NMMU Racing NEWS

Nelson Mandela Metropolitan University for tomorrow
Port Elizabeth & George

The official publication of the NMMU Racing Formula Student Team

February 2012

What is Formula Student?

- International student design competition
- Design, build and race a single-seater Formula 1 style car
- Competition judging criteria includes design quality, costing, static and dynamic tests culminating in an endurance race
- Students from a variety of disciplines involved including engineering, marketing, business, IT, finance, PR etc.
- Funding mainly through industry sponsorships
- After successfully competing at the German Formula Student Event in 2011, NMMU Racing plans to develop an electric vehicle for 2013.

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www.nmmu.ac.za/nmmuracing

Don't miss our completely refreshed website for 2012!

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NMMU Racing Launches Green Technology Division

Following on the successful development of DibaOne, NMMU Racing's first Formula Student racing car, and the incredible experience of competing against more than 100 international teams in Germany, NMMU Racing went back to the drawing board to lay the foundation for DibaTwo.

managed by electronic systems which not only control the brushless DC electric motor's performance, but monitor temperatures, voltages and current, to implement failsafe procedures in the event of a dangerous condition.

NMMURACING GREEN TECHNOLOGY

A DIVISION OF NMMURACING FORMULA STUDENT

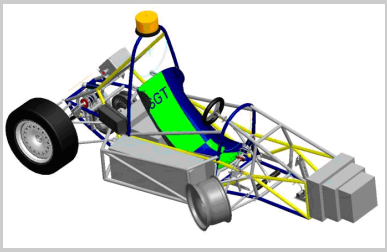
Fueled by an awareness of the need to focus increasingly on environmentally friendly designs, NMMU Racing decided to launch a new strategy dubbed **"Green Technology"** or GT for short.

NMMU Racing GT has a two-pronged focus, namely renewable energy and renewable materials.

In order to fully explore the ***renewable energy*** opportunities for DibaTwo, NMMU Racing is developing an electric drivetrain. It will be powered by rechargeable lithium polymer batteries, and

Although this will once again be a first for South Africa, the Formula Student event globally has developed a special category for electric-powered Formula Student cars, which in the last three years has seen the participation grow from a handful to over 30 electric cars in the German event alone!

NMMURACING FORMULA STUDENT



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The "**Formula Student Electric**" competition has its own set of stringent rules, which cover safety and performance aspects of the powertrain. It mandates the fitment of an energy meter, requiring the car to produce no more that 100kW of continuous power. All vehicles are checked after the race to ensure compliance with these rules.

In addition to the typical static and dynamic events, electric cars under go a water test to make sure that no electrical contacts are affected in the event of rain. Many drive configurations are currently in use by teams including a single, dual or three motor layout, allowing the implementation of such technologies as hub-mounted motors and torque-vectoring. Although an electric powertrain is typically at least 50kg heavier than a combustion engine, considering the weight of the batteries, the top electric cars out-perform combustion cars in the acceleration event! The photographs on the left show the variety and complexity of electric cars at the 2011 Formula Student Germany event.

NMMU Racing is recruiting P1 and BTech electrical engineering students for the first time, through the cooperation of the Electrical Engineering department to assist with the development of the electric car.

Ground breaking research into alternative **"renewable materials"** is underway to substitute for traditional composites, and collaborative links have been established with Warwick University in the UK, to learn from their extensive experience in the use of renewable materials on racing vehicles.

New Green Technology Logo for NMMU Racing!

A new logo was commissioned by NMMU Racing to reflect the strategy of the team for 2012/13. The "GT" logo reflects not only our commitment to Green Technology, but also reinforces our unwavering focus on racing performance.

Ingolstadt University Collaboration Steps Up!

NMMU Racing is expanding their collaborative relationship with Ingolstadt University in Germany, by moving beyond student exchange to sharing technical design information.

After getting to know their team leader, Ferdinand Ort, during his five-month stay with NMMU Racing in 2011, NMMU Racing met with the Ingolstadt team at the Hockenheim Ring during the 2011 Formula Student event to discuss how our respective teams could work closer together. Ingolstadt is well on their way with the manufacture of their first electrically powered Formula Student racing car and have secured an entry into the 2012 German "Formula Student Electric" event.

During Saleem Noorshib's six month visit to Ingolstadt this year, he will be tasked with gaining as much insight into the unique challenges of developing an electric vehicle, while sharing our experiences with the Ingolstadt team in the run-up to their first Formula Student competition. Ingolstadt will provide NMMU Racing with valuable insights into the research and design of their electric vehicle. NMMU Racing has been able to provide Ingolstadt with support on mechanical design aspects, specifically on the frame and suspension.

We look forward to expanding this valuable relationship in the future to the benefit of both teams, as NMMU Racing has always had international exposure as a core value of our Formula Student team.

VW Racing Recruits First Race Support Interns

Due to the positive relationship developed over the past three years between NMMU Racing and VW's Racing division, Mike Rowe, VW Motorsport manager has launched an innovative "Race Support Intern" programme in partnership with NMMU Racing.

The programme involves selected NMMU Racing students, who travel to each of the VW sponsored track and rally events on the calendar, to learn the "ins and outs" of running a racing team!

Our NMMU Racing Interns will be supporting the Formula VW single-seater series, Polo Cup and Rally series, and will travel the breadth of South Africa with the VW Racing team to assist with everything from race administration to vehicle performance data analysis.

This is a fantastic opportunity for our students to learn from the professionals, while providing a chance for NMMU to give support back to one of our major sponsors.

This is a very exciting development for NMMU Racing and we look forward to reaping the benefits of the experience gained!

Sponsors and Supporters

This project would not have been possible without the generous financial, technical and material support of the companies and organisations listed below.

- **NMMU:** financial & marketing support
- **VW Racing**: technical support, materials and racing vehicle components, race support intern program.
- **Nelson Mandela Bay Municipality**: financial support
- **AIDC:** human resource development
- **Continental Tyres**: racing tyres , driver training, donations

- **NRF:** research funding
- **DAAD:** German student exchange funding
- **ZF Sachs:** shock absorbers
- **Profile Tooling:** component machining
- **HiTech Automotive:** component fabrication
- **Disen Engineering:** machined components
- **SKF Bearings:** vehicle bearings

- **Terry Moss Racing:** technical support & helmets
- **Autograph Racing:** Diktator engine ECU
- **Custom Works:** Composites
- **Coker Race Products:** discounted racing components
- **Rezlo Auto Works:** discounted hoses & fittings
- **Graymaur Plastics:** fabrication of air intake system
- **Esteq Engineering:** CAE / CFD
- **MVB Designs:** Graphic Art

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