

**SGL Carbon produces prototypes of fully integrated composite battery enclosures for NIO's Advanced Technology**

- Fiber-reinforced battery enclosure 40 percent lighter than comparable aluminum solutions
- Increased driving dynamics and safety
- Further projects with various OEMs

In collaboration with SGL Carbon, Chinese automotive manufacturer NIO has developed prototypes for battery enclosures made of carbon-fiber reinforced plastic (CFRP) for its NIO high performance electric vehicles. Thanks to CFRP, the battery enclosure is extremely lightweight, stable and safe. The entire battery enclosure, including the batteries, can be changed at swapping stations of NIO within just three minutes. NIO presented the swap concept at NIO Day in December 2017 for the first time and now demonstrated the actual system along with various technological innovations including the CFRP battery enclosure live at the 2019 Shanghai Auto Show last week.

“Commercial battery enclosures for electric vehicles are mainly made of aluminum and steel. In comparison, the CFRP battery enclosure is around 40 percent lighter. Other benefits include the enclosures’ stiffness and the approximately 200 times lower thermal conductivity of CFRP compared to aluminum, which better shields the battery from heat and cold. Plus, the composite also offers excellent values in terms of water and gas leakage tightness and corrosion resistance,” states Sebastian Grasser, head of market segment Automotive in the Composites – Fibers & Materials business unit at SGL Carbon.

“Lightweight technology is one of the core elements in NIO technology roadmap. Using composite material especially the high-performance carbon fiber in battery enclosure system, our vehicle can achieve better dynamic performance, increase range, and obtain remarkably high energy density of the battery pack (over 180 Wh/kg). These features fit perfectly to the core values of NIO brands of ultimate product and system efficiency” states Bin Wei, Senior Manager of Lightweight Engineering at NIO.

These outstanding battery enclosure characteristics mainly owe to the bottom and cover plate design, combining a sandwich core with multiple layers of carbon fiber non-crimped fabrics. SGL’s own Lightweight and Application Center was responsible for developing the tool to produce the bottom and cover plate. Along the fully integrated value chain, carbon fiber is produced for these components at the SGL plants in Moses Lake and Muir of Ord, processed into non-crimped fabrics in Wackersdorf. Besides producing the bottom and cover plate, the SGL site in Ried, Austria, also assembled the individual components.

SGL Carbon expects demand for lightweight solutions for battery enclosures in the automotive

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sector to grow rapidly in the next few years due to increasing electromobility. The company is already working with various partners to continue developing different battery enclosures made of composites with the aim of scaling them for electric vehicle batteries of all sizes and designs.

### About SGL Carbon

SGL Carbon is a technology-based company and world leader in the development and production of carbon-based solutions. Its high-quality materials and products made from specialty graphite and composites are used in industrial sectors that determine the future: automotive, aerospace, solar and wind energy, semiconductor and LEDs as well as in the production of lithium-ion batteries and other energy storage systems. In addition, SGL Carbon develops solutions for chemical and industrial applications.

**In 2018, SGL Carbon generated sales of around 1 billion euros. As of December 31, 2018, the company had approximately 5,000 employees worldwide in 33 locations in Europe, North America, and Asia.**

Materials, products and solutions from SGL Carbon are embedded in the major topics of the future: sustainable mobility, new energies and cross-industry digitization. Further developments in these areas demand more intelligent, more efficient, networked and sustainable solutions. This is where the entrepreneurial vision of SGL Carbon evolves around: contributing to a smarter world.

Further information on SGL Carbon can be found at [www.sgllcarbon.com/press](http://www.sgllcarbon.com/press).

#### Important note:

To the extent that our press release contains forward-looking statements, the latter are based on information that is available at present and on our current forecasts and assumptions. Forward-looking statements, by their very nature, entail known as well as unknown risks and uncertainties that may lead to actual developments and events differing substantially from the forward-looking assessments. Forward-looking statements must not be understood to be guarantees. Instead, future developments and events depend on a large number of factors; they comprise various risks and imponderables and are based on assumptions that may possibly turn out not to be appropriate. These include unforeseeable changes to fundamental political, economic, legal and societal conditions, particularly in the context of our main customers' industries, the competitive situation, interest and exchange rate trends, technological developments as well as other risks and uncertainties. We perceive additional risks e.g. in pricing developments, unforeseeable events in the environment of companies acquired and Group member companies as well as in current cost savings programs from time to time. The SGL Carbon assumes no obligation and does not intend to adjust or otherwise update these forward-looking statements either.

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