL 25CrMo4 / S355JO
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2560 / 1440 / 1040
WHEELBASE (mm) 1575
TRACK (Fr / Rr) (mm) 1200 / 1100
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 130 / 160
FRONT SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented air-shocks
REAR SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented air-shocks
TYRES (Fr / Rr) 20.0x7.0-13, R075 Goodyear
WHEELS (Fr / Rr) 8x13, 28mm offset, 3 pc Al Rim
ENGINE 2004 Honda CBR 600 PC35
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 43mm / 4 cylinder / 599cc
COMPRESSION RATIO 12:1
FUEL SYSTEM Student des/built, fuel injection, sequential
FUEL 98/100 octane unleaded gasoline
MAX POWER DESIGN (rpm) 10400
MAX TORQUE DESIGN (rpm) 9600
DRIVE TYPE 6 speed sequential
DIFFERENTIAL none
COOLING 2 side mounted radiators, ECU controlled fans
BRAKE SYSTEM 3 disc system – floating offset hub mounted 220mm drilled discs, 4 opposing pistons fixed mounting, actuation via brembo push type master cylinders

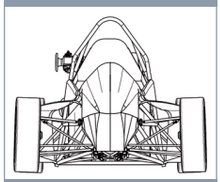
Berlin
University of Applied Sciences Berlin, Germany

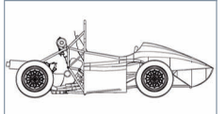


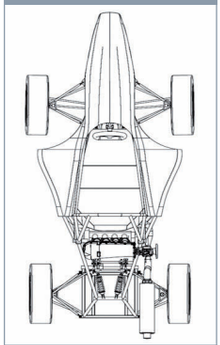
In 2006 The Formula Student racing team from the Berlin University of Applied Sciences participated for the 1st time at Hockenheim. Due to an unfortunate engine blow-up, the competition ended even before the driving event began. After one year of intense work FHTW-MOTORSPORT is back for 2007 with a brand new car packed with innovations. Even if the size of our team is very small compared to others, we managed to stick to our production schedule and will present a highly competitive race car. One of the most significant changes concerning our new car is the change over to a dry sump lubrication permitting higher curve speeds and a lower center of gravity. The team is made up of members with different academic backgrounds. There are automotive, mechanical and industrial engineers as well as computer scientists and business students. The common purpose for Hockenheim 2007 is to demonstrate the competitiveness of our car BRC '07 and the whole FHTW Motorsport Team and to score high in all events.

Car 66

FRAME CONSTRUCTION Steel tube space frame
MATERIAL S355 J2G3 (1.0570/EN10025) mild steel tube - cold drawn seamless, 15mm to 25mm dia
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2855 / 1385 / 1084
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1205 / 1145
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 144 / 216
FRONT SUSPENSION Unequal length A-Arms. Pull rod actuated DNM RCP22 damper/spring units
REAR SUSPENSION Unequal length A-Arms. Push rod actuated DNM RCP22 damper/spring units
TYRES (Fr / Rr) Hoosier 20.5"x 6.0" - 13" - R25A / Hoosier 20.5"x 6.0" - 13" - R25A
WHEELS (Fr / Rr) BBS 13" x 152mm -10,8mm offset/ BBS 13" x 152mm -10,8mm offset
ENGINE Suzuki / GSX-R600
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 43 mm / 4 cylinder / 599cc
COMPRESSION RATIO 12,5:1
FUEL SYSTEM Suzuki fuel injection, sequential
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 10000
MAX TORQUE DESIGN (rpm) 8000
DRIVE TYPE chain drive, 520
DIFFERENTIAL Drexler limited slip differential with fins
COOLING one side pod mounted radiators with thermostatic controlled electric fans
BRAKE SYSTEM 4-Disk system, fixed Cast Iron, hub mounted, 220mm outer diam, adjustable brake balance, Brembo P32G 32mm dia., dual piston, fixed mtg







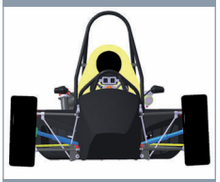
Berlin
Berlin School of Economics, Germany

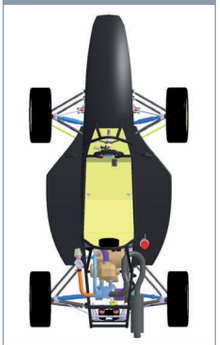
The moto7 is the first Formula Student race car of the Berufsakademie Berlin (Berlin School of Economics). Hence, this first car is made to stand out for it's extraordinary concept and solid base for future moto-Generations. The team was founded in March 2006. The BA-Motors members are predominant mechanical engineers, but also business administration students.

Tailored for a parcours full of curves and acceleration/intensive straights, the moto7 is a light race car with a low barycentre.
The big highlight is the four wheel drive. This four wheel drive allows high speed on curved tracks and an outstanding acceleration during the Endurance and a reduced wheel abrasion.
A one cylinder supercharger engine using an intake-manifold fuel injection provides the necessary power to compete with other teams.

Car 20

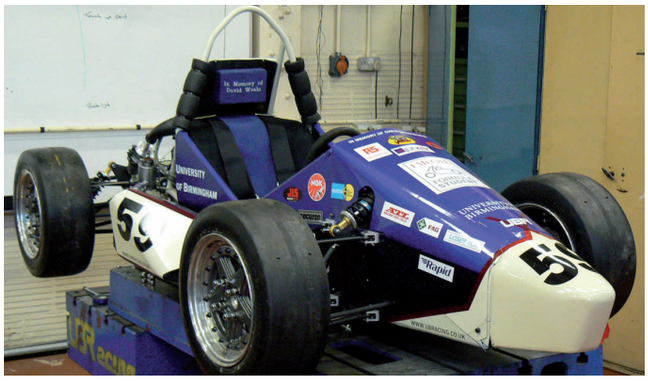
FRAME CONSTRUCTION tubular space frame
MATERIAL S355 steel round tubing . 25x2.5/2 mm dia
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2780 / 1430 / 1090
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1250 / 1250
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 127,2 / 190,8
FRONT SUSPENSION Double equal length A-Arm. Pull rod actuated horizontally oriented spring and damper
REAR SUSPENSION Double unequal length A-Arm, Pull rod actuated vertically oriented spring and damper
TYRES (Fr / Rr) 20x7-13 R25A Hoosier (Fr / Rr)
WHEELS (Fr / Rr) 6.5 inch wide, 3 pc Al Rim, 3 deg. neg. offset / 6.5 inch wide, 3 pc Al Rim, 2 deg. Offset
ENGINE 2003 KTM-LC4-1 cylinder, modified
BORE / STROKE / CYLINDERS / DISPLACEMENT 101mm / 76mm / 3 1/1 cylinder / 609 ccm
COMPRESSION RATIO 8.1:1
FUEL SYSTEM Student designed/built ,two-stage-fuel injection, sequential
FUEL 94 octane unleaded gasoline
MAX POWER DESIGN (rpm) still unknown
MAX TORQUE DESIGN (rpm) still unknown
DRIVE TYPE 4-wheel-chaindrive
DIFFERENTIAL Torsen Universal
COOLING left and right mounted radiators for water and turbocharged air with electric fans
BRAKE SYSTEM 3-Disk system, modified rotors with 210/190mm diameter, floating, adjustable brake balance, Brembo calipers





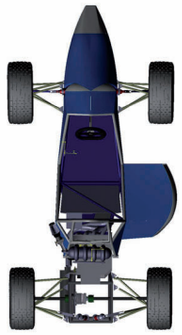
Birmingham

University of Birmingham, United Kingdom



UBR X, the 10th racecar to be born at the University of Birmingham and has utilised the strengths from history combined with our expertise to create an improved car for 2007. The team consists of 9 final year students three of which are conducting final year projects on the Intake, Driveshafts and Gearbox. The rest of the team consists of 30 students from 3rd, 2nd and 1st year. UBR X has had a design philosophy of simplicity, reliability and weight reduction. For simplicity the car has a diff-box, which intern put the suspension back in plane and with the use of weld-on rod ends simplified the wishbones. The chassis is a simplified version of last years with a redesigned front end; this redesign has produced a 5% weight loss. The drivetrain has an aluminium differential housing resulting in a 54% weight loss as well as lighter driveshafts, a 65% weight loss and an 86% lower rotational inertia. The design work has been done on Catia V5 and utilising the inbuilt FEA to validate designs.

Car 59



FRAME CONSTRUCTION TIG welded steel tubular Spaceframe

MATERIAL Clubman 500 steel and T45 Heat treated steel - Aluminium honeycomb floor

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2627 / 1374 / 1030

WHEELBASE (mm) 1637

TRACK (Fr / Rr) (mm) 1200 / 1125

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 125 / 153

FRONT SUSPENSION Unequal length, unparallel A-Arms. Push rod actuated Bilstein spring/damper units

REAR SUSPENSION Unequal length, unparallel A-Arms. Push rod actuated Bilstein spring/damper units

TYRES (Fr / Rr) 7.2/20-13 AVON 9760 / 7.2/20-13 AVON 9760

WHEELS (Fr / Rr) Braid 2-piece aluminium split rim. 13"x7", -35mm offset / Braid 2-piece aluminium split rim. 13"x7", -35mm offset

ENGINE 2001 Yamaha YZF R6 standard exhaust cam retarded by 10.5deg, stock race exhaust cam as inlet cam

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

COMPRESSION RATIO 12.4:1

FUEL SYSTEM Student des/built, sequential fuel injection (Honda CBR600 Injectors), DTA P8Pro ECU

FUEL 99RON Shell Optimax Unleaded

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE 5/8" Simplex DID Gold Racing Chain

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

COOLING Single twin pass radiator 250 X 350 X 45mm core mounted in duct on right side of chassis + electric fan

BRAKE SYSTEM Student designed, waterjet cut from stainless steel, hub mounted, 190mm dia. Mechanical balance bar, for base balance. Front: 2 x Tokico single alumimium billet radial mount caliper. Rear: 2 x Brembo single alumimium billet axial mount caliper.

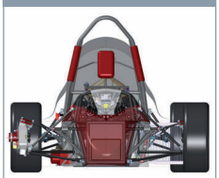
Braunschweig

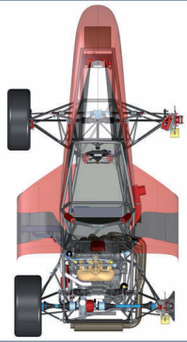
Technical University of Braunschweig, Germany

The Lions Racing Team has competed in several Formula Student events since 2002. In the 2004 Formula Student competition we finished third in the overall standings and won the title "Best European Team". In FSG 2006 we placed seventh which again shows the great potential of the car's concept.

On the basis of our 2006 car we developed its successor the LR07. A very small and agile car, yet easy to handle. With its aggressive appearance, it is an eye-catcher. It challenges your senses while driving and the impression of its powerful sound remains in your ears. It represents a new era for the Lions Racing Team, since we integrated a high performance stand-alone data acquisition system which is quite helpful to further understand the behaviour of our vehicle. Furthermore, the LR07 is equipped with a race ABS. With well trained drivers and a well tested car the Lions Racing Team is looking forward to a successful Formula Student Germany 2007 competition.

Car 7





FRAME CONSTRUCTION Steel tube space frame

MATERIAL 4130 (25CrMo4) and 1022 (St-52) steel round tubing, 10mm to 28mm diameter

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2716 / 1482 / 1125

WHEELBASE (mm) 1525

TRACK (Fr / Rr) (mm) 1300 / 1150

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 132,5 / 155,5

FRONT SUSPENSION Double unequal length A-Arm. Push rod actuated spring and damper (orientated in vertical plane), Anti-roll Bar

REAR SUSPENSION Double unequal length A-Arm. Direct acting spring and damper (orientated in 15 deg inclined plane), Anti-roll Bar

TYRES (Fr / Rr) 195/500 R13, Continental / 245/500 R13, Continental

WHEELS (Fr / Rr) 7x13, -5mm offset, 3 pc Al/Mg Rim / 9x13, -5mm offset, 3 pc Al/Mg Rim

ENGINE Suzuki GSXR-600 K4

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

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Student des/built, fuel injection, sequential

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE chain driven, DIN ISO 8187 chain 15,875mm x 6,5mm

DIFFERENTIAL progressive locking, speed sensing GKN Visco Loc limited slip

COOLING One side pod mounted radiator with ECU controlled electric fan

BRAKE SYSTEM 4-Disk system, self developed rotors with 230mm diameter, adjustable brake balance, 32mm dia., Opposing piston calipers, ABS

ELECTRONICS wiring harness sealed to IP67, Multifunctional Steering Wheel, Electropneumatic Shifting System, selfdesigned Live-Telemetry System

Cambridge
University of Cambridge, United Kingdom

full blue racing

Full Blue Racing is an entirely independent foray into the Formula Student programme by students at the University of Cambridge. Passionate and driven, our small team works in addition to their courses and out of their own pockets in order to make it happen. The past nine months have seen excitement and heartache in equal measure, but thanks to the efforts of the organisers, support of our partners and a little help from friendly competitors we look forward to seeing you this August! Our MY07 vehicle is a proof of concept, designed to show academics and partners alike that we're serious, that Formula Student can be worked around even the most intensive courses, and that it need not cost the earth. She is also the base for future undergraduate course projects and a hybrid powertrain development mule - our keys to the academic and industrial buy-in needed to let this invaluable development opportunity for the engineers and business leaders of the future flourish past our first anniversary.

Car 22

FRAME CONSTRUCTION Tube spaceframe

MATERIAL BS6323 Pt5 mild steel tube, 25.4mm OD in variety of wall thicknesses

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2440 / 1300 / 1365

WHEELBASE (mm) 1575

TRACK (Fr / Rr) (mm) 1150 / 1100

WEIGHT WITH with 68kg DRIVER (Fr / Rr) TBC / TBC

FRONT SUSPENSION Double wishbone. Push rod actuated horizontally oriented spring and damper. Externally adjustable anti-roll bar.

REAR SUSPENSION Double wishbone. Push rod actuated horizontally oriented spring and damper. Externally adjustable anti-roll bar.

TYRES (Fr / Rr) 20.5x7.0-13 Goodyear D2692

WHEELS (Fr / Rr) 1pc 13x6 Compomotive CX-R, +12mm offset

ENGINE 20005 Yamaha R6

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

COMPRESSION RATIO 12.4:1

FUEL SYSTEM Open-source MegaSquirt system with semi-sequential injection and wasted-spark ignition

FUEL 95 RON Unleaded

MAX POWER DESIGN (rpm) 8000

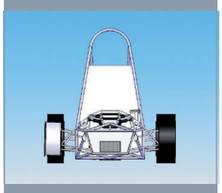
MAX TORQUE DESIGN (rpm) 7000

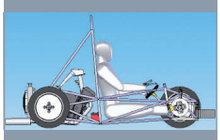
DRIVE TYPE #520 Chain

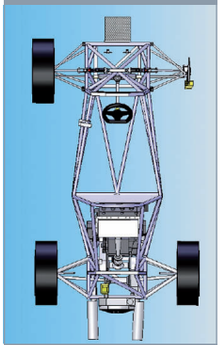
DIFFERENTIAL Spool

COOLING Rear mounted 850cc Mini radiator and 254mm electric fan

BRAKE SYSTEM 3-Disk system, 220/200mm floating discs, fixed twin-piston 32mm calipers, adjustable brake balance, 300N/g pedal gain







Darmstadt
Darmstadt University of Technology, Germany

DART Racing is proud to present its second Formula Student/SAE race car – 'beta2007'. After finishing the 2006 FSG event 16th overall & on 2nd position in the newcomer ranking, the Darmstadt-based outfit aims at catching up with the top teams. With a squad consisting of about 60 students, a huge gain in experience, new ideas, new technologies & new partners, the team is confident that its efforts will ensure success at FSG 2007. Compared to its predecessor, this year's entry 'beta2007' is improved in every respect. Besides a more competitive engine package & a lower centre of gravity, strict weight management & expedient lightweight design allowed a weight reduction of over 100kg. Some of the car's highlights include the carbon fibre monocoque & engine air intake as well as the innovative one-piece 15'' light-alloy-rim, complemented by custom-built low-profile slicks. We would like to thank the TU Darmstadt & our sponsors for their kind support. For more information visit: www.dart-racing.de

Car 27

FRAME CONSTRUCTION Monocoque, rear tubular space frame

MATERIAL Carbon fibre, Aluminium honeycombs with carbon-inserts, 15cdv6, 25CrMo4

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2754 / 1432 / 978

WHEELBASE (mm) 1640

TRACK (Fr / Rr) (mm) 1230 / 1190

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 117 / 155

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

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

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

WHEELS (Fr / Rr) 7 inch wide, 1 pc Al Rim, 10 mm neg. offset student designed

ENGINE 2002 Suzuki GSX-R 600

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

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Student designed and built, fuel injection

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10000

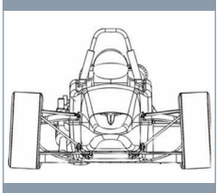
MAX TORQUE DESIGN (rpm) 8000

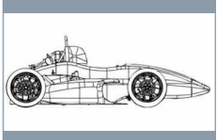
DRIVE TYPE Chain

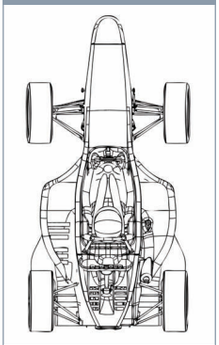
DIFFERENTIAL Drexler Formula SAE special, limited slip

COOLING single pod mounted radiators with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, student designed floating rotors with 220mm diameter, adjustable brake balance, monobloc 4/2 piston calipers







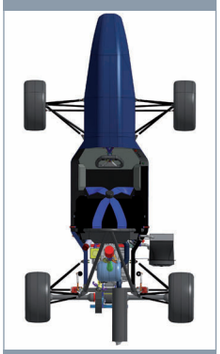
Delft

Delft University of Technology, Netherlands

Already for the seventh time Delft has built a Formula Student Car, the DUT07. The car is based on the experience and knowledge obtained in the previous years and therefore a clear evolution of its predecessors that were successful in both the design competition as in the dynamic events. The underlying design philosophy of the DUT07 is user centered design, which focuses on the needs, wants and limitations of the end user. As a result the design is a constant compromise between Performance and Reliability, Availability, Maintainability and Serviceability (RAMS). The compromise that is reached is in the end the best available total package.

