

Unmatched

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Norman Lemm
VACUUMSCHMELZE GmbH &
Co. KG
Tel. +49 (0)6181 / 38-0
Fax +49 (0)6181 / 38-2645
norman.lemm@
vacuumschmelze.com

Konzept PR
Simon Federle
Tel. +49 (0)821 / 34300-19
s.federle@konzept-pr.de

Contact address for reader requests:
VACUUMSCHMELZE GmbH &
Co. KG
Postfach/P.O.B. 22 53
D-63412 Hanau
Tel. +49 (0)6181 / 38-0
Fax +49 (0)6181 / 38-2645
info@vacuumschmelze.com



Stator and laminations (c)
VACUUMSCHMELZE GmbH & Co.
KG

Hanau - The participants of Formula Student Germany, taking place from August 6-12 at the Hockenheimring, have been working hard for many months on the configuration of their vehicles. VACUUMSCHMELZE (VAC) supports this year's favourites with its high-performance materials.

All top **Formula Student Electric** teams have been using VAC's cobalt-iron-alloys since the competition, which has been held since 2006, was extended in 2010 to include the topic of "electromobility". Rotor-stator systems in combination with optimized magnet assemblies made of rare-earth permanent magnets are used in the electric drive motors. The greatest advantage of using VAC materials is the considerably higher torque with increases of up to 53 % compared to conventional materials.

Electrical steel, which is the standard solution used, is significantly more limited in terms of magnetizability, which is decisive for the power density. Accordingly, VAC supplies the racing series with rotor-stator systems made of the cobalt-iron alloys VACOFLEX[®] and VACODUR[®]. While the induction of standardized electrical steel at a field strength of 1,000 A/m is still below 1.5 T, the materials of VAC reach 2.3 T. In consequence motors are either more powerful or smaller.

Not only motor sport applications, but also applications within electromobility, industrial or aviation have constantly increasing requirements that demand electric machines with the highest efficiency. An optimally adapted combination of rotor-stator packages and segmented permanent magnet systems allows the "weight" and "speed" parameters to be ideally adjusted, thus improving the performance and efficiency of the motors.

"Based on the technical development of our materials, we are confident that another world record can be set at Formula Student this year," says Dr. Robert Brand, Product Manager and Application Specialist at VAC, referring to the acceleration world records set in 2015 and 2016, the last one from zero to 100 km/h in only 1.513 seconds.

VACUUMSCHMELZE GmbH & Co. KG

VACUUMSCHMELZE (VAC), based in Hanau, has 4,300 employees worldwide, 1,450 of whom are in Hanau. The company designs, produces and markets advanced materials, particularly with magnetic, but also with other physical qualities as well as related products. In 1914, the first vacuum furnace laid the foundation for today's VACUUMSCHMELZE. Industrial vacuum melting techniques for alloys have been in operation since 1923.

VAC Group today achieves annual sales of approx. 380 million euros in over 50 countries and is holder of around 800 patents. The company is among the world's most highly innovative developers of advanced industrial materials.

VAC's range of products comprises a broad array of advanced semi-finished materials and parts, inductive components for electronics, magnets and magnet systems for use in a wide variety of fields and industries spanning watch-making and medical technology, renewable energies, shipbuilding, installation technology, automotive and aviation. VAC's custom solutions are developed in close collaboration with the customer, reflecting the company's expertise in materials, applications and state-of-the-art production technology.

For more information, visit www.vacuumschmelze.com