

NEWSLETTER



TOPICS:

>01 LATEST NEWS

Current topics as well as past and future events.

>02 NEW ARRIVALS IN THE GARAGE

Brief presentation of the components that arrived in the garage during the last two months.

>03 SLIGHT IN-HOUSE DEVELOPMENT

The role of the CFRP rim and its development process as well as manufacturing.

UP-TO-DATE WITH RACETECH

Within the last two months a lot has happened in our Formula Student Team.

The most important events are summarized in the topic "Latest news". This includes the online event FSEast, in which we participated in July as well as our driver training on the kart track in Grimma.

In addition, some new components for the chassis, the electronics and the drive have arrived, which we will briefly introduce to you.

The technical part of this edition revolves around our CFRP rims. Which involves their tasks, development and production.

Stay healthy!
Your Racetech Racing Team

> 01 LATEST NEWS

NOT YOUR TYPICAL EVENT

In the last issue of our newsletter, we already told you about our participation in the online version of the FSEast. By now, we submitted every document and video on-time! To explain that a bit, we had to upload the engineering design report and engineering design videos as well as the business plan summary, the corresponding presentation video and the deep dive topic. Furthermore, we had to develop an alternative energy storage system for the future of the Formula Student and present that in a written composition for the concept design challenge. We even made it to the finals in this discipline. Further on, we submitted fun activity videos, e.g. a driver egress only with household items, and our answers to the questions concerning our Design Reports. We are excited to hear if we will also be in the finals of the engineering design report and business plan. We'll keep you updated!

Author: Lara Windler



Engineering Design Event at FSG 2019



Karting at the Kartcenter Grimma

KARTING

On the 20th 6 June, the team went karting at the Kartcenter Grimma. Initially, teams were formed from two drivers each, who then drove in two ten-minute qualifying sessions for the starting grid. The forty-minute race included a driver change after half of the race time and was characterized by exciting and fair duels. Dominik Kögler and Max Schneider emerged victorious. If you are interested in participating in one of our carting nights, you are cordially invited. For further information please contact the team management.

Author: Marvin Gretschel

NEW ARRIVALS IN THE GARAGE

Thank you to all our sponsors who make these components possible for us!



CONNECTION TRIANGLES

In order to save as much weight as possible in the chassis, the RT14 will have CFRP-wishbone. For this purpose, aluminium bearings are glued to the ends of the carbon pipes. The connecting triangles are the most complicated parts of the wishbone and were manufactured by Konnerth & Co.

With the switch to a high-voltage system of 600V, we also need a new charger to charge our traction accumulator. The main component is the Genesys 600-8. 5 power supply from TDK Lampda. With this it is possible for us to fully charge the accumulator of the RT14 in about one and a half hours. The charger will also have a self-developed control panel. This will display information provided by the CAN Bus accumulator, such as measurement data on cell temperatures and voltages, on a display. In addition, it includes a safety shutdown, which opens the accumulator isolation relay e. g. in case of an accumulator side-by-side occurring isolation error. In order to make the charger resistant enough for use at the events or the test station, the housing forms a robust flight case.



CHARGER



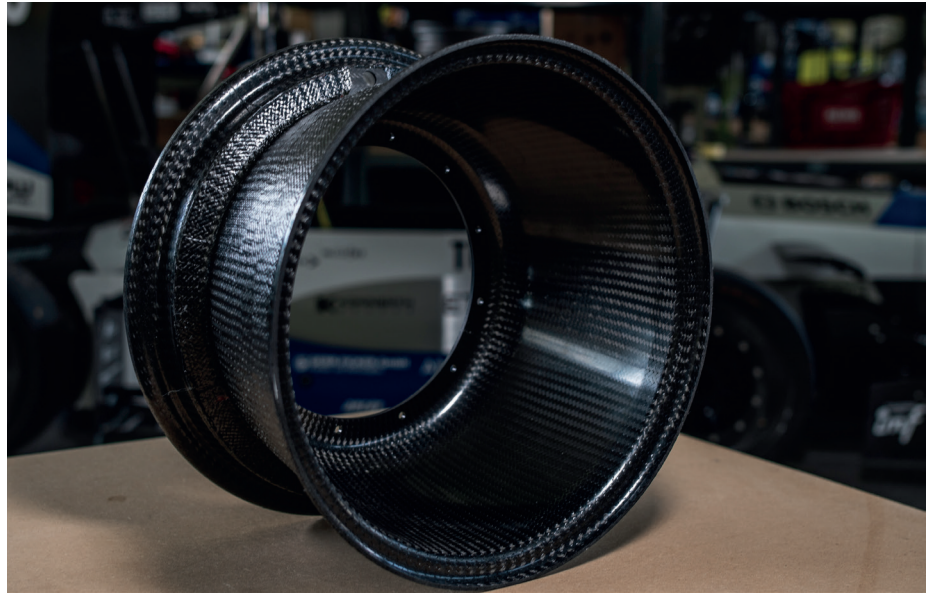
AIREX RIGID FOAM

The Airex rigid foam is used for the Sandwich structure in the Mono-coque. It's placed between CFRP cover sheets to increase the bending strength significantly. The mechanical properties are slightly worse compared to the aluminium honeycomb from the last newsletter, but because it can be milled, we use it for fillets too narrow for aluminium honeycomb. The milling was done by Hiconform and Modellbau Stabnow.

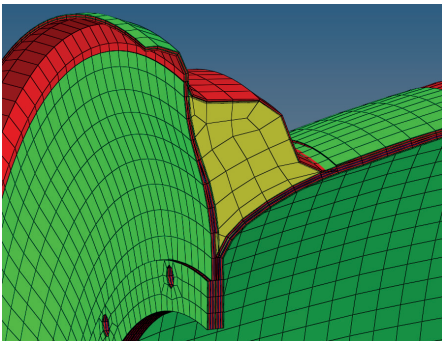
SLIGHT IN-HOUSE DEVELOPMENT

Our CFRP-Rim

One of the main goals in the development of our racing car is a good balance between weight reduction and enough stiffness. This is especially important for unsprung and rotating masses in order to improve the performance on the track. One of these components is the rim, which has to ensure a good and dense tire seat while transmitting to direct the forces of the tire to the rest of the chassis.



CFRP-Rim of the RT14



Simulation of the CFRP-Rim

For several years we have been driving the concept of a self-developed hybrid rim with an aluminium star and a CFRP-rim-bed. With the help of our simulation, we optimize the layer structure of the rim-bed in weight and stiffness. In some regions, in order to further improve stiffness, a hard foam core is also used, which is later laminated with.

Prepreg fabrics, which are pre-impregnated with the necessary resin, are used in the production process in order to implement this layer structure as precisely as possible in spite of the complex shape while maintaining the optimal fiber volume proportion.

An 8-piece aluminium shape ensures optimum surface quality on the functional surfaces during the manufacturing process as well as good demouldability after curing. In an autoclave, the rim-bed is baked at overpressure and high temperature to allow the pre-impregnated resin to harden.



CFRP-Rim of the RT13
Author: Simon Karschner

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