The DUT07 is build by making extensive use of advanced modeling software resulting in a car with good packaging. Main features of the car are the Carbon Fibre Monocoque, Rims and half axles. Another main feature is the pneumatic shifting system using an artificial muscle to activate the clutch and a pneumatic cylinder to shift up and down.

Car 3



FRAME CONSTRUCTION Monocoque with tubular steel roll bars / tubular steel rear frame

MATERIAL Carbon and Technora fibres, DSM Daron resin, Klegecell foam, high grade multiplex inserts

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2651 / 1375 / 1188

WHEELBASE (mm) 1540

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 101 / 106

FRONT SUSPENSION Double unequal length A-Arm. Horizontally oriented spring and damper, actuated by a push rod and rocker.

REAR SUSPENSION Double unequal length A-Arm. Vertically oriented spring and damper, actuated by a pull rod and rocker.

TYRES (Fr / Rr) Hoosier 18.0 x 6.0-10 R25A / Hoosier 18.0 x 7.5-10 R25A

WHEELS (Fr / Rr) 6.0 x 10, -30 mm offset from middle, 2 piece; aluminum center/rim with carbon rim shell / 7,0 x 10, -41 mm offset from middle, 2 piece; aluminum center/rim with carbon rim shell

ENGINE 2006 Yamaha WR450F, with Yamaha-Rinaldi tuning kit

BORE / STROKE / CYLINDERS / DISPLACEMENT 98.0 x 63.4 mm / 1 cylinder / 479 cc

COMPRESSION RATIO 12.3 : 1

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

FUEL 98 octane petrol

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE Chain DID520

DIFFERENTIAL Torsen University Special modified with custom housing. Bias ratio 2.6:1

COOLING Chassis mounted custom radiator with ecu controlled electric fan

BRAKE SYSTEM 4-Disk system, self designed full floating rotors with 196mm diameter, adjustable brake balance, double piston calipers

Dortmund

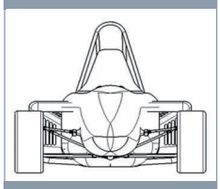
University of Applied Sciences Dortmund, Germany

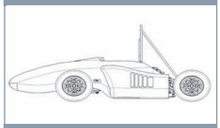
It is the second year of Formula Student for the FH Dortmund Race-Ing. Team. The performance and quality of their car has dramatically improved. As a special feature the team has built a Carbonfibre Monocoque on its own. Only the moulds where CNC Machined at Silence Aircraft, the rest was completely made by the students.

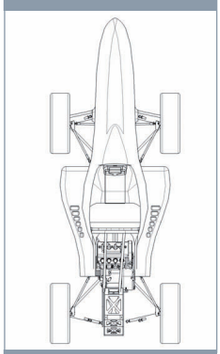
Following the route of innovativity, the students use the engine as a supporting element that connects the CNC machined aluminum rear frame to the Monocoque.

The Team pleases its sponsors to accept its best thanks and wishes all other teams good luck.

Car 96







FRAME CONSTRUCTION Monocoque with tubular steel roll bars / CNC-machined Aluminium rearframe

MATERIAL
CFRP Sandwich with 20mm Schütz Coremaster Honeycomb Core

OVERALL LENGTH / WIDTH / HEIGHT (mm)
2815 / 1360 / 1230

WHEELBASE (mm) 1670

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 149/ 160

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

REAR SUSPENSION Double unequal length A-Arm. Push rod actuated

TYRES (Fr / Rr) 160/530 R13 A 15 Avon / 195/530 R13 A15 Avon

WHEELS (Fr / Rr) BBS aluminium alloy 13” x 6” -2,6mm/ 13” x 8” -10,8mm

ENGINE Honda CBR / F4i PC 35

BORE / STROKE / CYLINDERS / DISPLACEMENT 67.0 x 42.5 mm / 4 cylinder / 599 cc

COMPRESSION RATIO 12:1

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

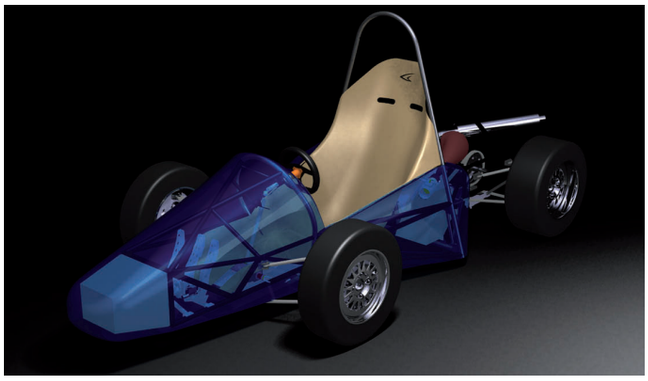
FUEL 98 octane unleaded gasoline

DIFFERENTIAL Drexler limited slip

COOLING dual side pod mounted radiator with thermostatic controlled electric fan

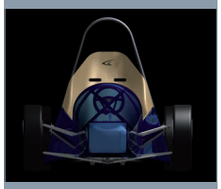
BRAKE SYSTEM 4-Disk system, 240/210mm, 2 Piston Brembo Calipers

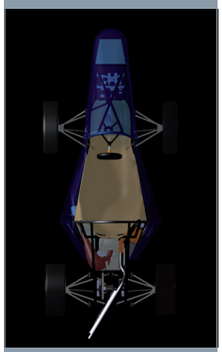
Dortmund
University of Dortmund, Germany



GET racing, the Formula Student Team at the University of Dortmund, consists of about 15 students. Following the team´s first participation in the Formula Student last year we are now looking forward to take place in the next competition in August.
The experiences we made during construction and driving with the GT06, have been introduced in construction and manufacturing process of the GET GT07. Thus the car has been completely re-engineered and optimized: the main changes were a much lighter frame construction made off 25CrMo4 and a smaller and lighter, but equal powerful single-cylinder from our top-class partner KTM.
Due to a generation change in the team many new team members will gain their first experiences in the FSG 2007 event. All team members have benefited from their involvement and we would like to thank all our sponsors and supporters at the University of Dortmund for their support this year.

Car 24



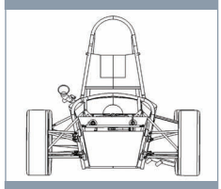


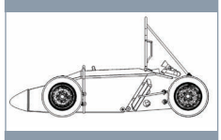
FRAME CONSTRUCTION Front and rear tubular space frame
MATERIAL 25CrMo4 steel round tubing 16mm
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2890 / 1356 / 1229
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1200 / 1100
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 140 / 160
FRONT SUSPENSION Double wishbone suspension. Pull rod actuated horizontally oriented spring and damper
REAR SUSPENSION Double wishbone suspension. Pull rod actuated horizontally oriented spring and damper
TYRES (Fr / Rr) 20.5" x6.0"-13, Hoosier R25A/ 20.0" x7.5"-13, Hoosier R25A
WHEELS (Fr / Rr) 6.0x13, 10.8 mm offset, 3 pc Al-Mg Rim / 8.0x13, 2.6mm offset, 3 pc Al-Mg Rim
ENGINE KTM 525 EXC
BORE / STROKE / CYLINDERS / DISPLACEMENT 95.0mm / 72.0mm / 1 cylinder / 510,4cc
COMPRESSION RATIO 11:1
FUEL SYSTEM Sequential intake manifold fuel injection by Silent Hektik (Unna, Germany)
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 9000
MAX TORQUE DESIGN (rpm) 7500
DRIVE TYPE chain drive
DIFFERENTIAL Torsen University special gearset
COOLING Heat exchanger with single radiator, controlled by coolant temperature
BRAKE SYSTEM 4-Disk system, solid mounted rotors with 255mm diameter, adjustable brake balance, dual piston calipers

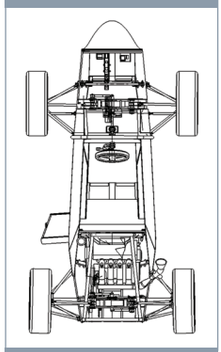
Eindhoven
Eindhoven University of Technology, Netherlands

University Racing Eindhoven competed their first time in the Formula Student and formula Ata competition last year. Now the Eindhoven team is proud to present their second operational race car, the URE03.
The URE03 is 50 kg lighter, faster, more reliable, more user-friendly and much better to handle than the URE02. The car's chassis is again made out of aluminium honeycomb sandwich panels and our very own suspension box is also present in the car, this year both signifi-cantly improved. A new model of dynamic behaviour resulted in a new suspension geometry providing the car an excellent handling. Thanks to the production method rapid manufacturing(sls) our engineers had total freedom in designing the intake. Taking a good look at the car will instantly let you notice the outstanding finishing. The carbon orange painted body is an eye catcher and naked parts are very neat.
With the strategy of combining high tech engineering with design, University Racing Eindhoven is climbing its way to the top.

Car 140



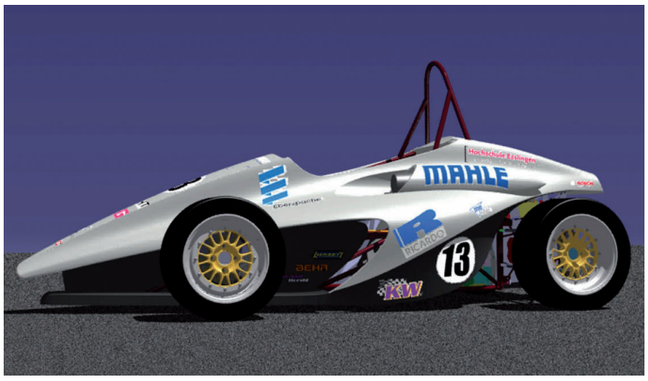




FRAME CONSTRUCTION Aluminium sandwich panel box structure with tubular steel roll bars
MATERIAL Alcan ALUCORE aluminium honeycomb sandwich panel (8.5 mm core, sides 0.5 and 1mm)
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2534 / 1377 / 1188
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1225 / 1175
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 119 / 179
FRONT SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring/damper monoshock
REAR SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring/damper monoshock
TYRES (Fr / Rr) 20.5x6.0-13 R25A Hoosier / 20.5x7.0-13 R25A Hoosier
WHEELS (Fr / Rr) 5.5 inch wide, 3 pc Al/Mg Rim, 3 pc Al/ Mg Rim
ENGINE Suzuki/ GSX R-600 2006
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 43mm / 4 cylinder / 599cc
COMPRESSION RATIO 12.2:1
FUEL SYSTEM Student des/built, fuel injection
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 10200
MAX TORQUE DESIGN (rpm) 10200
DRIVE TYPE chain #520
DIFFERENTIAL Torsen Traction 012000 University Special. Bias ratio 3:1
COOLING One side pod mounted radiator with thermostatic controlled electric fan
BRAKE SYSTEM 4-Disk system, self developed rotors with 210mm front diameter and 190mm rear, adjustable brake balance

Esslingen

Esslingen University of Applied Sciences, Germany



The “Rennstall Esslingen” was founded in the year 2006. The first step for the Team was to build a prototype called “Stallardo 06” to gain experience in building a Formula Student race car. The “Rennstall Esslingen” project connects different faculties of the University building up our virtual company. The Team consists of nearly 70 members.
After 8 months of designing, developing and building the “Stallardo 07” was born. This is the first car to take place in a Formula Student Event for the HS-Esslingen. The main goals are reliability, usability as well as functionality. The other main influence for its design is to build a race car for amateur drivers.
A further aspect for the car is to build an emotional car, because it is one of the main purchase criteria for a sports car.
The heart of the “Stallardo 07” is the compact and powerful Mahle drive train. The drive train consists of a 3 cylinder engine and a sequential 3 gear gearbox with the integrated differential.

Car 13

FRAME CONSTRUCTION Front Tubular Frame with detachable Rear frame

MATERIAL S235/ S355 steel round tubing 10mm to 26mm diameter

OVERALL LENGTH / WIDTH / HEIGHT (mm) 3000 / 1415 / 1210

WHEELBASE (mm) 1650

TRACK (Fr / Rr) (mm) 1281 / 1205

WEIGHT with 68kg DRIVER (Fr / Rr) 143 / 181

FRONT SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented spring and damper (coil-over). Adjustable in compression and in rebound range

REAR 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 R25A / 203x44 R13, Hoosier R25A

WHEELS (Fr / Rr) 152,4 mm x 330,2 mm (6’’x13’’), 10,8mm offset, 3 pc Al Rim / 203,2 mm x 330,2 mm (8’’x13’’), 2,6mm offset, 3 pc Al Rim

ENGINE MAHLE SAE Motor V1

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

COMPRESSION RATIO 13:1

FUEL SYSTEM Fuel tank Student des/built, fuel injection and fuel pump (Bosch), fuel rail (Mahle)

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9500

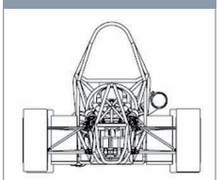
MAX TORQUE DESIGN (rpm) 7000

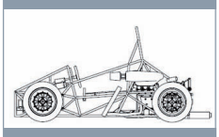
DRIVE TYPE longitudinal built-in engine, integrated Torsen differential in gearbox

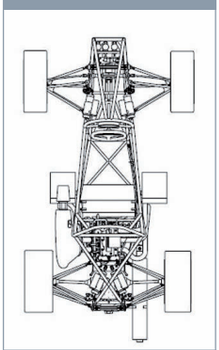
DIFFERENTIAL Torsen differential

COOLING Twin side pod mounted radiators, series connection

BRAKE SYSTEM 4-Disk system, front and rear 210mm diameter, front 4 piston-caliper, fixed mounted, rear 2 piston-caliper, fixed mounted, adjustable brake balance, pressure reducer for the rear







Freiberg

Technical University of Freiberg, Germany

The Racetech Racing Team, now counting about 25 members, was founded in April 2005 by students of the TU Bergakademie Freiberg. Their aim was to take part in the Formula Student competition, starting in 2007.
From the very first moment onwards it was clear, that innovations from our university would be used to ameliorate our car and to represent our origin. Special attention was paid to magnesium, a very light and innovative material requiring advanced manufacturing techniques. In order to demonstrate the material’s potential, the car body shell is handmade of magnesium alloy sheets with a thickness of 1.5mm. The chance of using modern technology and of finding smart solutions was a persistent motivation for all participants and led us to where we are now.

A big Thank You goes to all our sponsors and especially to our university for the confidence in and the support for our goals.

Car 85

FRAME CONSTRUCTION Front and rear Tubular space frame

MATERIAL St37

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2820 / 1370 / 1010

WHEELBASE (mm) 1845

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 136 / 204

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

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

TYRES (Fr / Rr) 20.5x6.5 R13 / 20.5x7.5 R13, Avon A15

WHEELS (Fr / Rr) 6.0x13, 40mm offset, (3 pc Al Rim) / 7.0x13, 40 mm offset, (3 pc Al Rim)

ENGINE 2003 Honda - Engine PC37

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

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Student designed ,fuel injection, sequential

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

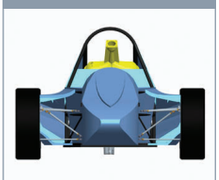
MAX TORQUE DESIGN (rpm) 7300

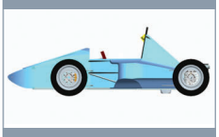
DRIVE TYPE chain, 10 B-1

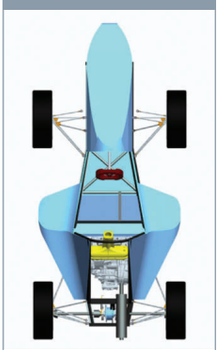
DIFFERENTIAL Quaife Torson differential

COOLING single side pod mounted radiator, thermostatic controlled electric fan

BRAKE SYSTEM 3-Disk system, 3x220 mm diameter, adjustable brake balance, 6-piston calipers Fr and 4-piston Rr





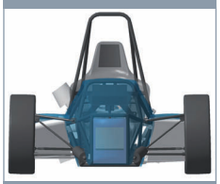


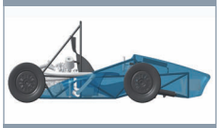
Friedrichshafen

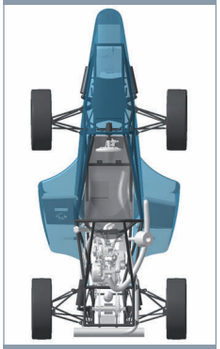
Ravensburg University of Cooperative Education, Germany

In our second year in the formula student, our major goal was to learn from the events in 2006 and fulfil consequent improvements to parts that did not carry out our demands. The development was focused on the reduction of weight as well as better ergonomics and performance. We wouldn't be able to achieve these aims without all our sponsors and we are deeply grateful that they supported us with knowledge, parts and funds. At this place, we would like to welcome Tognum in our group of platin sponsors to give us together with ACE, Aluca, Handtmann, Kautex and Stegmaier Nutzfahrzeuge the appliance to realize our ideas of a high performance race car. This year we are going the way of a light car with a FEM optimized Steel tube frame. Nevertheless, most weight is saved by our compact single cylinder supercharged Engine. Its bore and stroke is especially customized for a maximum of torque and performance in fulfilment of the formula student competition rules. And now, let's race!

