Racing News

Official publication of the NMMU Racing Formula Student Team

Nelson Mandela Metropolitan University
for tomorrow

October 2009 Volume 1, Issue 4

Formula Student

- International student design competition
- Design, build and race single seater Formula 1 style car
- 600cc motor cycle engine with intake restrictor
- Competition judging criteria includes design quality, costing, static and dynamic tests culminating with an endurance race
- Students from a variety of disciplines involved including engineering, marketing, business, IT, finance etc.
- Funding mainly through industry sponsorships
- AIESEC supports this project with marketing and business student teams
- NMMU plans to enter the Formula Student Germany competition in August 2010

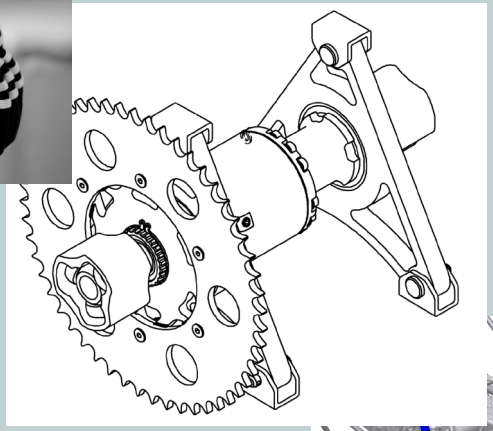
In this issue:

Designing a Formula Student Drivetrain

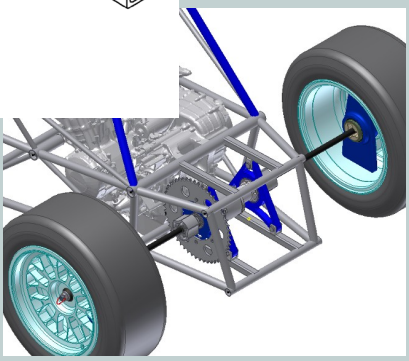
Shaun Pretorius is a BTech Mechanical Engineering student at NMMU, and for his final design project selected the design of the drivetrain on our Formula Student vehicle.

The drivetrain includes all components required to transfer the engine power from the gearbox to the wheels, such as the chain and sprockets, the limited-slip differential, universal joints, drive shafts and mounting brackets.

As shown in the illustrations below, Shaun chose a Drexler limited-slip differential due to its compact design, high performance and proven durability in the competition. Key aspects of designing the drivetrain include selecting the appropriate final drive ratio for optimum acceleration, calculating the torque transmitted by the drive shafts and ensuring that the reaction forces are adequately transferred into the vehicle's structure. Finite Element Analysis was also used to verify the strength of key components.



The tractive forces available at the tyres needed to be clearly understood, to endure maximum vehicle acceleration without wheel slip.



Tripot joints are being used to allow for the flexibility required for suspension movement due to their compact size and light weight. Standard motorcycle sprockets and chain were selected for the chain drive which will incorporate a chain tensioning device.

Shaun is not new to the Formula Student competition, having spent time in Germany in 2008 with the WOB racing team in Wolfsburg, as part of our academic exchange programme.

We wish him all the best in his future studies!

Continental Delivers Formula Student Tyres

NMMU Racing took delivery of their purpose-built Formula Student racing tyres on 9 October from Continental Marketing Manager Russell Stewart. Sixteen tyres were transported from Continental's German factory via air-freight to Port Elizabeth. We now have two sets of dry weather and two sets of wet weather tyres.

We are fast approaching our "design freeze" date at the beginning of November, by which time all CAD design work must be completed. The frame and suspension fabrication phase will then commence during November, and if all goes well during manufacturing and assembly, we plan to start vehicle testing in April 2010.

At the official tyre hand-over were: (back from left) Russell Stewart, Carl van Rooyen, Peter-Ben Johnson, Hiten Pamar (front) Howard Theunissen and Trevor Stroud.

