Case Study: ‘Team Fast Forest’

Quick as Lightning - MSC Software supports ‘Team Fast Forest’ from Deggendorf

Overview
Young university students make use of Adams multi-body simulation software to construct a vehicle for entry in the Formula Student competition. ‘Team Fast Forest’ from Deggendorf is using the software to study tires and chassis. Breaking conventional car design, the team will focus on electric vehicles.
Focus on Electric Cars
Due to high fuel consumption and the increasing number of regulations aimed at urban driving, attention is now, more than ever, focused on electric cars. But concerns about fuel efficiency not only play a role in the design of larger vehicles; they are also a significant factor in the Formula Student competitions. Titus Meier-Kraut, technical director for ‘Team Fast Forest’ from Deggendorf, reports on his experiences with Formula Student.

The Formula Student Contest
Formula Student is a contest in which university students construct a single-seat formula racing car. It’s not the fastest car that wins, however, but rather the team that racks up the highest overall score across a range of categories: design, financial planning and sales strategy. Formula Student was initially launched in the US in 1981. Starting in 2006, students have been allowed to participate at the Hockenheimring in Germany. In all, 346 teams from 50 countries around the world take part in developing cars for the competition.

MSC Software is providing support to 26 teams in Germany, Austria and Switzerland with its simulation software MSC Nastran and Adams. One of these is the ‘Fast Forest Team’ from Deggendorf. Mr. Meier-Kraut has been studying mechanical engineering at Deggendorf University, where he is currently completing his Bachelor thesis. To him, the most important thing about Formula Student is that it allows him to apply the experiences he has learned at the university to designing vehicles. “Formula Student is a great introduction to a professional career and to everyday work life. You’re dealing with things that a technician normally doesn’t deal with, like cost planning. So it’s extremely important that we keep an eye on inputs and outflows.”

Titus Meier-Kraut, Technical Director for ‘Team Fast Forest’ from Deggendorf

Key Highlights:

Product: MSC Nastran & Adams
Industry: Automotive
Benefits:
- Build a reliable electric-powered vehicle that saves time & money
- Quickly simulate the mechanical system & analyze tire behavior and complex road profiles
- Develop the best chassis possible using the multibody simulator from Adams
to everyday work life. You're dealing with things that a technician normally doesn't deal with, like cost planning. So it's extremely important that we keep an eye on inputs and outflows," says Meier-Kraut.

“In Formula Student, you learn how to handle stress and work as part of a team. It’s often the case that the car decides not to start right before the competition begins – and you have no idea why. That’s when you really need to be able to keep calm and think everything through carefully so you can figure out where the problem lies. “Team Fast Forest” is made up of nearly 70 students from various fields of study. Most of its members are studying mechanical or electrical engineering, but there are also some in the team who are majoring in business administration and media technology. Members are divided into various groups focusing on production, management and batteries, in order to make the project as successful as possible. The team’s greatest achievement to date came when they placed 9th in the Formula Student competition held at the Hockenheimring last year.

**Electric Model for Car Design**

Team Fast Forest has now switched over completely to an electric model for the design of its car. During the first three seasons that they took part in the contest, the team concentrated on combustion engines, or combustion engines combined with electric engines. But owing to time and money constraints, they have now decided to switch over entirely to electric-powered cars. They recognized the potential it presented and have not been disappointed by the response.

“A number of companies have shown an interest in the new design and were quick to provide support in the form of both materials and know-how,” says Meier-Kraut. Formula Student Electric (FSE) allows the use of all types of rechargeable batteries and condensers as energy storage devices, so new teams have had an opportunity to build a reliable vehicle in their sixth season of participating in Formula Student.

For 2014, the team is eager to show that they can build a reliable vehicle in their sixth season of participating in Formula Student. They hope to be among the top six teams at Hockenheim. Along with the event in Germany, the team will also be participating in competitions in Austria and Spain. You can find out more about MSC Software sponsoring at:

www.mscsoftware.com/de/page/formula-student

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For more information on MSC Nastran, Adams and for additional Case Studies, please visit [www.mscsoftware.com](http://www.mscsoftware.com)