Car 25







FRAME CONSTRUCTION Front and rear tubular space frame

MATERIAL 1. 5070 steel round tubing 25mm dia

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2718 / 1397 / 1066

WHEELBASE (mm) 1600

TRACK (Fr / Rr) (mm) 1245 / 1245

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

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

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

TYRES (Fr / Rr) 20x6.5-13 Good-Year Eagle / 20x6.5-13 Good-Year Eagle

WHEELS (Fr / Rr) 165mm wide, 3pc Mg/Al rim / 165mm wide, 3pc Mg/Al rim

ENGINE KTM LC4 1cylinder

BORE / STROKE / CYLINDERS / DISPLACEMENT 105 / 70 / 1 cylinder / 606cc

COMPRESSION RATIO 11,7:1

FUEL SYSTEM Student des/built, fuel injection, sequential

FUEL E-85 ethanol

MAX POWER DESIGN (rpm) 8000

MAX TORQUE DESIGN (rpm) 7000

DRIVE TYPE 520 chain belt

DIFFERENTIAL Drexler Formula Student

COOLING Left side pod mounted radiators with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, Braking rotors with 220mm diameter, adjustable brake balance, Brembo calipers

Glasgow

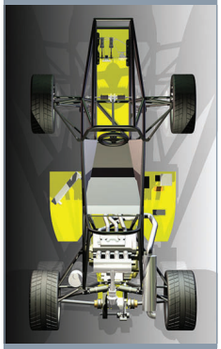
University of Strathclyde, United Kingdom

The University of Strathclyde's Formula Student team is eight years old this year and is seeking to build on the success of their 2006 season when the team finished tenth at Hockenheim. The team continues to be well supported by the university, the faculty of Engineering, local engineering companies and some multinational companies. The team would like to thank all its faculty advisers, the faculty itself and all the companies that support them throughout the year. Without them they would not have made it this far.

The team aims to repeat the dynamic and cost report successes of 2006 in 2007, but seeks to significantly improve their design and sales performance. This years restructuring has helped the team to improve how it operates this year, but it is part of a longer term plan toward exceptional formula student performance across the world.

Most of all we can't wait to get back to Hockenheim where we had such a great time last year!

Car 10



FRAME CONSTRUCTION Mild steel tubular space frame with composite kelvar reinforced GFRP sidepods and floor pan

MATERIAL 25.4mm OD mild steel tube - cold drawn seamless

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2943 / 1680 / 1210

WHEELBASE (mm) 1680

TRACK (Fr / Rr) (mm) 1210 / 1149

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 135 / 150

FRONT SUSPENSION Unequal length double wishbone, pull rod actuated air shocks.

REAR SUSPENSION Unequal length double wishbone, push rod actuated air shocks.

TYRES (Fr / Rr) 19.5x6.2-13 Avon soft / 19.5x7.2-13 Avon soft

WHEELS (Fr / Rr) 6.2 inch wide, 3 pc Al Rim, no offset / 7.2 inch wide, 3 pc Al Rim (student designed Aluminium wheel centre)

ENGINE Honda CBR 600F 4 stroke engine

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

COMPRESSION RATIO 12:1

FUEL SYSTEM Student designed/built sequential fuel injection system using DTA ECU

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10,000

MAX TORQUE DESIGN (rpm) 7,000

DRIVE TYPE Tsubaki racing TX4 ring chain

DIFFERENTIAL Zexel Torsen University Special modified

COOLING Custom made Aluminium radiator housed in left hand sidepod with thermostatic controlled electric fan

BRAKE SYSTEM 2-Disk front (outboard - 260mm diameter) and 1-Disk rear (centrally located - 240mm diameter) student designed floating discs with laser cut steel rotor and aluminium hub. Adjustable brake balance, 3 x Willwood Dynalite single alumimium billet caliper

Graz

Graz University of Technology, Austria

After the amazing and successful previous season we again faced the challenge to build not only a FS car but a new “Tankia”. Behind his extremely aggressive and sexy appearance the “Tankia2007” is hiding a lot of highly sophisticated technical solutions at a weight of less than 180 kg and 102 hp. It comes up with a two-piece carbon fibre chassis that is even lighter and stiffer (15% weight reduction) with the possibility to remove the whole rear end within only 10 minutes. Other highlights are one-piece carbon fibre wishbones, one-piece carbon fibre rims (1.45 kg), hollow uprights made by EBM technology, variable intake tube length, self-developed multifunctional CRP steering wheel. Our team consists of 44 ambitious members and is divided into five technical (chassis, drivetrain, electronics, engine, suspension) and three non-technical departments (finance, marketing, IT). But what does “Tankia” mean? It’s an unique and extraordinary abbreviation: “There Are No Kangaroos In Austria”.

Car 1

FRAME CONSTRUCTION carbon fibre monocoque, carbon fibre rear end, aluminium investment cast differential housing

MATERIAL CRP sandwich with prepreg and Nomex core foam

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2720 / 1410 / 953

WHEELBASE (mm) 1575

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 116 / 130

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

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

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 / 7 inch wide, self made one piece carbon fibre Rim

ENGINE 2003 Yamaha YZF R6

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

COMPRESSION RATIO 13,7:1

FUEL SYSTEM Student designed and built, fuel injection, sequential

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

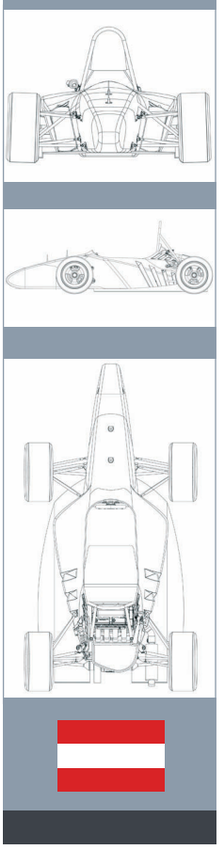
MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE DID 520 chain

DIFFERENTIAL clutch pack limited slip, variable preload

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4-Disk system, self developed rotors with 200mm diameter front and 175mm diameter rear, adjustable brake balance via proportioning valve, front 2 x CRG four pistons calipers, diameter 26mm / rear 2 x CRG two pistons calipers, diameter 26mm



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Graz

University of Applied Sciences Joanneum Graz, Austria

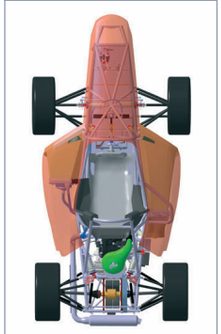
The team of joanneum racing graz took part in the static competitions 2003 for the first time and since 2004 a new car has been built every year. Since the team members had worked very hard for their success, a synonym for them and their ambitions was soon found - The “Weasels” were born. Each year there is a new team with new innovative ideas coming up. The team has been successful right from the beginning: At their first participation in 2003 they won the Marketing event, in 2004 they were awarded the „FISITA Award of Best Endeavour“ for the best team spirit. In the 2006 competition in Italy the joanneum racing team achieved the “Overall Winner” as the first UAS ever. These results show that the team of joanneum racing graz has permanently improved within just 4 years and that it is one of the main favourites at international competitions. Because of the outstanding results at the previous events there can only be one aim for the next competitions: to finish under the top 3 teams.

Hamburg

Hamburg University of Applied Sciences, Germany

The Hamburg based Hawks Racing Team is entering the FSG competition for the second time. The third racecar of the team, the H03, was designed and manufactured from October 2006 to May 2007. Despite the short development period the team members decided to enhance mayor parts of the 2006 car. With a completely new package, the H03 has 150 mm less height than its predecessor. For the engine the team designed a new intake and exhaust system to enhance the performance. The adaptable interior is equipped with a steering wheel mounted display and a newly designed carbon/kevlar seat. For the exterior style, main ideas of the 2006 car were used and further developed into an individual and exciting interpretation of the common Formula design. In order to design a competitive formula student car within 7 months, the team needed to optimize the team structure and processes as well. With new partners and hard working team members, we are looking forward to a tough competition at the Hockenheimring!

Car 111



FRAME CONSTRUCTION Tubular space frame

MATERIAL S355, S235, removable CFK tubes

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2680 / 1370 / 1035

WHEELBASE (mm) 1600

TRACK (Fr / Rr) (mm) 1184 / 1102

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 121 / 132

FRONT SUSPENSION Double unequal length A-Arm. Push rod actuated Sachs RD36 spring/dampers units

REAR SUSPENSION Double unequal length A-Arm. Push rod actuated Sachs RD36 spring/dampers units

TYRES (Fr / Rr) 6.2-20.0-13 AVON A45 / 7.2-20.0-13 AVON A45

WHEELS (Fr / Rr) 6x13 - 12.3mm offset CFK rim with BBS Mg-center / 7x13 - 12.3mm offset CFK rim with BBS Mg-center

ENGINE ROTAX R14 (from BMW F 650) with Lysholm supercharger, servo-motor bypass controlled, Tri-Spark and dual injection

BORE / STROKE / CYLINDERS / DISPLACEMENT 100mm / 77.6mm / 1 cylinder / 609cc

COMPRESSION RATIO 10:1

FUEL SYSTEM Student des/built fuel injection system

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 7000rpm

MAX TORQUE DESIGN (rpm) 6000rpm

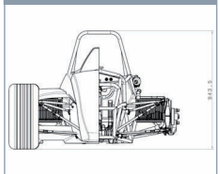
DRIVE TYPE 3-gear sequential gearbox, automatic clutch, chain #520, full integrated drive shafts

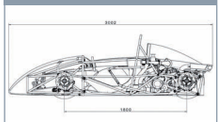
DIFFERENTIAL limited slip differential

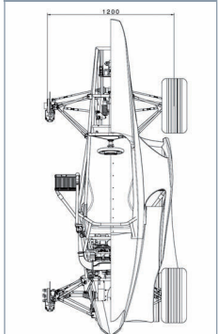
COOLING tailor made water cooler in right side pod, air intercooler in left side pod

BRAKE SYSTEM 4-Disk system, floating rotors of own design, 220 / 210mm diameter, adjustable brake balance, four and two piston calipers

Car 69







FRAME CONSTRUCTION Tubular Spaceframe

MATERIAL mild steel round tubing 25mm dia, various thicknesses, TIG welded

OVERALL LENGTH / WIDTH / HEIGHT (mm) 3002 / 1425 / 944

WHEELBASE (mm) 1800

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 159 / 171

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

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

TYRES (Fr / Rr) 19.5x7.0-13 LeCont soft / 19.5x9.0-13 LeCont soft

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

ENGINE 2000 Kawasaki ZX-6R 4 cylinder (ZX600J)

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

COMPRESSION RATIO 12.8:1

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

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10850

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE Chain Drive, Chain Type 520

DIFFERENTIAL Torsion Type 2 (Helical LSD), Automatic Torque Bias

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

BRAKE SYSTEM 4-Disk system, self designed 6-piston calipers, floating rotors 260mm outer diameter, adjustable brake balance

Fasziniert von allem, was sich bewegt?

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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.

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Im Geschäftsjahr 2006 erwirtschafteten rund 63.000 Mitarbeiter einen Umsatz von über 8,3 Mrd. Euro – an über 180 Standorten.

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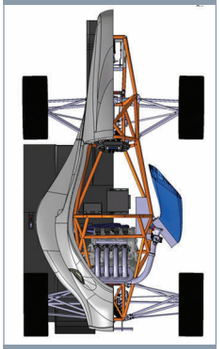
Helsinki

Helsinki Polytechnic Stadia, Finland

Helsinki Polytechnic Formula Team is proud to present the real nordic challenger, the HPF007. This year is the first time that Helsinki Polytechnic comes out without a turbocharger. Our Yamaha R6 2004 based engine is over ten kilograms lighter than last year´s engine and produces maximum power output of 67 kW and maximum torque of 65 Nm. Finnish Tatech EMS is the basis of the electronically controlled system in the car. Self developed traction and launch control systems are included in the main engine control unit. The multifunction steering wheel includes not only graphic display unit, but also controls for electric clutch, bias-bar adjustment and pneumatic gear shifting system.
The design of our rigid steel tube spaceframe construction was created around a human CAD-model, digitally modelled Yamaha R6 engine and chassis geometry design. We are using pullrods in front and rear with five-way adjustable Manitou coil-over shock absorbers to ensure the best possible grip in every situation.

Car 2



FRAME CONSTRUCTION Steel tube space frame, carbon fiber body panels

MATERIAL Ruukki FORM 600, 800 and 1000 high strength steel

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2546 / 1470 / 996

WHEELBASE (mm) 1550

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 127 / 148

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

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

TYRES (Fr / Rr) 20x7.0-13 Goodyear D2692 (front and rear)

WHEELS (Fr / Rr) 6,5 inch wide, 3 pc Al Rim, offset -6mm (front and rear)

ENGINE 2004 Yamaha R6

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

COMPRESSION RATIO 13,6:1

FUEL SYSTEM Self developed custom made sequential fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Double row chain drive

DIFFERENTIAL Friction Plate type Limited Slip Differential

COOLING One side pod mounted radiator with ECU controlled electric fan

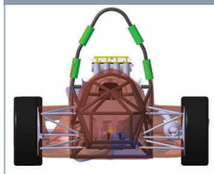
BRAKE SYSTEM 4-Disk system, self developed laser cut mild steel rotors with 220mm dia.(Fr) and 205mm dia.(Rr), 4-piston ISR calipers in the front, 2-piston Brembo calipers at the rear, Floating push-type master cylinders, electronically controlled brake balance

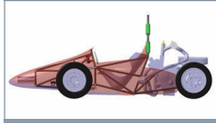
Isfahan

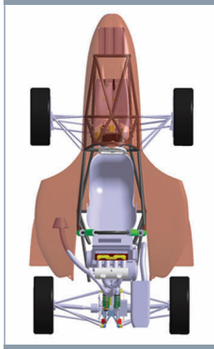
Isfahan University of Technology, Iran

The IUT Racing Team is based at Isfahan University of Technology. Actually, we are one of the pioneers of motor sport teams in the Middle East and the first Formula Student Team of our country as well. Indeed, our team is consisting of enthusiastic and persistent students of our university with outstanding abilities in designing, manufacturing and management.
After two years of hard attempt and independent working under our own personal responsibility, we have engineered our first genuinely competitive and high performance race car, despite all the limited facilities and financial resources faced with us. However, we highly appreciate our only sponsors, Export Development Bank of Iran and IUT. Working in the IUT Racing Team allows us not only to achieve additional experiences but also managing our educational responsibilities. Moreover, remembering that “impossible is nothing”, could help us to have dare for more.

Car 14







FRAME CONSTRUCTION Steel tube space frame with Aluminum floor panels / aluminum structure rear frame

MATERIAL Mild steel tube - cold drawn seamless

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2975 / 1422 / 1150

WHEELBASE (mm) 1700

TRACK (Fr / Rr) (mm) 1270 / 1250

WEIGHT WITH 68kg DRIVER (Fr / Rr) 112 / 168

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

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

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

WHEELS (Fr / Rr) BBS steel 13” x 175mm -108mm offset, 4mm thick magnesium

ENGINE Honda CBR 600RR 2005

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

COMPRESSION RATIO 12.0:1

FUEL SYSTEM Honda CBR 600cc RR originally mounted with modified auxiliary injectors position

FUEL 95 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8000

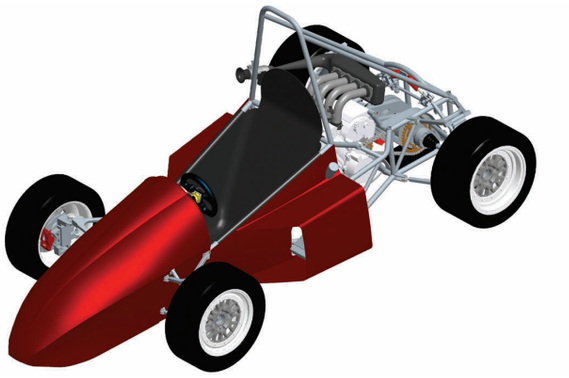
DRIVE TYPE chain 520

DIFFERENTIAL Zexel Torsen University Special modified, Aprox. Bias ratio 2.6:1

COOLING Honda CBR 6000RR original radiator mounted in duct

BRAKE SYSTEM 3-Disk system, Brembo rotors with 220mm diameter (Front), 245mm diameter (rear) adjustable brake balance

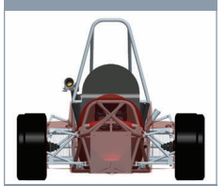
Karlsruhe
Karlsruhe University of Applied Sciences, Germany

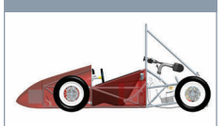


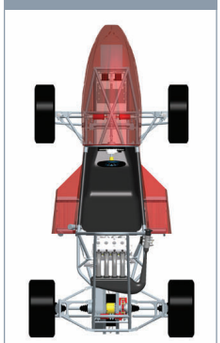
In September 2006, approximately 40 students founded the High Speed Karlsruhe team. The aim of the team was to fulfill the dream of many men: design a car and build it! For the realisation of this dream, many team members put aside their studies and worked 24/7 on the project. The resulting sleep deprivation, constant muscle aches, and the loss of all free time were accepted by all because they know that it will be benefit. And so, they are just waiting until the middle of August and hope that the F101 – the formula student racing car of the University of Applied Sciences Karlsruhe – will demonstrate their knowledge and prowess at its first Formula Student competition.

Car 88

FRAME CONSTRUCTION Steel tube space frame
MATERIAL Round steel tubing of mild steel
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2840 / 1500 / 1289
WHEELBASE (mm) 1769
TRACK (Fr / Rr) (mm) 1210 / 1261
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 155 / 164
FRONT SUSPENSION Double unequal length A-Arm. Push rod actuated spring and damper
REAR SUSPENSION Double unequal length A-Arm. Push rod actuated spring and damper
TYRES (Fr / Rr) 20.5x6.0-13 R25A Hoosier / 20x7.5-13 R25A Hoosier
WHEELS (Fr / Rr) 152.4 mm wide, 3 pc Al Rim, 10.8 mm pos. offset / 203.2 mm wide, 3 pc Al Rim, 2.8 mm pos. offset
ENGINE Yamah YZF-R6 1999
BORE / STROKE / CYLINDERS / DISPLACEMENT 65.5mm / 44.5mm / 4 cylinder / 599cc
COMPRESSION RATIO 12.4:1
FUEL SYSTEM Student des/built, fuel injection, sequential
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 12000
MAX TORQUE DESIGN (rpm) 9000
DRIVE TYPE Original Yamaha chain drive
DIFFERENTIAL Limited slip differential in cooperation with DREXLER Motorsport
COOLING Aluminium KTM cooler, radiator with thermostatic controlled electric fan
BRAKE SYSTEM 3-Disk system, rotors with 193/230mm diameter, adjustable brake balance, double/4 Piston caliber





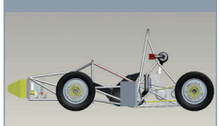


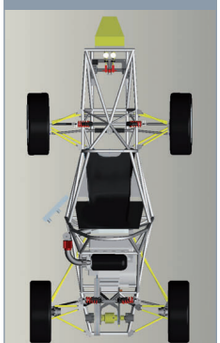
Karlsruhe
University of Karlsruhe, Germany

The KIT01 is the first car of the newly founded team KA-RaceIng.
A team of currently 53 members, we were working hard since February 2006 in order to design and build a race car that fulfils our main design aims – technical distinctiveness, appealing design, high quality and strong performance – and to achieve our main goal for 2007: to become best newcomer at Hockenheim 2007. From the beginning on, we chose to approach the contest with the key elements of good engineering: creativity, knowledge and communication.
With our powerful knowledge management tool, we were able to collect and store all ideas and to document decision processes. This, together with regular team meetings, was the key to work productive in such a large team. Extensive use of advanced simulation and design tools provided us important information during the design process. And finally, it should be noted that without the help of our sponsors and the partners at our university, there would be no KIT01 at all.