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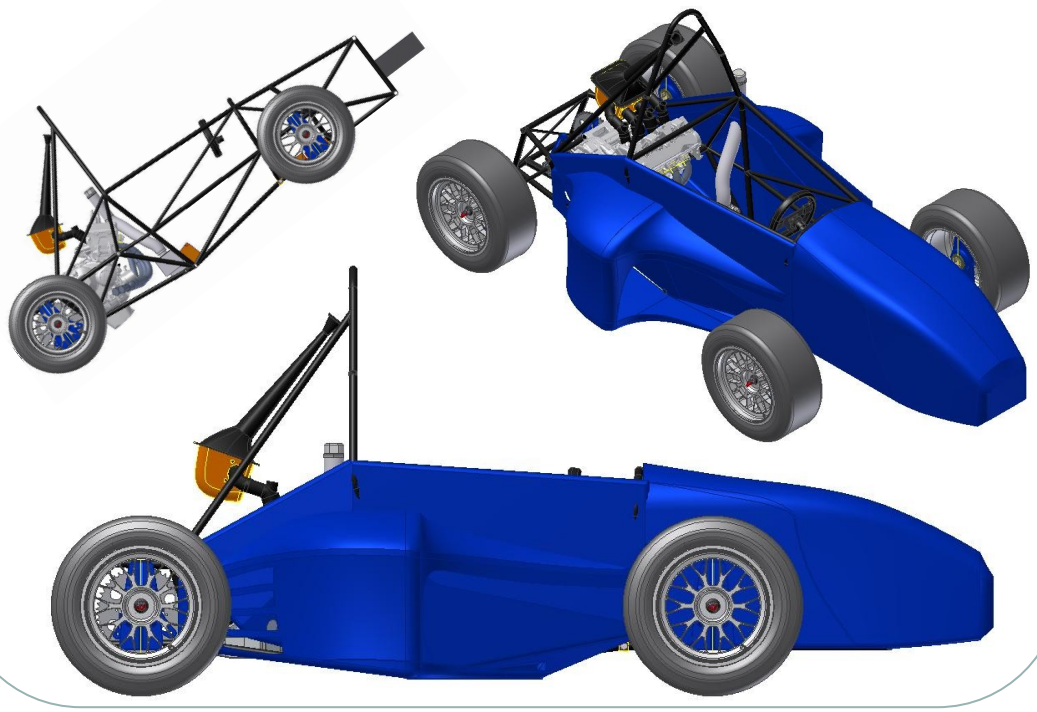
Latest images of our Formula Student Car



NMMU Racing Sponsors and Supporters

- **VW Racing**: technical support and racing vehicle components
- **Continental Tyres**: racing tyres
- **Dana Spicer Axles:** rear differential
- **General Motors:** test facility use
- **F1 Outdoor Karting:** race track use and driver training
- **Terry Moss Racing:** technical and racing support from Terry Moss and Michael Stephen
- **Autograph Racing:** Diktator engine ECU
- **Honda Wing Port Elizabeth:** Technical support
- **Specialist Composites:** Technical support
- **AIESEC:** student society that provides business and marketing support by mobilising students on campus
- **DAAD:** German student exchange funding
- **AIDC:** financial support
- **NRF:** research funding

Automotive Industry Development Centre

Visit by VW Racing Management Team

Mike Rowe and his team from Volkswagen Racing paid a visit to NMMU Racing's offices on 9 October to catch up on the progress of the design work on our Formula Student car.

VW Racing is a key sponsor of the NMMU Racing team providing a number of components and materials for the vehicle in addition to the vast technical expertise available from their world-class racing technicians. They have also agreed to allow our students to build the vehicle frame and suspension structures in their workshop where all the necessary fabrication and welding equipment is available.

VW has recognised the importance of building a strong partnership between industry and academic institutions to ensure that students leaving the university are adequately skilled for their future careers. They are demonstrating this commitment through their support of this project as well as the VW Chair in Automotive Engineering.

NMMU Racing is fortunate to have partners of this calibre!

Discussing the latest design concepts are Zerwick Kruger, Shawn Pretorious, Kobus Barnard, Johan Smit and Mike Rowe.