

PRESS RELEASE

July 2019 – Face Seals for Rotor Shaft Cooling of Electric Engines



Source: KACO GmbH + Co. KG

In times of an increasing electrification of powertrains technical solutions are required to prevent the electrical engines from overheating. For that use case the expert for sealing solutions developed face seals for rotor shaft cooling to directly cool down the shaft of the rotor internally.

KACO's face seals that have been specifically developed for rotor shaft cooling are axial acting systems for high speed (up to 37 m/sec), pressure application (up to 0,4 MPa) and allowed ambient temperature between -40 and 140°C. Designed for small installation space those sealing systems stand out for axial room of motion between ± 1 mm which ensures the compensation of thermal expansions of the rotor shaft as well as part and assembly tolerances. The face seals for electrical powertrains are robust, durable and effective, as they are based on proven and partially newly developed and optimized materials like silicon carbide, high-performance elastomers and stainless steel. The modular type "EMRS" (Electric Motor Rotor Shaft Seal) is applicable for inner diameters between 16 and 28 mm what represents the new standard within the KACO product portfolio regarding installation space, performance and customer requirements.

Use case tested under real life conditions

KACO's face seals for electrical powertrains are tested with specifically engineered dedicated test rigs. Test parameters as well as measuring methods have been specially adapted and aligned with numerous customers. Highest priority is on reliability of the sealing system within the whole range of applications.

„Since ever thermal management is a very important topic within the automotive industry. For decades KACO has been a reliable partner for dynamic sealing solutions in water pumps and control valves of the cooling circuit with our AXIA® face and elastomer seals. In the course of the powertrain electrification we transferred our know-how to the new requirements. We succeeded in developing dynamic sealing solutions for high-speed electrical engines where the internally cooled rotor speeds up to 20.000 RPM. This technology is already in series production or ramping up for major OEMs and Tier 1 suppliers. It is becoming evident that cooling systems for NEVs and BEVs are even gaining more importance with regard to conventional powertrain technology as the requirements for cooling of the electric engine, the battery as well as the power electronics and finally also the cabin is an enormous challenge to the thermal management system of NEVs and BEVs. We are pleased that we already

stepped into e-mobility with our dynamic sealing products for thermal management and we are for sure a reliable system partner for future mobility” explains Vice President Research & Development Andreas Genesisius.

The Expert for Sealing Systems

KACO GmbH + Co. KG, a subsidiary of the Zhongding Group, is one of the world’s leading developers and manufacturers of high-precision, practical sealing solutions for the automotive and mechanical engineering sectors. The company, with its headquarters in Germany, has earned a reputation for the highest quality sealing solutions and innovative power as well as for expertise in development and production. KACO has six production facilities in Germany, Austria, Hungary, China and the USA and delivers products across the globe. A trusted partner of the automotive and supplier industry, the company has been keeping pace with the high demands and technical changes of the industry for decades.