Car 15

FRAME CONSTRUCTION Tubular space frame
MATERIAL steel 15CVD6, 1.7734.5 steel round tubing, outer diameter ranging from 14 to 28 mm
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2830 / 1385 / 1105
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1210 / 1180
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 158 / 170
FRONT SUSPENSION Double unequal length A-Arms. Push rod actuated Cane Creek Double Barrel spring/ damper units
REAR SUSPENSION Double unequal length A-Arms. Push rod actuated Cane Creek Double Barrel spring/ damper units
TYRES (Fr / Rr) 16/53-13 S6A Michelin RadialX
WHEELS (Fr / Rr) BBS 6.5 inch wide, 3 pc AlMg Rim, 17.5mm neg. offset
ENGINE 2003 Honda CBR 600 PC 35 4 cylinder engine
BORE / STROKE / CYLINDERS / DISPLACEMENT 67mm / 42.5mm / 4 cylinder / 599cc
COMPRESSION RATIO 12:1
FUEL SYSTEM Student des/built, electronic fuel injection controlled by trijekt engine management
FUEL 95 octane unleaded gasoline
MAX POWER DESIGN (rpm) 11000
MAX TORQUE DESIGN (rpm) 8000
DRIVE TYPE 520 X-Ring Chain
DIFFERENTIAL Drexler limited slip differential, Torque bias ratio 29%, 49% or 85%
COOLING One side pod mounted radiator with thermostatic controlled electric fan
BRAKE SYSTEM 4-Disk system, rotors with 220mm diameter, adjustable brake balance, Brembo P 32 G/ AP-Racing CP4226 calipers





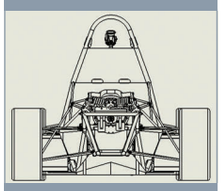
Kiel
University of Applied Sciences Kiel, Germany

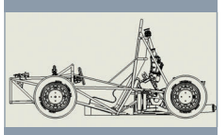
RACEYARD Kiel was founded in 2005 and was able to win the BEST NEWCOMER AWARD in 2006 with their first car, the tKielA06. In September 06, 28 motivated students from different fields of studies joined the new team to tie up to the previous successes. Experienced team members worked side by side with the inexperienced, in order to circulate knowledge. Focussing on technical improvements and a straight organisation, RACEYARD was proudly able to present the TKielA07 after 8 months of hard work on the 5th of May. In fact the Team reached to enlarge the engine power to 70kW, further more optimized the handling and reduced the weight by 15%. Concerning the organisation, the team build up a structure with a team leading and representatives of the main tasks. These are some upgrades which show an impressive way to transform experiences into improvements. Apart from that the Team RACEYARD remained true to itself and never forgot to enjoy teamwork.

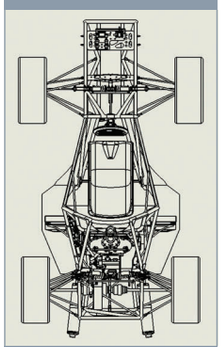
Köln
Cologne University of Applied Sciences, Germany

The Formula Student Team FH Köln Motorsport e.V. was founded in 2006 at The University of Applied Sciences Cologne. Our Team consists of 30 Students who belong to several different faculties within our university. After having studied the series in 2006, we decided to take part at the completion with our first own car, the CC07, in 2007.
As a newcomer team, our concept is consciously conservative but sophisticated. We analyzed the so far most promising concepts for each partition of the car. Thereby we preferred reliable, flexible and cost effective ones instead of using and developing expensive, incalculable high tech components for our first start. Our time schedule enables us to harmonize the different parts of our racing car carefully, in order to maximize the overall performance and reliability. Since we are aware of the performance of the experienced top teams, we observe them with great respect but try to fight for the title of the best newcomer team.

Car 53







FRAME CONSTRUCTION Tubular space frame with different diameter tubes

MATERIAL 4130 steel round tubing

OVERALL LENGTH / WIDTH / HEIGHT (mm)
2776 / 1475 / 1220

WHEELBASE (mm) 1600

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) 135 / 203

SUSPENSION (Fr / Rr) Double unequal length A-Arm. Push rod actuated horizontally, in line oriented spring and damper

TYRES (Fr / Rr) 160/530 R13, Avon A15 / 190/530 R13, Avon A15

WHEELS (Fr / Rr) three-pice aluminium with carbon center, 13"x6.5" ET 18 / 13"x7" ET 18

ENGINE 2003 PC37 Honda CBR600RR

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

COMPRESSION RATIO 12.0:1

FUEL SYSTEM trijekt, fuel injection, sequential

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12100

MAX TORQUE DESIGN (rpm) 7900

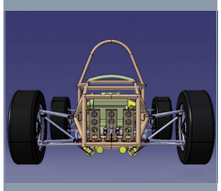
DRIVE TYPE chain drive

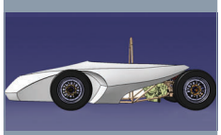
DIFFERENTIAL Quaife torque biasing differential

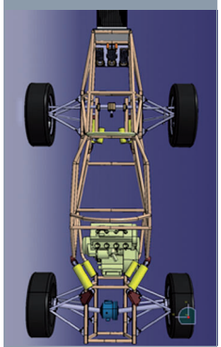
COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4 Disk system, Floating Rotors, hub mounted, quad piston with 230mm disk front and dual piston with 210mm disk rear, adjustable brake balance

Car 99







FRAME CONSTRUCTION Tubular space frame

MATERIAL S235JR steel tubing

OVERALL LENGTH / WIDTH / HEIGHT (mm)
2912 / 1370 / 1162

WHEELBASE (mm) 1600

TRACK (Fr / Rr) (mm) 1200 / 1175

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 142 / 163

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

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

TYRES (Fr / Rr) 16/53 – 13 Michelin S6A

WHEELS (Fr / Rr) 6x13; 10,8mm offset, 3 pc al rim

ENGINE Honda Cb 600, modified injection

BORE / STROKE / CYLINDERS / DISPLACEMENT
76mm / 43mm / 4 cylinder / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Fuel injection, sequential

FUEL Gasoline 69-100 octane

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE Chain drive

DIFFERENTIAL Torsen differential T-1

COOLING One side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, non floating, cast iron, hub mounted, 200mm brake discs, adjustable brake balance, monobloc calipers

In the education fast lane

To build up a formula race car from scratch by undergraduates and to stay ahead of competition at international Formula Student/SAE competitions around the world requires more than just enthusiasm. Frequently altering team members necessitate a short learning curve for the design and analysis tools to optimize the individual car components. SolidWorks is easy to learn, use and teach during the complete product lifecycle, and enable students and educators to run their projects in the same style as professional race teams. There is no better education for the real world than genuine design projects with a spin-off effect.

The SolidWorks Education Program provides a complete 3D design and engineering education solution. The SolidWorks Education Edition includes project-based curriculum and courseware materials. The SolidWorks student licensing and certification programs provide students with the tools for life long learning.

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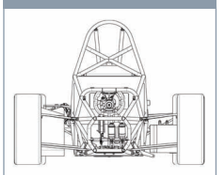
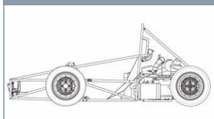
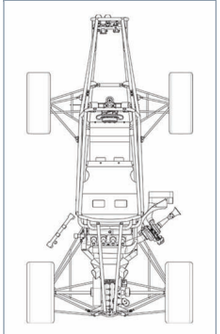
Konstanz
University of Applied Sciences Konstanz, Germany

The Bodensee Racing Team (BRT) of Konstanz - right in the middle of the German Carribean - consists of about 50 students. A lot of them are taking part in the Hockenheim-Event, so it's gonna be a lot of fun. This year, the BRT will try its luck with the brand-new "ILTIS 07". In the last year the team could improve internal organization and a better structuring of the work could be realized. Thanks to the HTWG-Konstanz, working conditions and equipment could be improved. Due to the high affluxion of new team members, it was necessary to expand our working area in the University. We kept on working with most of our industrial partners and we could manage to get a few new ones. The ILTIS 07 is a completely new designed car, even so a few similar components are still used in an advanced version. Packaging and decrease in weight were the important designing guidelines. The result is a shorter, lighter and more powerful "ILTIS 07", which is ready to take on the fight with its competitors!

Car 34

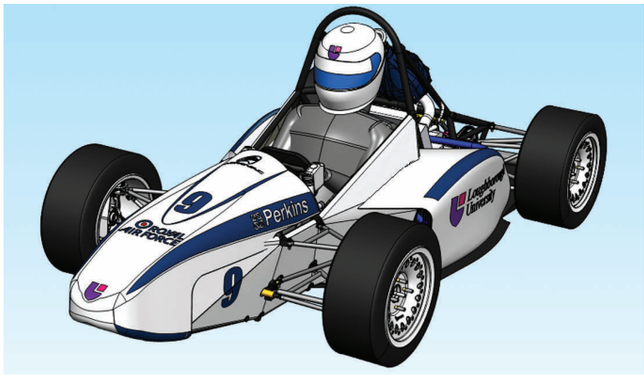






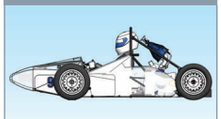
FRAME CONSTRUCTION tubular steel space frame / aluminium back axle carrier
MATERIAL mild steel
OVERALL LENGTH / WIDTH / HEIGHT (mm)
2800 / 1380 / 1040
TYRES (Fr / Rr) WHEELS (Fr / Rr) ? (6 inch wide, 3 pc Al Rim, no offset / 8 inch wide, 3 pc Al Rim, -13 mm offset)
ENGINE Suzuki GSXR 600 ccm³
CYLINDERS / DISPLACEMENT
4 cylinder / 600cc
COMPRESSION RATIO 12,3:1
FUEL SYSTEM Student-built, fuel injection
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 12000
MAX TORQUE DESIGN (rpm) 7500
DRIVE TYPE Double-Chain
DIFFERENTIAL Drexler Formula Student
COOLING One side pod mounted radiator
BRAKE SYSTEM 4-Disk system

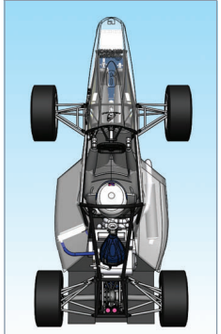
Loughborough
Loughborough University, United Kingdom



LFS07 marks LU Motorsport's 5th Formula Student car and 2nd entry FSG. The Team comprises 25 students from Automotive, Mechanical and Materials courses. Following a successful 2006, the objectives for LFS07 were to develop existing designs and redesign weaker areas, whilst still focussing on overall reliability and performance. The most significant developments have been changing the engine and driver position. Both these changes are a result of the Team's constant strive for improvement both in dynamic capability of the car and the final placing at the competition. The Honda CBR600RR engine offers improved power and a considerable weight reduction over the Triumph engine and the new driver position has resulted in a more upright and comfortable position for the drivers eliminating problems with cone blindness and restricted movement. The static events have also been improved to ensure that the Team will achieve our desire to become a winner of Formula Student Germany.

Car 90





FRAME CONSTRUCTION Steel tube spaceframe with bonded stiffner panels
MATERIAL T45 Steel, Pre-preg glass fibre panels
OVERALL LENGTH / WIDTH / HEIGHT (mm)
2928 / 1526 / 1081
WHEELBASE (mm) 1700
TRACK (Fr / Rr) (mm) 1220 / 1130
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 145 / 151
FRONT SUSPENSION Double unequal length A-Arm. Pull rod actuated, 3-way adjustable Reiger damper units and hyperco springs
REAR SUSPENSION Double unequal length A-Arm. Pull rod actuated, 3-way adjustable Reiger damper units and hyperco springs
TYRES (Fr / Rr) 20.5x7.0-13, Hoosier R25A / 20.0x7.5-13, Hoosier R25A
WHEELS (Fr / Rr) Braid 2-piece alloy 13"x8J – 45mm offset / Braid 2-piece alloy 13"x8J – 45mm offset
ENGINE 2005 Honda CBR 600 RR 4-cylinder inline
BORE / STROKE / CYLINDERS / DISPLACEMENT
67mm / 43mm / 4 cylinder / 599cc
COMPRESSION RATIO 12:1
FUEL SYSTEM Bespoke upper fuel rail made to fit plenum
FUEL 100 octane unleaded gasoline
MAX POWER DESIGN (rpm) 9000-10000
MAX TORQUE DESIGN (rpm) 4000
DRIVE TYPE Chain
DIFFERENTIAL Quaife QDF7ZR torsen style differential
COOLING One side pod mounted radiator
BRAKE SYSTEM 4-Disk system, floating bell (0.5mm float) mounted rotors 229mm diameter at front and 204mm diameter at rear, adjustable brake balance, two outboard Brembo 2-pot calipers

Madison

University of Wisconsin-Madison, United States

The UW Madison Formula SAE racing team is dedicated to the design, fabrication, marketing, and racing of an open wheel formula-style racing vehicle. The team consists of students from mainly Mechanical Engineering and Electrical Engineering majors. We are headed by a faculty advisor, two team leaders, and a group leader for each of the groups: suspension, frame and body, powertrain, drivetrain, electrical, and business. Together, we work to build and race a Formula SAE car. Over the past several years, the University of Wisconsin-Madison has risen through the vast Formula SAE field to become a front runner. The failure of the 2006 entry, the 206, while leading the competition only increased the desire to build a complete and dominant package for the 2007 competition. Sleeker styling, a new ethanol fueled powertrain, driver aids designed for all weather conditions, adjustable suspension and timely execution elevated the 207 above the competition earning the elusive SAE Foundation Cup.

Moscow

Moscow State Automobile&Road Technical University, Russia

Students Engineering Group MADI is the first Russian Formula Student team, founded in 2005 in MADI (STU). After visiting the FS event in UK in 2005 we decided to participate in FSG-2006. After hard work because of lack of time, experience and even team members we showed worthy result and got the prize of Jury's Choice Award. Our new car, FSM 500 2 "Adrenaline", has a 500 cc Yamaha engine with CVT from snow bike. Some problems with finances made us to built a car for a bit long time, but we are going to show the best result which is possible.
In this year we are delighted to invite all teams to First Russian Pre-Event, which will take place in Moscow on August 23-26. It`s first time in history, when you will be able to watch Formula Student and Hybrid and Baja at the same time and place. Don't miss your opportunity to participate in such outstanding event!

Car 103

FRAME CONSTRUCTION Steel Tubular Space Frame

MATERIAL 4130 steel round and square tubing .75" to 1" dia.

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2725 / 1372 / 1080

WHEELBASE (mm) 1524

TRACK (Fr / Rr) (mm) 1194 / 1169

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 118 / 156.5

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

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

TYRES (Fr / Rr) 20x7.0-13 D2509 R065 Goodyear/ 20x7.0-13 D2509 R065 Goodyear

WHEELS (Fr / Rr) 7 inch wide, 3 pc Al Rim, 1 inch neg. offset/ 7 inch wide, 3 pc Al Rim, 1 inch neg. offset

ENGINE 2003 Suzuki GSX-R600

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

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Student Designed/Built Sequential Port Injection / Dual cone 20 deg offset Bosch Injectors

FUEL E-85 ethanol

MAX POWER DESIGN (rpm) 10200

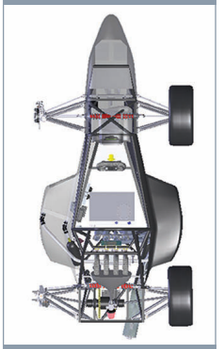
MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE Chain Drive, 520 X-Ring

DIFFERENTIAL Limited slip differential, Crossed axis helical in custom aluminum housing

COOLING Twin side pod mounted dual pass radiators, fanless

BRAKE SYSTEM 4-Disk system, floating dual outboard with 232mm/146mm diameter, electronic adjustable brake balance, two piece calipers housing two 30mm titanium pistons



Car 75

FRAME CONSTRUCTION Tubular space frame. Diameters: 1,18''x0,0787'', 0,984''x0,0787'', 0,787''x0,0787

MATERIAL 30xgsa

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2790 / 1312 / 1145

WHEELBASE (mm) 1690

TRACK (Fr / Rr) (mm) 1312 / 1312

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 132,75 / 162,25

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

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

TYRES (Fr / Rr) 155x60 R13, Hoosier R25A C2000/ 155x60 R13, Hoosier R25A C2000

WHEELS (Fr / Rr) 5.5x13, 35mm offset, 3 pc Al Forged Rim / 5.5x13, 35mm offset, 3 pc Al Forged Rim

ENGINE 2007 Yamaha Phazer GT PZ50GT

BORE / STROKE / CYLINDERS / DISPLACEMENT 77mm / 53,6mm / 2 cylinder / 499cc

COMPRESSION RATIO 12,4:1

FUEL SYSTEM Yamaha, fuel injection, sequential

FUEL 95 Octan

MAX POWER DESIGN (rpm) 11250

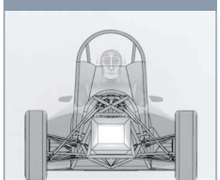
MAX TORQUE DESIGN (rpm) 9000

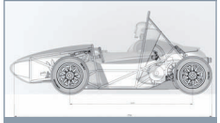
DRIVE TYPE 35mm x 15mm v-belt

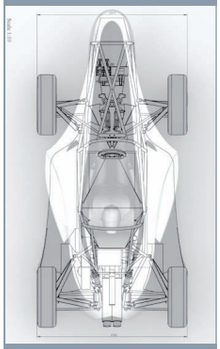
DIFFERENTIAL Torsen T-2, 30Nm preload

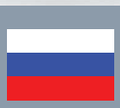
COOLING One side pod mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 4-Disk system, modified (wilwood) rotors with 230mm diameter, adjustable brake balance, monobloc calipers



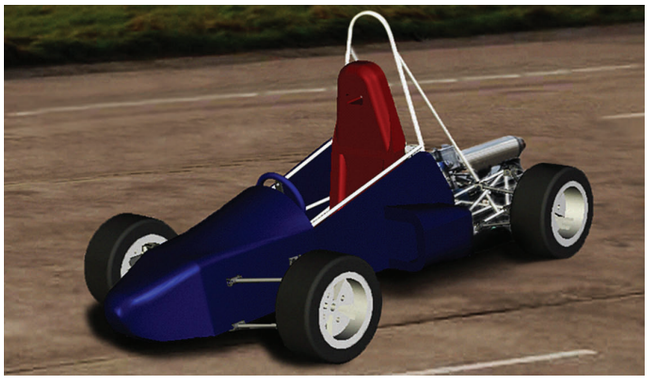






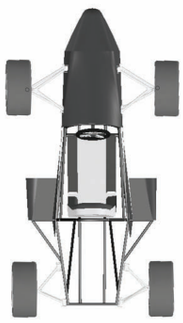
Moscow

Moscow State Technical University (MAMI), Russia



"FS-MAMI" team is an ambitious project which started in early 2007 by Moscow state technical university "MAMI" to participate in the Formula Student Series. The "FS-MAMI" team consists of over 10 enthusiastic students from a variety of different backgrounds including first, second, third and fourth year Mechanical, Design and Electrical engineering students as well as Management and Accounting students, each working in their specialized fields. An important point is that "FS-MAMI" is the first international team representing Russia in the tournament, involving overseas students from Ecuador and Moldova. The main goals of the team for the 2007 competition are to create a prototype, to accumulate an experience and to represent the University by the worthy performance. Our motto is "The spirit of innovations".

