Quick Deflation – tight seal by reversible battery quick venting solution

Source: KACO GmbH + Co. KG

The sealing expert **KACO** has developed a quick deflation solution for battery modules in BEVs and hybrids and is continuing to drive the further expansion of its modular venting system. The special feature of these quick vents compared to many previously known systems is, that the vent is sealed again tightly after the rapid pressure reduction. Various locking mechanisms (magnetic and/or spring loaded) are available to meet the respective customer requirements. As with **KACO's** well-known breather caps for transmissions, axles and engines, the sealing expert again solves a complex problem with **Quick Deflation**, using a cost- and space-optimized approach.

If an unintentional malfunction occurs in the traction battery of electric or hybrid vehicles, rapid emergency venting must be guaranteed to reduce the pressure in the affected battery segment. For this purpose, KACO offers a product range, optimized for installation space. The basic idea is a piston, which seals the quick exhaust tightly again after the exhaust process. One of the designs includes a magnetic piston, which enables the best results in the outflow behaviour. This concept was developed and optimized, by using CFD calculation. The piston can also be supported by a spring. As an alternative, a solution that is only spring-loaded can also be offered if higher locking forces are to be achieved at a reasonable price. KACO Quick Deflation is designed in such a way that a pressure compensation element can be integrated in addition. This ensures both, regular pressure compensation and the possibility of emergency venting in one product. The focus of the basic development of the modular product system was essentially to achieve low costs and the smallest possible installation space, while at the same time being able to offer additional advantages such as reversibility and simple installation.

New test benches

For years, the expansion of KACO's product range has gone hand in hand with the expansion of the worldwide testing facilities. The test facilities built for quick venting allow rapid validation of the

properties, simulated in advance on the digital twin. As a result, the customers of the sealing expert can rely on the fact, that KACO responds to their customer's wishes from the design and simulation, through the creation of prototypes and the necessary validation tests, to the start of series production.

Vice President Research & Development Andreas Genesius is enthusiastic about the new solution: "With the development of Quick Deflation for battery systems, KACO offers a further modular product group in the application area of ventilation in the drive train. By using state-of-the-art calculation programs, we can design venting caps and quick vents with regard to closing and opening pressures as well as required flow volumes for specific applications. The targeted expansion of the available product portfolio also results in a standard modular system, which provides growing flexibility for fast customer applications in the course of ever shorter development times. In addition to many other new developments, KACO's modular venting system illustrates the company's development competence with regard to the technological change".

First Choice in Sealing Solutions

KACO GmbH + Co. KG, a subsidiary of Zhongding Group, is one of the world's leading developers and manufacturers of high-precision, suitable sealing solutions for the automotive and mechanical engineering applications. The company with its headquarters in Germany has earned reputation for highest quality sealing solutions and innovation power as well as for its expertise in development and production. KACO has a global footprint with close proximity to its customers and production facilities in Europe, Asia and North America. As trusted partner of the automotive and supplier industry, KACO has been keeping pace with the high demands and technical changes of the industry for decades.