Car 777



FRAME CONSTRUCTION Monocoque with tubular steel roll bars / tubular steel rear frame

MATERIAL alloyed steel, glass fibre

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2560 / 1420 / 1290

WHEELBASE (mm) 1675

TRACK (Fr / Rr) (mm) 1225 / 1144

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 143 / 254

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

REAR 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) Custom spun aluminium 13"x7" -2"

ENGINE 2000 Honda CBR 600 F4I

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

COMPRESSION RATIO 12:1

FUEL SYSTEM Student des/built, fuel injection, sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 9500

MAX TORQUE DESIGN (rpm) 8000

DRIVE TYPE DID 3/8"-525 roller chain, 68 links

DIFFERENTIAL Torsen, 2.6 torsen bias ratio

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

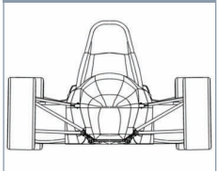
BRAKE SYSTEM 3-Disk system, semi floating rotors with 230/220 mm diameter, brake balance adjustable, dual piston calipers

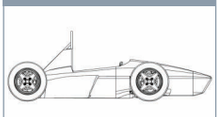
München

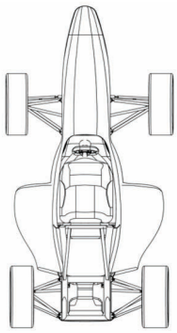
Technical University Munich, Germany

TUfast, the student racing team of the Technical University of Munich, has now successfully built three cars which all have one thing in common: revolutionary design. This year's car, the nb07, is the first to adopt evolutionary engineering to enhance performance by improving the effectiveness and reliability of our race-car's components. The nb07 incorporates a carbon fibre monocoque, drive-shaft air-box, rims, steering wheel and suspension control arms. We use our knowledge of CFRP and bonding technology to follow our design philosophy of a low centre of gravity and light weight construction. Substantial testing to validate simulated CAD models has been done to improve reliability and gain engineering experience. All parts except for our engine are in-house developed and of high quality. 40 dedicated students have managed to build this race car and are happy to answer your questions. Feel free to visit us in our box to get a better view of the real race car.

Car 31







FRAME CONSTRUCTION axis-to-axis carbon fibre monocoque with integrated bulks, front and main hoop

MATERIAL CFRP aluminium honeycomb construction. ACG MTM49-3-38%-1KT300-2X1T-120-1000 with M46J-UD reinforcements, Rohacell foam core

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2823 / 1275 / 948

WHEELBASE (mm) 1655

TRACK (Fr / Rr) (mm) 1260 / 1160

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 110,4 / 114,4

FRONT SUSPENSION Double unequal length A-Arm. Pull rod actuated titanium spring / double barrel damper unit

REAR SUSPENSION Double unequal length A-Arm. Pull rod actuated titanium spring / double barrel damper unit

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

WHEELS (Fr / Rr) 1pc CFRP 13"x152.4 - 27.5mm Offset with integrated stabilizing ring on the inside / 1pc CFRP 13"x177.8 - 4mm Offset

ENGINE 2001 Kawasaki ZX600J1

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

COMPRESSION RATIO 12.8:1

FUEL SYSTEM TUfast EMS utilizing semi sequential fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12.000

MAX TORQUE DESIGN (rpm) 10.000

DRIVE TYPE Chain #520

DIFFERENTIAL TUfast Vario-Lock limited slip differential

COOLING One side pod mounted twin heat exchanger with PWM controlled electric fan

BRAKE SYSTEM 4-Disk system, (Fr / Re) 220mm / 160mm diameter motorcycle cast iron disks, adjustable brake balance, Brembo 4 / 2 piston calipers

München

Munich University of Applied Sciences, Germany

The FHM Racing Team was founded in 2005 and has successfully participated in the 2006 Formula Student/SAE events in Hockenheim and Balocco. Even if the team didn't win the Best Newcomer Award, it can look back on outstanding results for a newcomer team. It came in 2nd in the acceleration event and 3rd in the fuel economy event during the endurance race. Learning lessons from the 2006 season, the team decided to build a completely new car with many improvements for 2007. With a monocoque structure and other engineering techniques, the young engineers strive for a total weight of PW2.07, which is much lower than the previous models' weight.

The 60 team members of various academic departments and class standings are subdivided into several teams: chassis, engine, electrical equipment, drive train, marketing and team organisation. The goal for 2007 is to convince with a durable race car on the highest technical level, which enables the team to keep up with the top teams.

Car 207

FRAME CONSTRUCTION Front: Carbon fibre monocoque with sandwich structure; rear car section: monolithic carbon fibre

MATERIAL carbon fibre composite; quasiisotrope topology with unidirectional prepregs; foam-core

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2836 / 1382 / 1048

WHEELBASE (mm) 1600

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 133,2 / 168,8

FRONT SUSPENSION Double unequal length A-arm. Pull rod actuated horizontally mounted spring and damper

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

TYRES (Fr / Rr) 160/530 R13 A 15 Avon / 160/530 R13 A 15 Avon

WHEELS (Fr / Rr) Student des/built CFK rim and Aluminium center, 6,5 x 13 offset 4,5 / Student des/built CFK rim and Aluminium center, 6,5 x 13 offset 4,5

ENGINE 2001 Honda CBR 600 PC 35

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

COMPRESSION RATIO 12:1

FUEL SYSTEM Student des/built CFK throttle body with 40mm diameter

FUEL 100 octane

MAX POWER DESIGN (rpm) 11500

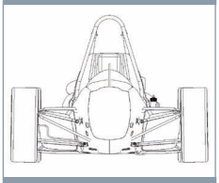
MAX TORQUE DESIGN (rpm) 9000

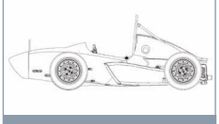
DRIVE TYPE Chain drive

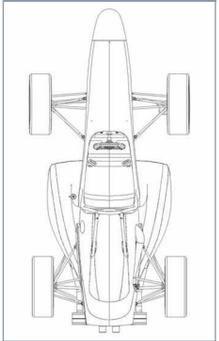
DIFFERENTIAL Drexler Formula Student clutch pack limited slip diff, adjustable preload

COOLING Twin side pod mounted radiators with ecu controlled electric fans

BRAKE SYSTEM Floating, stainless steel, hub mounted, 220 mm outer diam., 169mm inner diam.

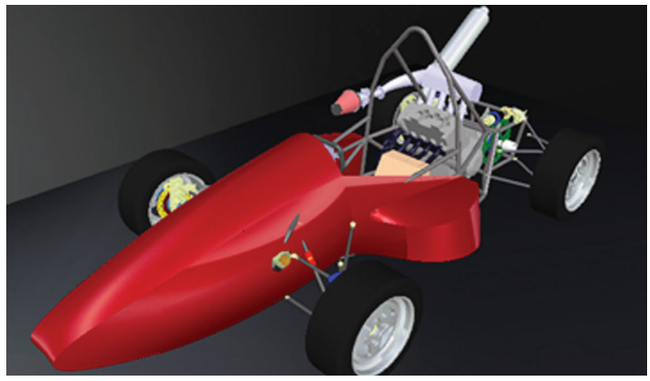






Mumbai

K. J. Somaiya College of Engineering, India



Orion Racing comprises of Mechanical and Electronics Engineering students from K. J. Somaiya College of Engineering, Mumbai. We are a first year team seeking to make our name on the Formula Student circuit. A core group of six leads the team – technically and managerially. Two final-year students are in charge of each system on the car. We also have a dedicated electronics team and an all important junior team.

Orion Racing came up with a unique strategy to get a head start to the FSG campaign. We built a low budget ($1500), 150cc prototype car in just two months' time to gain technical experience, develop team building skills and attract potential sponsors – an exercise which has paid us rich dividends.

Our challenger for FSG 2007, the Barracuda B600, is designed with great stress laid on simplicity and reliability – with an aim to develop a strong, solid car, which will be tested, redesigned, and improved upon by the junior teams in the years to come.

Car 17

FRAME CONSTRUCTION simple space frame

MATERIAL SAE 1020 round tubing 25,4mm x (2,4mm / 1,6mm / 1,2mm)

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2880 / 1250 / 1050

LBASE (mm) 1780

TRACK (Fr / Rr) (mm) 1400 / 1300

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 140 / 203

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

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

TYRES (Fr / Rr) 180x60 R13, Ultima XT Tubeless, JK Tyre / 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 cylinder / 599cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Stock Fuel Rail, Injectors. Batch Injection

FUEL Octane 95 Unleaded Gasoline

MAX POWER DESIGN (rpm) 12500

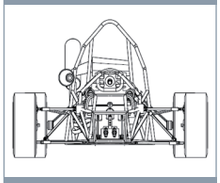
MAX TORQUE DESIGN (rpm) 10500

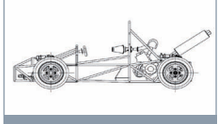
DRIVE TYPE Chain Drive 15,875mm Pitch

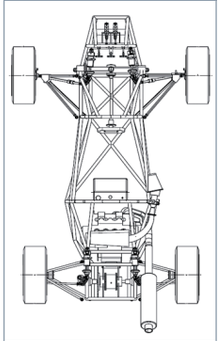
DIFFERENTIAL Limited Slip Torsen, Bias Ratio 3,2:1

COOLING Twin side pod mounted radiators with electric fans

BRAKE SYSTEM 4-Disc system, self developed rotors with 213mm diameter, adjustable brake balance, front 4 piston fixed, rear 2 piston floating calipers







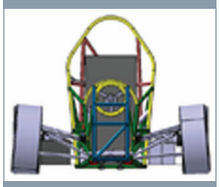
Nevers

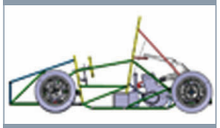
Institute of Automotive and Transport Engineering, France

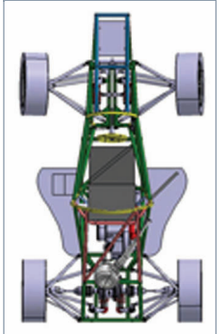
A photo of the actual car was not available. See here a photo of team and car from 2006.

The ISAT University, which is the only university specialised in automotive and transport in France, is located at few kilometres from the Nevers Magny-Cours Circuit. The 2007 team is composed by 16 students in mechanical engineering split up into five main fields of design and research: structure, vehicle dynamics, engine, drivetrain and electronics. The Formula Student challenge at ISAT University is taken up by the 3rd year engineering students and has to be completed in one year. Our strategy this year is a one of evolution, so we based our design on the strong points of last year car and found solutions to solve weaknesses. Every part of the 2007 car has been designed to improve technical solutions from past years. With the incorporation this year of the new push rod suspension system and the adoption of an anti-roll bar system the general performance level improved.
We are looking forward to make a good result in the competition at Hockenheim this year, for this very first involvement.

Car 58







FRAME CONSTRUCTION Alloy steel tube space frame with glass fibre body
MATERIAL BSEN 10210 Pt1 S355J2H alloy steel - cold rolled
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2700 / 1410 / 1105
WHEELBASE (mm) 1650
TRACK (Fr / Rr) (mm) 1250 / 1230
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 120 / 130
FRONT SUSPENSION Unequal length A-Arms. Pull rod actuated BOS EVO II spring/damper units
REAR SUSPENSION Unequal length A-Arms. Pull rod actuated BOS EVO II spring/damper units
TYRES (Fr / Rr) AVON 6.2/20.0-13 – A45 compound / AVON 6.2/20.0-13 – A45 compound
WHEELS (Fr / Rr) Mygale O.Z Racing aluminium 13”x6” -offset 12mm / Mygale O.Z Racing aluminium 13”x6” -offset 12mm
ENGINE 2006 YAMAHA WR450
BORE / STROKE / CYLINDERS / DISPLACEMENT 95.0 / 63.4 mm / 1 cylinder / 449 cc
COMPRESSION RATIO 13.5:1
FUEL SYSTEM Student designed/built fuel injection system using SODEMO ECU
FUEL 98 octane unleaded gasoline
MAX POWER DESIGN (rpm) 9000
MAX TORQUE DESIGN (rpm) 7000
DRIVE TYPE Chain (520 threads)
DIFFERENTIAL Zexel Torsen University Special modified. Bias ratio 2.6:1
COOLING Single Yamaha Raptor 450 radiator mounted in sidepod
BRAKE SYSTEM 4 brake discs and rotors Béringer, 193mm (diameter for brake disc)

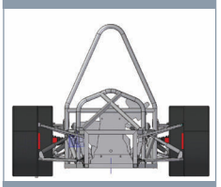
Offenburg

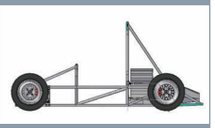
University of Applied Sciences Offenburg, Germany

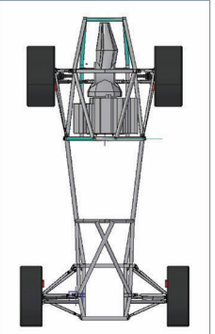
The Black Forest Formula Team was established in June 2004 after the Formula Student concept had been introduced by Prof. Dr. H.-W. Kuhnt, Department Head of Automotive Engineering. The 15 team members are studying various fields, i.e. mechanical engineering, business administration, communication and media engineering and electrical engineering.
Our aim is, to build an absolutely reliable racing car. To accomplish these requirements especially the drive train and the suspension were modified. In our third season we take part with a new engine from Weber Motor AG. It´s called MPE 750 NA, a two cylinder engine which is generally used in personal watercrafts and snowmobiles.

We want to thank our sponsors, and are looking forward to a great event at Hockenheim. For more information please visit our website www.bf-formula.de.

Car 16







FRAME CONSTRUCTION Steel tube space frame with sandwich floor panels
MATERIAL stainless steal EN 1.4301
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2900 / 1440 / 1170
WHEELBASE (mm) 1990
TRACK (Fr / Rr) (mm) 1250 / 1130
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 168 / 235
FRONT SUSPENSION Double unequal length A-Arm; outboard spring/damper units.
REAR SUSPENSION Double unequal length A-Arm; outboard spring/damper units.
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 Weber MPE 750 NA “Freizeit”
BORE / STROKE / CYLINDERS / DISPLACEMENT 84mm / 54mm / 2 cylinder / 609cc
COMPRESSION RATIO 11,5:1
FUEL SYSTEM Student des/built, fuel injection, sequential
FUEL 91 octane unleaded gasoline
MAX POWER DESIGN (rpm) 8000
MAX TORQUE DESIGN (rpm) 6500
DRIVE TYPE VW Käfer 4 speed gearbox
DIFFERENTIAL Original VW Käfer
COOLING Left side pod mounted radiator
BRAKE SYSTEM 4-Disk system, self developed rotors with 250mm and 240mm diameter, adjustable brake balance, Wilwood calipers

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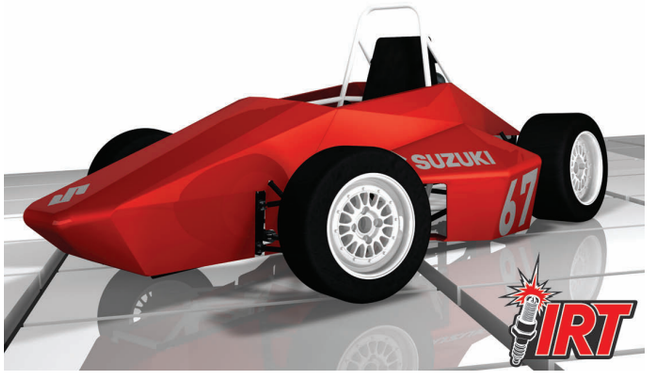
Gothaer

Osnabrück

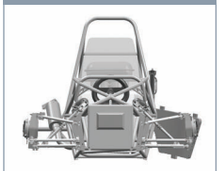
University of Applied Sciences Osnabrück, Germany

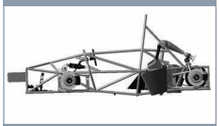


The Ignition Racing Team at the University of Applied Sciences in Osnabrueck (IRT) was founded in June 2006 by 15 motor sport enthusiast students. Today the team comprises 33 students with degree courses in engineering and business sciences. In just one year an exceptional vehicle was developed, a professional team with full infrastructure was built up and sponsors were won over with the shared goal of making the IR07-Red Diamond reality.

Alongside much manual work the most modern technologies, such as rapid prototyping or laser machining, were used to produce the IR07-Red Diamond. The bodywork was divided up into polygon surfaces and dynamic parallelogram shapes, which break the light in different angles. This gives the impression of a precisely cut precious stone – the “Red Diamond”. As rookies it was our prime objective to derive the greatest possible experience and to achieve a good ranking among the new-comers to Formula Student.

Car 67





FRAME CONSTRUCTION Front and rear tubular space frame

MATERIAL S355N steel round tubing 15 to 26.9 mm dia

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2760 / 1400 / 1080

WHEELBASE (mm) 1600

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

WEIGHT WITH 68kg DRIVER (Fr / Rr) ≈ 170 / 210

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

REAR SUSPENSION Double unequal length A-Arm. Pushrod actuated spring and shock

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 – Al/Mg/ BBS 7.0 x 13 Formula ADAC – Al/Mg

ENGINE SUZUKI GSX-R600K6 / Model 2006

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

COMPRESSION RATIO 12.5:1

FUEL SYSTEM Original SUZUKI dual injection system

FUEL 95 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12.000

MAX TORQUE DESIGN (rpm) 9.000

DRIVE TYPE Chain drive

DIFFERENTIAL Quaife Torsen limited slip differential

COOLING Side pod located radiator with thermostatic controlled electric fan

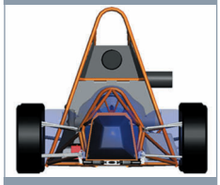
BRAKE SYSTEM 4-Disk system, fixed Rotors, Cast Iron, hub mounted, 220 mm outer diam., 121 mm inner diam., unvented, drilled, adjustable brake balance, AP Racing 4 x 25.4 mm dia. calipers front (rear 2), Opposing pistons, fixed

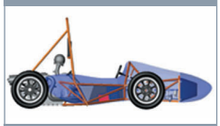
Oxford

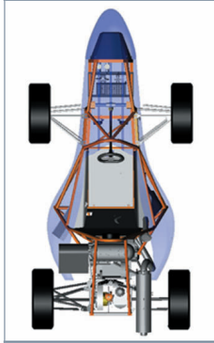
Oxford Brookes University, United Kingdom

The ISIS07 is the 7th Formula Student car design by Oxford Brookes University. The car is a direct evolution from last year’s competitive vehicle, being a tubular steel space-frame with semi-stressed Triumph engine. Under the skin however, there have been many detail design changes. A mass analysis program, developed by the Simulation Group, was used to steer the design team on packaging & fundamental chassis design. The areas of major updating where: suspension, with a full ADAMS analysis carried out, dampers: Cane Creek student-dyno tested, cooling system: lower C of G, CAN Bus electrics: many more inputs than previous & bodywork: much improved asthetics. Coupled with these updates the chassis & engine map were further refined & whilst the gear lever/clutch remain integrated, a push/pull cable is used for gear actuation & a hydraulic circuit for the clutch. In May the team competed at the FSAE ’07 finishing 31st overall with notable perfor-mances in Autocross – 3rd & the Skidpad -6th.

Car 4







FRAME CONSTRUCTION Welded square and tubular steel with rear sub-frame, seat panel bonded

MATERIAL CDS Mild steel, aluminium honeycomb sandwich panel

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2750.5 / 1397 / 1168

WHEELBASE (mm) 1570

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 121 / 147

FRONT SUSPENSION Double unequal length A-arm. Pull rod and rocker actuated spring over damper with ARB REAR SUSPENSION Double unequal length A-arm. Push rod and rocker actuated spring over damper with ARB

TYRES (Fr / Rr) TBA

WHEELS (Fr / Rr) 3 piece spun aluminum rim with magnesium centre

ENGINE Triumph Dayton 600cc

BORE / STROKE / CYLINDERS / DISPLACEMENT 68mm / 41.3mm / 4 / 599 cc

COMPRESSION RATIO 12.75:1

FUEL SYSTEM Triumph

FUEL 97 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 5000-11000

DRIVE TYPE Chain (520)

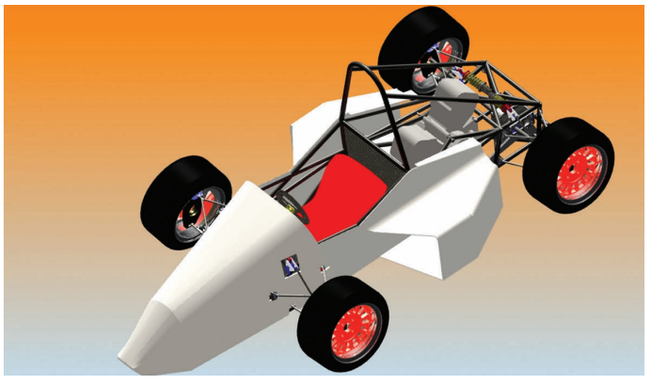
DIFFERENTIAL Quaife Automatic Torque Biasing LSD, student modified. Bias ratio 4:1

COOLING Single aluminium radiator with header tank, mounted on LH sidepod with diffused ducting fore and aft

BRAKE SYSTEM Double front and single rear cast iron disc system, 220mm diameter with adjustable brake balance

Paderborn

University of Paderborn, Germany



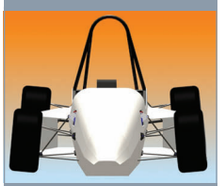
After having seen several Formula Student Teams at the Hannover Messe the idea of founding an own team at the University of Paderborn was born. The UPBracingTeam was finally founded on November 30th 2006 and from then on the team members have been focused on achieving the goals we set for ourselves. Being the first team in East-Westphalia Lippe we are not only representing the University but also the strong economy and companies like our sponsors that are settled in this region.

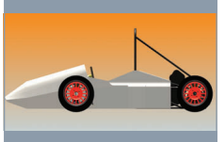
The Px2-07 as our first car is build with much enthusiasm and passion for racing but as a matter of fact we had to find a suitable compromise between our vision and the possible. This year's car will use E-85, a formula which we think will combine a possibility to save the environment and provide a regenerative source of fuel. The serial motorbike engine is fitted to the use of it and also equipped with a turbo charger.

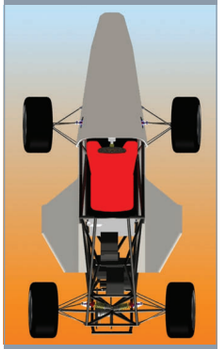
We would like to thank all our supporters!

Car 47

FRAME CONSTRUCTION Tubular steel frame
MATERIAL 15CVD6
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2850 / 1550 / 1150
WHEELBASE (mm) 1620
TRACK (Fr / Rr) (mm) 1250 / 1150
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 130 / 160
FRONT SUSPENSION Double wishbone. Push rod actuated, horizontally oriented spring and damper
REAR SUSPENSION Double wishbone. Push rod actuated, horizontally oriented spring and damper
TYRES (Fr / Rr) 160 x 53 R13 Michelin FSAE tires / 160 x 53 R13 Michelin FSAE tires
WHEELS (Fr / Rr) 7 inch wide, 3 pc Al Rim, -18mm offset / 7 inch wide, 3 pc Al Rim, -18mm offset
ENGINE Suzuki SV650S
BORE / STROKE / CYLINDERS / DISPLACEMENT 78.5mm / 62mm / 2 cylinder / 606cc
COMPRESSION RATIO 10:1
FUEL SYSTEM Bosch fuel injection, FSE fuel pump
FUEL E 85
MAX POWER DESIGN (rpm) 6000-10000
MAX TORQUE DESIGN (rpm) 6000
DRIVE TYPE Motorbike chain with 525 division, serial Suzuki SV650S gearing
DIFFERENTIAL GKN Visco Loc limited slip
COOLING Twin side mounted radiators with thermostatic controlled electric fans
BRAKE SYSTEM 4-Disk system, AP Racing 248mm diameter rotors, adjustable brake balance, AP Racing 2 piston calipers







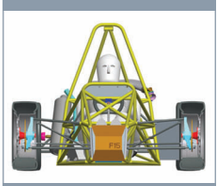
Rochester

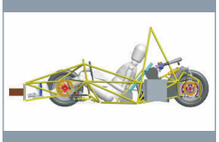
Rochester Institute of Technology, United States

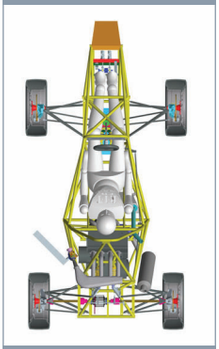
The R•I•T Formula SAE Racing Team is a group of approximately 35 undergraduate university students from the Rochester Institute of Technology devoted to designing, fabricating, racing, and promoting a high performance formula-style racing vehicle. At the Formula SAE competition this past May in Romeo, MI, R•I•T joined 119 entrants from around the world and captured seventh place overall. The team looks to carry this success into the second annual Formula Student Germany event, where the competition looks to be even tougher than in Michigan. A focus on craftsmanship and quality has allowed R•I•T 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. R•I•T's success would not be possible without the generous support of many industry partners, each maximizing the global name and reputation R•I•T has established in the cutting edge technology sport of Formula SAE.

Car 12

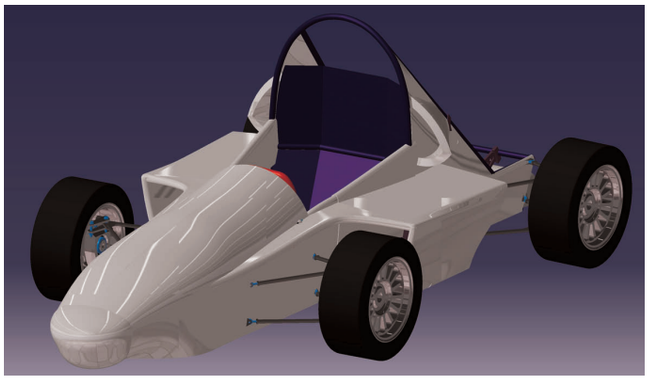
FRAME CONSTRUCTION: tubular steel space frame
MATERIAL 4130 steel round tubing
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2795 / 1425 / 1120
WHEELBASE (mm) 1750
TRACK (Fr / Rr) (mm) 1270 / 1220
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 140 / 145
FRONT SUSPENSION Double unequal length A-Arm. Pull rod actuated coil-over Penske damper
REAR SUSPENSION Double unequal length A-Arm. Push rod actuated coil-over Penske damper
TYRES (Fr / Rr) 152x63 R13(20.5 in x 6in – 13) / 152x63 R13(20.5 in x 6in – 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 66mm / 45mm / 4 cylinder / 609cc
COMPRESSION RATIO 13.5:1
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 Torsen Type II gearset, RIT designed differential carrier,adjustable TBR
COOLING One side pod mounted radiator with thermostatic controlled electric fan
BRAKE SYSTEM 4-Disk system, self developed rotors with 245mm diameter, adjustable brake balance, RIT designed mono-block calipers







Saarbrücken
University of Applied Sciences of the Saarland, Germany

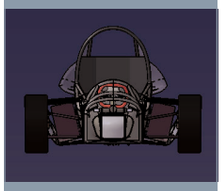


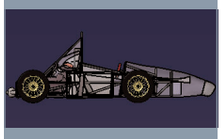
The Saar Racing Team was founded in July 2006 by students of the University of Applied Sciences Saarbrücken. In the beginning there was only the idea – just a vision. But every time the team met the fiction became more and more a reality. Our first goal is to take part at the event Formula Student Germany 2007. Besides this we want to prove our construction at the static and dynamic competitions.

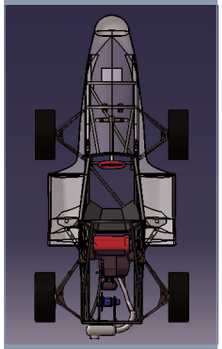
The Saar Racing Car 01 has to be developed and build in just a few months. To achieve this goal we need to keep it both simple and cheap. For this reason we decided in favor for common solutions like double wishbones, mild steel tube space frame or pneumatic shifting.

Until now we personally made an exciting journey from theory to praxis – what an amazing ride!

Car 50

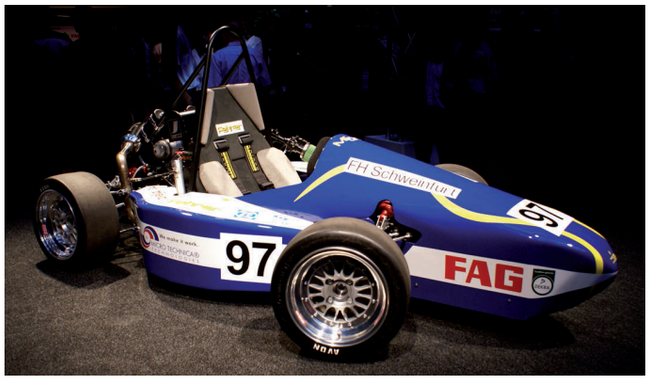






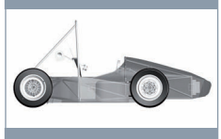
FRAME CONSTRUCTION mild steel tube space frame
MATERIAL S355
OVERALL LENGTH / WIDTH / HEIGHT (mm) 2970/ 1475/ 1060
WHEELBASE (mm) 1700
TRACK (Fr / Rr) (mm) 1300 / 1300
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 143 / 244
FRONT SUSPENSION Double unequal length A-Arm. Push rod actuated Fox DHX 5.0 spring and damper units
REAR SUSPENSION Double unequal length A-Arm. Push rod actuated Fox DHX 5.0 spring and damper units
TYRES (Fr / Rr) 16/53-13 Michelin
WHEELS (Fr / Rr) MiniLite 13x6
ENGINE 1999 Suzuki GSX-R 600
BORE / STROKE / CYLINDERS / DISPLACEMENT 65,5mm / 44,5mm / 4 cylinder / 599cc
COMPRESSION RATIO 13:1
FUEL SYSTEM multipoint intake-manifold fuel injection
FUEL 100 octane unleaded gasoline
MAX POWER DESIGN (rpm) 12000
MAX TORQUE DESIGN (rpm) 8000
DRIVE TYPE Chain
DIFFERENTIAL Drexler limited slip differential
COOLING Twin side pod mounted radiators in DIN A4 size with thermostatic controlled electric fans
BRAKE SYSTEM 4-Disk system, floating rotors with 255mm diameter, adjustable brake balance, monobloc calipers

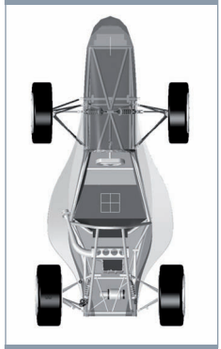
Schweinfurt
University of Applied Sciences Würzburg-Schweinfurt



The Team: “Mainfranken Racing e.V.” at University of Applied Sciences Würzburg-Schweinfurt is a Newcomer in FSG Season 06/07. The non-profit association was founded in September 2006. Born out of the idea of some motor sports enthusiastic students the team has 23 members at the moment. In August 2006, the smell of burned rubber and fuel gave us the ultimate motivation to build our own car.
Team Philosophy: As a newcomer, our first aim was to gain experience with a reliable and down-to-earth car. This means we did not focus on extreme lightweight and exotic designs. Furthermore we want to provide a basis for future FSG-seasons at our university.
The car: The MFone - the first monoposto ‘engineered in Schweinfurt’ for Formula Student – is the result of ambitious students who managed to design, to construct – of course with help of different companies – and to assemble it in less than eight months. It’s a small sportscar with an appealing design, an impressive performance and a huge potential.

Car 97





FRAME CONSTRUCTION Tubular space frame
MATERIAL St37 / St52 10,2 - 26,9mm diameter
OVERALL LENGTH / WIDTH / HEIGHT (mm) 3150 / 1300 / 1200
WHEELBASE (mm) 1600
TRACK (Fr / Rr) (mm) 1200 / 1150
WEIGHT WITH with 68kg DRIVER (Fr / Rr) 136 / 204
FRONT SUSPENSION Double unequal length wishbones. Push rod actuated, horizontally oriented spring and damper
REAR SUSPENSION Double unequal length wishbones. Push rod actuated, horizontally oriented spring and damper
TYRES (Fr / Rr) 165/530-13 Avon / 195/530-13 Avon
WHEELS (Fr / Rr) 6 inch wide, 3 pc Al/Mg Rim, 10.8 mm offset / 8 inch wide, 3 pc Al/Mg Rim, 2.6 mm offset
ENGINE 2003 Yamaha YZF-R6
BORE / STROKE / CYLINDERS / DISPLACEMENT 66mm / 45mm / 4 cylinder / 600cc
COMPRESSION RATIO 12.4:1
FUEL SYSTEM modified injection rail and valves from the original R6 engine, fuel injection
FUEL 95 octane unleaded gasoline
MAX POWER DESIGN (rpm) 11000
MAX TORQUE DESIGN (rpm) 9000
DRIVE TYPE 520 racing chain
DIFFERENTIAL Quaife ATB differential
COOLING left side mounted radiator with thermostatic controlled electric fan
BRAKE SYSTEM 3-Disk system, self developed rotors with (Fr/Rr) 240/220mm diameter, rear rotor diff. mounted, adjustable brake balance, dual piston calipers

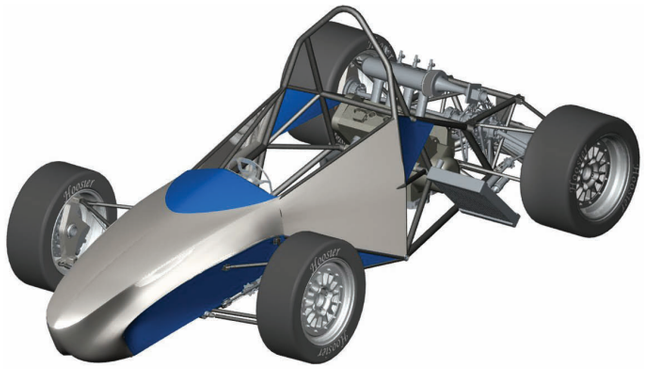
Stockholm

KTH Royal Institute of Technology, Sweden

Previous years, KTH Racing has achieved good results and this year KTHR4 will aim for a podium position. The car is designed by the College of Art, Crafts and Design and several institutions at the school make contributions to the project. As for innovations, a new suspension design is immediately noticeable. The engine concept is also changed compared to previous years, it will be running on ethanol and it does not have an intercooler. The car is also a lot lighter than its predecessors. Advanced electronics is also mounted to the car, for example an electronic gear shifting system, a traction control system and a log system, all of them self developed. The team consists of about 15 students from different education programs, all with different areas of connoisseurship. The car has the potential to challenge the best and will hopefully do so.

Stralsund

University of Applied Sciences Stralsund, Germany



Founded in 1999 by ten ambitious students the student racing team is the oldest and most successful German FSAE team. The first car, TY 2000, had its premier at the British Event in 2000 getting best Rookie. Just one year later the title “Best European Team” was achieved. Also in 2001 we made the breakthrough into the international Top Ten with a ninth place in Australia. The biggest success was celebrated 2004 in GB as we reached first place and received the price “Best Developed Car” as well as the “SolidWorks 3D Design and Analysis” Award. 2005 we could prove that we still belong to Europe’s top teams getting best German team the ninth time in a row at various events and a brilliantly sixth place in the overall ranking. Ending up at ninth place in Germany (2006) we immediately started constructing the new car as we got back home. With a new concept concerning the frame, engine management and chassis a striving student racing team is looking forward to the upcoming Event in Germany.

Car 71

FRAME CONSTRUCTION Tubular steel rear frame

MATERIAL Cold drawn steel

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2600 / 1386 / 1000

WHEELBASE (mm) 1530

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 103 / 155

FRONT SUSPENSION Double unequal length A-arms. Pushrod actuated transverse horisontally oriented spring and damper. Rock Shox Pearl spring/damper unit

REAR SUSPENSION Double unequal length A-arms. Pushrod actuated transverse horisontally oriented spring and damper. Rock Shox Pearl spring/damper unit

TYRES (Fr / Rr) 19.5x7.0-13 LeCont soft / 19.5x9.0-13 LeCont soft

WHEELS (Fr / Rr) 6 inch wide, 3 pc Al Rim, no offset / 8 inch wide, 3 pc Al Rim, -13 mm offset

ENGINE Suzuki GSX-R 600 -04

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

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Student des/built, fuel injection, NIRA I3+

FUEL E-85 ethanol

MAX POWER DESIGN (rpm) 9500

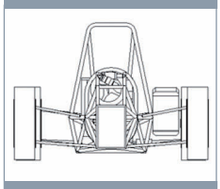
MAX TORQUE DESIGN (rpm) 8500

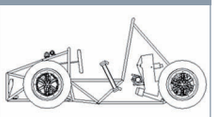
DRIVE TYPE Aixam Rzeppa style CV joints on sliding splines

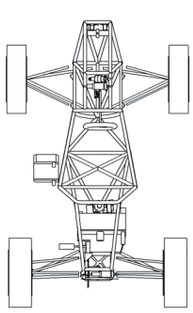
DIFFERENTIAL Modified Opel Manta LSD

COOLING One side pod mounted radiator with controlled electric fan

BRAKE SYSTEM 3-Disk system, self developed rotors, adjustable brake balance, student designed, 4-pistons single aluminium billet caliper, 25 mm cylinders







Car 9

FRAME CONSTRUCTION Space frame

MATERIAL 25CrMo4 steel round tubing 10mm to 35mm dia

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2950 / 1440 / 1008

WHEELBASE (mm) 1800

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 118 / 150

FRONT SUSPENSION Unequal length A-Arms. Pull rod actuated Mazzochi Rocco RC spring/damper units

REAR SUSPENSION Unequal length A-Arms. Pull rod actuated Mazzochi Rocco RC spring/damper units

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

WHEELS (Fr / Rr) 152,4 mm wide, 3 pc AlMg Rim

ENGINE 1999 Honda CBR 600 PC35

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

COMPRESSION RATIO 13.5:1

FUEL SYSTEM Student des/built fuel injection used Walbro ECU

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10500

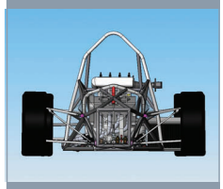
MAX TORQUE DESIGN (rpm) 9500

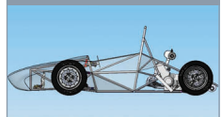
DRIVE TYPE Chain

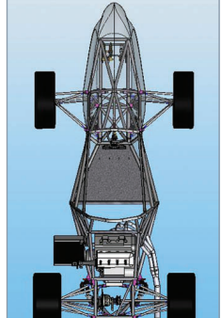
DIFFERENTIAL Quaiffe limited slip

COOLING left side pod mounted radiator

BRAKE SYSTEM 4-Disk system, Floating, stainless steel, hub mounted



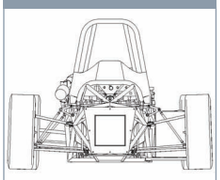


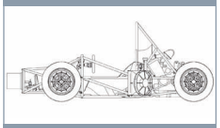


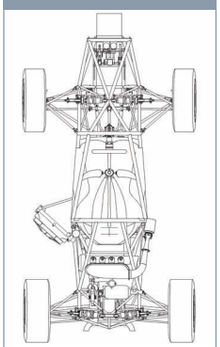
Stuttgart
University of Stuttgart, Germany

As a second year competitor in the Formula Student Germany, we are proud to present the F0711-2. After finishing 6th overall last year, we were already quite satisfied with our car. So, instead of working 8 months on the development of the new car, using various top-notch engineering techniques and spending our days and nights on the project, we decided to take some months off and just sent the old car to the gym. When it came back to its presentation in May, it had lost 20 % of its weight and gained 20 % more power. Testing confirmed that it had maintained its sound reliability. A pleasant side-effect of this workout was the speed: Although the 11-1 was not a considerably slow car (2nd place Autocross FSG 2006), it was easily outperformed by the new 11-2. That said, the 11-2 can't wait to get its tires on the ground to celebrate the festival of speed in Hockenheim together with its competitors! You wish to know more about us and the 11-2? We look forward to welcoming you in our pit!

Car 6







FRAME CONSTRUCTION Steel tube space frame with glued carbon fibre floor panels

MATERIAL 25 CrMo4, 15CDV6 steel round tubing

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2805 / 1396 / 1026

WHEELBASE (mm) 1700

TRACK (Fr / Rr) (mm) 1214 / 1172

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 138 / 149

FRONT SUSPENSION Double unequal length A-Arms. Push rod actuated Sachs Racing RD 36-2 spring / damper units

REAR SUSPENSION Double unequal length A-Arms. Push rod actuated Sachs Racing RD 36-2 spring / damper units

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

WHEELS (Fr / Rr) BBS 6" x 13" 3mm offset, self designed wheel spider / BBS 7" x 13" +28mm offset, self designed wheel spider

ENGINE 2005 Honda CBR 600 RR

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

COMPRESSION RATIO 12,8:1

FUEL SYSTEM Student built, fuel injection, MoTeC M 400, fully sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11750

MAX TORQUE DESIGN (rpm) 11000

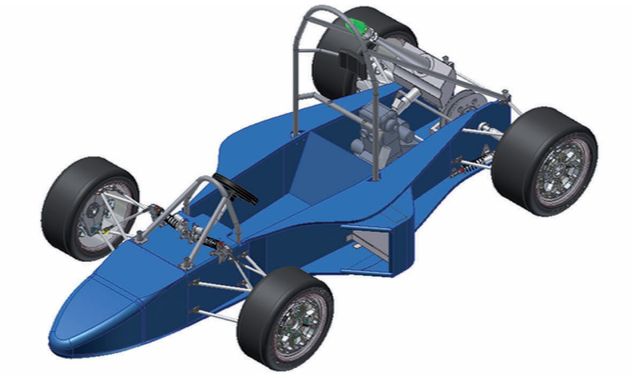
DRIVE TYPE Chain Drive #520

DIFFERENTIAL Zexel Torsen University Special modified. Bias ratio 4:1

COOLING Custommade single radiator, mounted in left sidepod, ECU controlled fan

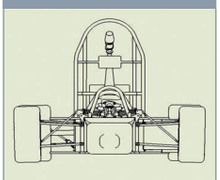
BRAKE SYSTEM 4-Disk system, self developed rotors with 243mm/203mm diameter, adjustable brake balance, monobloc calipers

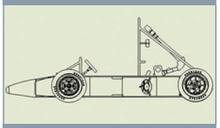
Swansea
Swansea University, United Kingdom

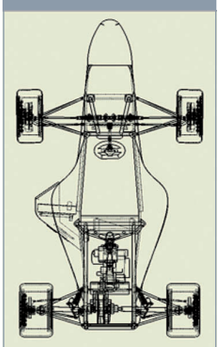


Our team comprises of 10 final year students from Mechanical and Electrical Engineering. S7 will be the 4th car that Swansea University Race Engineering (SURE) has built. This year's entry is an evolution of previous cars built by SURE. The experience gained by the team has been handed down through the years and this ensures that the expertise of the team is not lost as final year Students graduate from University. S7 is lightest least expensive and is more powerful than last years entry. Extensive development work has been carried out on the engine chassis and suspension to improve performance and reliability of the car. We look forward to competing in FSG as we had a very successful event there last year. We were very pleased with our most fuel efficient car award win at FSG 2006 and we are aiming to win this award yet again in 2007. In previous years we have been successful achieving class wins including class 1-200 with S4-b in 2005 and class 3 in 2003 at Formula Student UK.

Car 57







FRAME CONSTRUCTION Monocoque with tubular steel roll bars

MATERIAL Aluminium honeycomb; 12.7mm core with 0.5mm aluminium skins

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2600 / 1300 / 1150

WHEELBASE (mm) 1700

TRACK (Fr / Rr) (mm) 1250 / 1208

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 131 / 132

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

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

TYRES (Fr / Rr) 20x6.5-13 Avon soft / 20x6.5-13 Avon soft

WHEELS (Fr / Rr) 6.5 inch wide, 3 pc Al Rim, -34.5mm offset / 6.5 inch wide, 3 pc Al Rim, -34.5 mm offset

ENGINE Husqvarna TC510

BORE / STROKE / CYLINDERS / DISPLACEMENT 97.0mm / 67.8mm / 1 cylinder / 501cc

COMPRESSION RATIO 12:1

FUEL SYSTEM Student des/built, fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8500

MAX TORQUE DESIGN (rpm) 7500

DRIVE TYPE Chain drive

DIFFERENTIAL AP Racing Suretrac limited slip

COOLING One side pod mounted radiator with electric fan

BRAKE SYSTEM 3-Disk system, 254mm diameter rotors, adjustable brake balance

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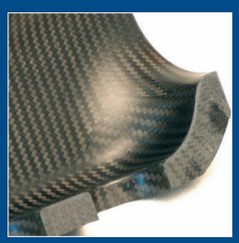
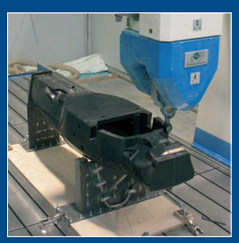
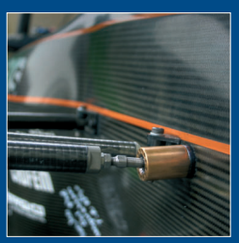

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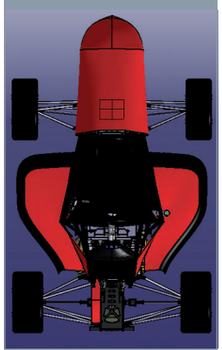
Turin

Politecnico di Torino, Italy

Politecnico di Torino Squadra Corse is very proud to present its third Formula SAE car. Managed by highly motivated students, the new team is enlarged significantly to a group of goal oriented students from different faculties that work together toward the same aim: the Sc07. The third generation of our car was realized with the aim of doing better than the previous editions with a more reliable, lighter and faster prototype. Our new race-car withstands the goals that we were aiming at when we started this project. This prototype is an evolution of our last year's car, which was a good point to start from. This evolution not only led to eliminate the past project weaknesses, but strengthened its pros and added new features. Frame is made by a structure of alloy steel pipes welded (the front section), and an aluminum alloy box (the rear one). SC07 has been equipped with a 4in-line cylinder engine derived from the HONDA CBR 600 RR engine. We feel confident that it will make us proud.

Car 46



FRAME CONSTRUCTION Tubular steel frame / aluminum rear frame

MATERIAL carbon fiber / epoxy resins cover laminate

OVERALL LENGTH / WIDTH / HEIGHT (mm) 2361 / 1374 / 1076

WHEELBASE (mm) 1600

TRACK (Fr / Rr) (mm) 1200 / 1190

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 145 / 149

FRONT SUSPENSION Double unequal length A-Arm. Pull rod actuated horizontally oriented air damper

REAR SUSPENSION Double unequal length A-Arm. Push rod actuated horizontally oriented air damper

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

WHEELS (Fr / Rr) 13" x 6" rim aluminum alloy -42mm offset / 13" x 7" rim aluminum alloy -42mm offset

ENGINE Honda CBR 600 RR 2005

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

COMPRESSION RATIO 13:1

FUEL SYSTEM Student des/built, fuel injection

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 12000

MAX TORQUE DESIGN (rpm) 9000

DRIVE TYPE chain drive train

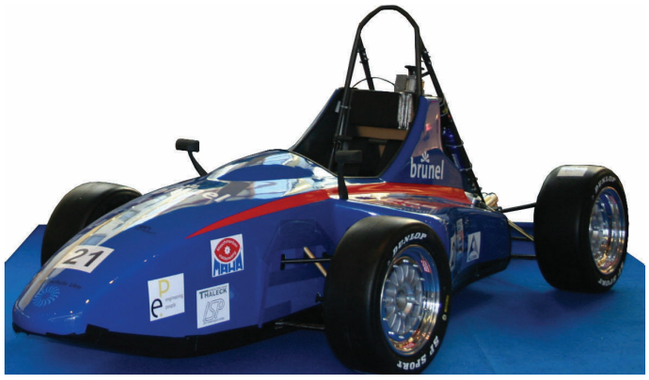
DIFFERENTIAL Helical gears limited slip differential (Quaife)

COOLING Two side mounted radiators with thermostatic controlled cooling fans

BRAKE SYSTEM 4-Disk system, Brembo rotors, adjustable brake balance, Brembo calipers

Ulm

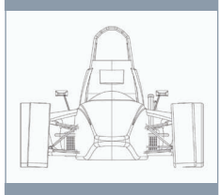
Ulm University of Applied Sciences, Germany

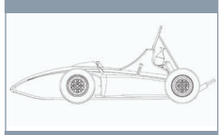


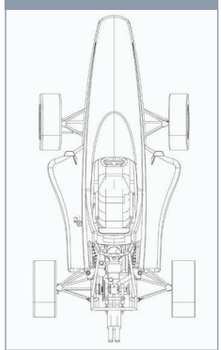
Einstein Motorsport is a project of the Einstein Automotive e.V.. This non-profit association was founded in 2005 by students of the university of applied sciences Ulm to provide a statutory framework for different projects for students. For its second participation in a Formula Student competition, the Einstein Motorsport team has re-organised itself in summer 2006 to build the new racing car AL '07. Based on the experiences that where made with its forerunner AL '06, the new aims where clearly achieved: beside the completely re-designed tubular steelframe and a 2007 motorcycle engine, lots of new self-designed and custom made parts such as the exhaust-gas system, the dampers and the carbon fibre airbox helped to create an much more lightweight and reliable construction.

Thanks to the support of our sponsors and the university of applied sciences Ulm, we look forward to the 2007 Formula Student competition in Hockenheim.

Car 21







FRAME CONSTRUCTION Tubular Space Frame

MATERIAL St 52 (S355J2G3)

OVERALL LENGTH / WIDTH / HEIGHT (mm) 3024 / 1546 / 1183

WHEELBASE (mm) 1600

TRACK (Fr / Rr) (mm) 1227 / 1324

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 127 / 191

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

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

TYRES (Fr / Rr) 190/535R13 Dunlop SP Sport / 175/535R13 Dunlop SP Sport

WHEELS (Fr / Rr) 6 inch wide, 3 pc Al Rim, 10,8mm offset / 8 inch wide, 3 pc Al Rim, 2,6 neg mm offset

ENGINE 2006 Aprilia SXV 550 V2

BORE / STROKE / CYLINDERS / DISPLACEMENT 80mm / 55mm / 2 cylinder / 553cc

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Student des/built, fuel injection, sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11500

MAX TORQUE DESIGN (rpm) 8750

DRIVE TYPE Chain DriveT

DIFFERENTIAL Drexler Diff for Formula Student

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4-Disk system, floating mounted rotors with 180mm diameter, adjustable brake balance, 1,4 pistons per calipers

Uxbridge
Brunel University, United Kingdom

Brunel Racing were one of the founding UK Formula Student teams and have been competing since 1999, building a prestigious history. This year sees Brunel University's eighth car produced by the Brunel Racing team and continues the precedence of pushing the boundaries of design and raising the level of engineering ingenuity. BR-8 is a direct evolution from the team's previous car, BR-7. The successes of this car have been developed further, such as the re-appearance of a front monoshock and the addition of a rear monoshock.
A Yamaha YZF-R6 600cc engine has been selected to power BR-8 and the bio-fuel E85 will be utilised once again following its successful implementation in 2006. To achieve the maximum benefits from using E85 the engine has been modified to allow for a compression ratio of 15.2 with the addition of a racing gasket and forged pistons. Engine simulation software was fully utilised to aid the development of the intake and exhaust systems including performance improvement strategies.

Car 666

FRAME CONSTRUCTION Complete tubular steel spaceframe with detachable rear section and semi-stressed engine

MATERIAL 4130 steel round tubing 25.4mm diameter (1.65 & 2.4mm wall thickness)

OVERALL LENGTH / WIDTH / HEIGHT (mm)
2760 / 1480 / 1175

WHEELBASE (mm) 1583

TRACK (Fr / Rr) (mm) 1300 / 1230

WEIGHT WITH 68kg DRIVER (Fr / Rr) 117.6 / 162.4

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

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

TYRES (Fr / Rr) 18/7-10 Hoosier soft compound / 18/7-10 Hoosier soft compound

WHEELS (Fr / Rr) Keiser alloy 10" x 7" 50.8mm positive offset, 4mm thick 6061 aluminium / Keiser alloy 10" x 7" 50.8mm positive offset, 4mm thick 6061 aluminium

ENGINE 2005 Yamaha YZF-R6

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

COMPRESSION RATIO 15.2:1

FUEL SYSTEM Standard port fuel injectors & rail plus four sequential secondary injectors located in plenum

FUEL E85 Bio-fuel

MAX POWER DESIGN (rpm) 9,000

MAX TORQUE DESIGN (rpm) 8,000

DRIVE TYPE 520 O-Ring Chain/Sprocket

DIFFERENTIAL Quaife ATB limited slip (gear type)

COOLING Twin sidepod mounted Titan-Lite radiators with ECU controlled electric fans

BRAKE SYSTEM Four 200mm diameter stainless steel cross-drilled discs, AP racing calipers and adjustable bias balance bar

Wolfsburg
University of Applied Sciences Braunschweig/Wolfenbüttel

After one year of development and building time we could present our new Formula Student Car at the rollout in Wolfsburg. The WR03 is the third car made by the U.A.S. Braunschweig/ Wolfenbüttel team. The team consists of a large number of new members. With the experience of our second car and many new ideas the team could re-design and improve the vehicle and the assembling process. The construction was completed under the usage of the PTC Pro Engineer CAD software which resulted in the economization of manufacturing time. Lots of new electronic features have been included; a fresh new design has been created and various improvements in almost every part of the race car were made. The achievement is amazing compared to the car of the year 2006.

Our aim is to be successful and we are bent on improving our last year's results.

Car 35

FRAME CONSTRUCTION tubular steel rear frame

MATERIAL S235JR / S355 steal

OVERALL LENGTH / WIDTH / HEIGHT (mm)
3150 / 1361 / 1135

WHEELBASE (mm) 1700

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 139 / 169

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

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

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

WHEELS (Fr / Rr) 6 inch wide, 3 pc Al Rim, 35mm neg. offset / 7 inch wide, 3 pc Al Rim, -10mm neg offset

ENGINE Honda PC35 Engine

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

COMPRESSION RATIO 12:0

FUEL SYSTEM Student des/built, fuel injection, sequential

FUEL 98 octane unleaded gasoline

MAX POWER DESIGN (rpm) 10.000 rpm

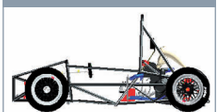
MAX TORQUE DESIGN (rpm) 8.000 rpm

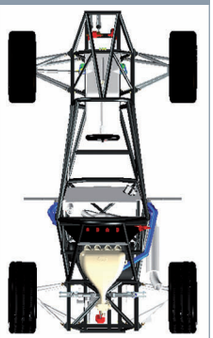
DRIVE TYPE Chain drive, chain 5/8"

DIFFERENTIAL Torsen T1, 3.2:1 bias ratio in student designed aluminium housing

COOLING Twin side pod mounted radiators

BRAKE SYSTEM 3-Disk system, self developed rotors, adjustable brake balance, monobloc calipers

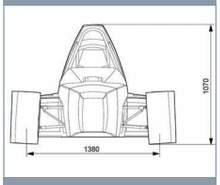


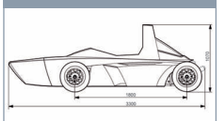


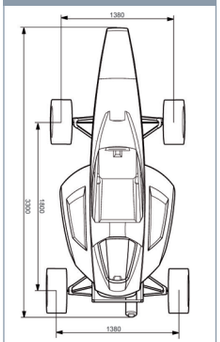
Wuppertal
University of Wuppertal, Germany

In May 2006 the idea arose of building a competitive, extraordinary car to participate in the Formula Student competition. At this point, building a prototype was rather an illusion than reality. But since then the “Petrol-Head-Racing-Team” from the University of Wuppertal was totally fulfilled with the dream of success. Step by step construction work, design, knowledge and enthusiasm led to a concrete result: our PHR07. The perfect cooperation of different fields of science was the key for our stamina and bundled our will to succeed. Our team is eagerly looking forward to the Formula Student event 2007. Competing with the other teams and constantly improving on our weak points to optimize the project is our goal. The engagement for PHR is a never ending project, this year being the first step on a long and exciting road. This design brief will provide the reader with an insight into the technical details of our prototype.

Car 54







FRAME CONSTRUCTION Tubular Steel Spaceframe

MATERIAL s235 25mm x 2,5mm

OVERALL LENGTH / WIDTH / HEIGHT (mm)
3300 / 1650 / 1070

WHEELBASE (mm) 1800

TRACK (Fr / Rr) (mm) 1380 / 1380

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 145 / 155

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

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

TYRES (Fr / Rr) 200x50 R13Yokohama Advan A005 / 200x50 R13 Yokohama Advan A005

WHEELS (Fr / Rr) 8x13,0mm offset, 3 pc Al Rim / 8x13,0mm offset, 3 pc Al Rim

ENGINE Suzuki GSX-R 600

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

COMPRESSION RATIO 12,5:1

FUEL SYSTEM Student designed and built sequential fuel injection

FUEL 100 octane

MAX POWER DESIGN (rpm) 10000

MAX TORQUE DESIGN (rpm) 8500

DRIVE TYPE PC-8MGT 1000-36 (Poly Chain Carbon GT)

DIFFERENTIAL Quaife Torsen Differential

COOLING Twin side pod mounted radiators with thermostatic controlled electric fans

BRAKE SYSTEM 4-Disc system, floating, cast Iron, hub mounted, 250mm outer diam., 190mm inner diam.

Zürich
Swiss Federal Institute of Technology Zurich, Switzerland

As a „rookie-team”, the Academic Motorsportclub Zurich (AMZ) presents its first race car „albula”. AMZ was founded in September 2006 by 17 mechanical engineering students at the Swiss Federal Institute of Zurich (ETH) and over the last year, AMZ grew to an interdisciplinary team that includes all skills needed to develop and manufacture a unique race car. Our design strategy focuses on lightweight construction and outstanding ergonomics. Furthermore, we paid a lot of attention to achieve a low centre of gravity to guarantee optimal racing performance.
The car’s highlights include a multi-functional steering wheel and an electronic gear shifting system. Our main goal for FSG is to participate with a competitive vehicle in every event, in full compliance of the rules. We hope to represent Switzerland by attaining a top position among the newcomers.
We would like to thank our university, our professors and our sponsors for the kind and dedicated support they provided throughout the year.

Car 33

FRAME CONSTRUCTION Tubular space frame

MATERIAL 15CDV6, 1.7724.2, 12mm to 32mm dia

OVERALL LENGTH / WIDTH / HEIGHT (mm)
2884 / 1402 / 1037

WHEELBASE (mm) 1625

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

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 122 / 183

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

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

TYRES (Fr / Rr) 18x6-10 R25A Hoosier / 18x6-10 R25A Hoosier

WHEELS (Fr / Rr) 6inch wide, 3 pc Al Rim, 2inch pos. Offset / 6inch wide, 3 pc Al Rim, 2inch pos. Offset

ENGINE 2005 GSX-R 600

BORE / STROKE / CYLINDERS / DISPLACEMENT
67mm bore / 42.5mm stroke / 4 cylinder / 599 cc

COMPRESSION RATIO 12.5:1

FUEL SYSTEM original fuel injection, sequential

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 11000

MAX TORQUE DESIGN (rpm) 9500

DRIVE TYPE Chain 520 norm

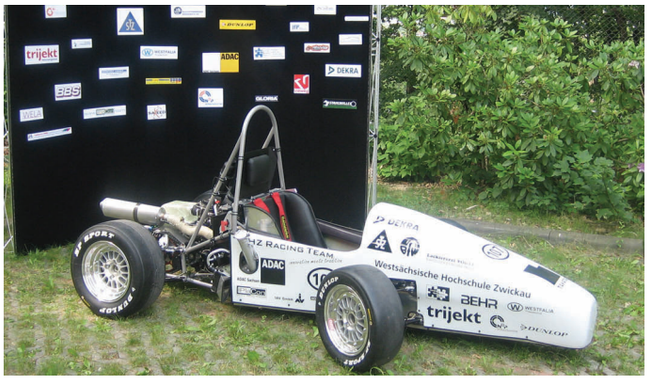
DIFFERENTIAL Torsen limited slip differential 2.6:1 bias ratio

COOLING right side frame mounted radiator with thermostatic controlled electric fan

BRAKE SYSTEM 3-Disk system, self developed rotors with 196/200mm diameter, adjustable brake balance, dual piston calipers

Zwickau

University of Applied Sciences of Zwickau, Germany



In spring 2006, a small group of students of different courses at the University of Applied Sciences Zwickau founded the WHZ RACING TEAM. After the first difficulties, in terms of finding an office and a garage, the main job was to find strong partners. We are happy that our university which will also support us in the future is among them. After this the first brainstorming for a car concept took place. The decision for a small car with a short wheel base and an one cylinder motorcycle engine were first fixed points. Our body follows the concept of the “Autounion” racing cars (built in the 1930s in Zwickau). So, good handling at the formula student course and a really attractive design are guaranteed. The construction by CATIA started in November ‘06. This construction time ended in January ’07 and first car parts were ordered and our storeroom filled up. The phase of manufacturing was one of the most exiting parts because the design drafts got real. In June, our FP107 was completed.

Car 107

FRAME CONSTRUCTION tubular steel roll bars / tubular steel rear frame

MATERIAL steel round

OVERALL LENGTH / WIDTH / HEIGHT (mm) 3150 / 1450 / 1289

WHEELBASE (mm) 1600

TRACK (Fr / Rr) (mm) 1225 / 1220

WEIGHT WITH with 68kg DRIVER (Fr / Rr) 142 / 149

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

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

TYRES (Fr / Rr) 175/535-R13 Dunlop / 190/535-R13 Dunlop

WHEELS (Fr / Rr) 6” x 13”, -10 mm offset 3 pc Al Rim / 8” x 13”, -10 mm offset 3 pc Al Rim

ENGINE KTM, LC 4

BORE / STROKE / CYLINDERS / DISPLACEMENT 101.0mm / 76,9mm / 1 cylinder / 609cc

COMPRESSION RATIO 10,4:1

FUEL SYSTEM Student built pencil coil on plug system

FUEL 100 octane unleaded gasoline

MAX POWER DESIGN (rpm) 8000

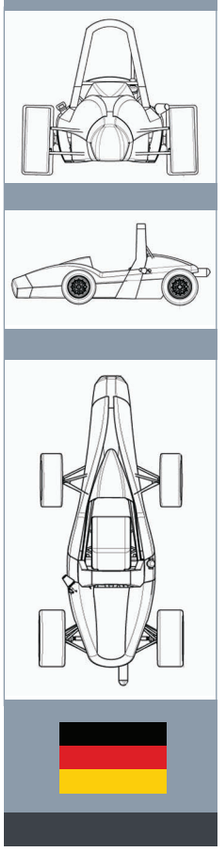
MAX TORQUE DESIGN (rpm) 6500

DRIVE TYPE chain

DIFFERENTIAL limited slip differential

COOLING 1 cooling unit between engine and fuel tank, 2 fans

BRAKE SYSTEM 4-Disk system, fixed, hub mounted, cast iron with 220mm diameter, adjustable brake balance, two pistons

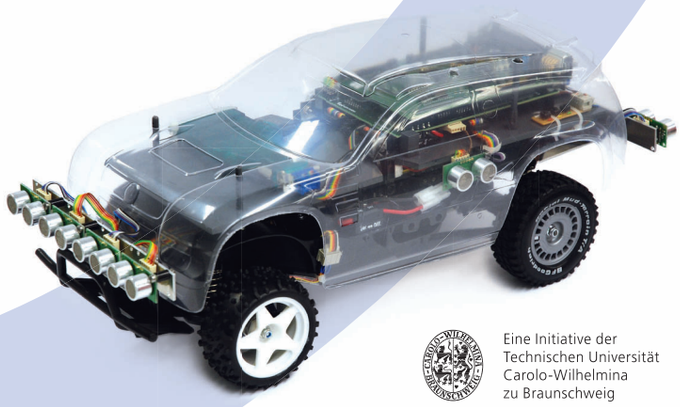


Carolo-Cup

Hochschulwettbewerb

Studenten entwickeln autonome Modellfahrzeuge

Ab 2008 im Rahmen der AAET



Eine Initiative der Technischen Universität Carolo-Wilhelmina zu Braunschweig

Die Aufgabe

Ein Modellfahrzeug autonom durch verschiedene, realitätsnahe Szenarien steuern –

das ist das Ziel der Studenten, die ihre selbstentwickelten Fahrzeuge beim Carolo-Cup an den Start schicken.

Der Wettbewerb

Beim parallelen Einparken zwischen anderen Modellautos und beim Abfahren einer vielseitigen Strecke mit und ohne Hindernisse müssen die realisierten Konzepte der Studenten funktionieren. Und das in möglichst kurzer Zeit und ohne Fehler.

Auch die wissenschaftliche Leistung der Studenten wird bewertet: Vor einer Jury aus Experten aus Wirtschaft und Wissenschaft stellen sie ihre Konzepte zur Kosten- und Energiebilanz und zur regelungstechnischen Realisierung vor.

www.carolo-cup.de

Prof. Thomas Form, TU Braunschweig
Prof. Ulrich Seiffert, Sprecher „Zentrum für Verkehr der TU Braunschweig“
mazur | events + media

kontakt@carolo-cup.de

Dictionary of frequently used terms

Wörterbuch häufig verwendeter Begriffe

acceleration	*Beschleunigung (siehe auch Seite 11)*
accessories	*Zubehörteile*
angle	*Winkel*
autocross / sprint	*eine schnelle Runde auf dem Rundkurs (siehe auch Seite 11)*
bearing	*Lager*
bodywork	*Karosserie*
bolt	*Bolzen, Schraube*
bore	*Bohrung*
brake cylinder	*Bremszylinder*
brake disk	*Bremsscheibe*
business plan	*Geschäftsplan (siehe auch Seite 10)*
caliper	*Bremssattel*
camber	*Sturz*
camshaft	*Nockenwelle*
carbon fibre reinforced plastic	*carbonfaserverstärkter Kunststoff [Abk.: CFK]*
chain	*Kette*
chassis	*Fahrgestell, Fahrwerk*
clutch	*Kupplung*
composite chassis	*Karosserie aus Verbundwerkstoff*
compression ratio	*Verdichtungsverhältnis*
connecting rod	*Pleuelstange*
constant velocity (CV) joint	*Gleichlaufgelenk*
cooling	*Kühlung, Kühlsystem*
crankshaft	*Kurbelwelle*
cylinder	*Zylinder*
crash box	*Crashbox*
damper	*Dämpfer*
differential	*Differential*
displacement	*Hubraum*
downforce	*Abtrieb*
driveshaft	*Antriebswelle*
drive train	*Antriebsstrang*
driver restraint harness	*Gurtsystem*
egress test	*5-Sekunden-Ausstiegstest*
electronic control unit (ecu)	*elektronisches Steuergerät*
emergency switch	*Notaus-Schalter*
engine	*Motor*
exhaust	*Auspuff*
exhaust system	*Abgasanlage*
endurance	*Ausdauer, hier: Langstrecken-test (siehe auch Seite 11)*
filler neck	*Einfüllstutzen*
fire extinguisher	*Feuerlöscher*
firewall	*Feuerschutzwand*
force	*Kraft*
frame	*Rahmen*
fuel consumption	*Kraftstoffverbrauch*
fuel injection	*Kraftstoffeinspritzung*
fuel lines	*Kraftstoffleitungen*
gear	*Gang*
gearbox	*Getriebe*
glass-fibre reinforced plastic [abbr.: GRP]	*glasfaserverstärkter Kunststoff [Abk.: GFK]*
handling	*Fahrverhalten*
hub	*Nabe*
intake manifold	*Ansaugleitung*
intake runner	*Saugrohr*
intake system	*Ansaugsystem*
jack	*Wagenheber*
judge	*Juror, Jurymitglied*
lateral forces	*Seitenkräfte*
marshal	*Streckenposten*
monocoque	*Karosserie in Schalenbauweise*
nut	*Mutter*
peak power design (rpm)	*Entwicklungszieldrehzahl für Spitzenleistung*
peak torque design (rpm)	*Enttwicklungszieldrehzahl für Spitzendrehmoment*
piston	*Kolben*
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*
rocker arm	*Umlenk-, Kipphebel*
rod end	*Gelenkkopf*
rpm	*U/min*
scatter shields	*Kettenschutz*
scrutineering	*technische und Sicherheits-überprüfung*
to shift	*schalten*
Skid Pad	*Skid Pad, Befahren einer Acht (siehe auch Seite 11)*
slick	*profilloser Reifen*
spaceframe	*aus Profilen zusammen-gesetzter Rahmen*
spring	*Feder*
sprint	*→ autocross*
sprocket	*Kettenrad*
steel tube chassis	*Gitterrohrrahmen aus Stahl*
steering	*Lenkung*
steering lever	*Spurhebel*
steering rack	*Zahnstange der Lenkung*
stroke	*Hub*
suspension	*Radaufhängung*
suspension loads	*Fahrwerkslasten*
tie rod	*Spurstange*
throttle body	*Drosselklappe*
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*
wheel carrier	*Radträger*
wing	*Flügel, Spoiler*

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