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E-mobility Era Requires New Types of Lubrication

The pursuit of better performance and increased efficiencies for electric vehicles is charging the development of ever more innovative lubricants. And BASF, with its extensive portfolio of essential lubricant components, is particularly well positioned to help industry players choose the right components for future e-fluids and to drive e-mobility forward.

The latest electric cars have many different requirements in terms of lubrication and, as yet, there is still no single preferred technology or fluid concept. The build of an electric vehicle very much depends on the OEM and the model, and as there is no set standard or specification, the fluid requirements are equally diverse.

“For that reason, the industry requires a holistic approach, along with close collaboration, established sustainability expertise and an openness across the value chain,” says Dr. Frank Rittig, technical marketing – Performance Components at BASF’s Fuel and Lubricant Solutions business.

“This is a market with enormous innovation potential and its fair share of challenges across the value chain.”

Over the years, BASF has successfully positioned itself as a leading component supplier for lubricant

manufacturers globally to address the specific needs of its customers. A dedicated e-fluids team has been established with a strong focus on customer collaboration that covers a broad range of technologies and capabilities to meet and exceed even the most demanding fluid requirements.

For the motor and gearing in battery electric vehicles, there is a steady trend of moving away from conventional systems with a single gear transmission toward a more compact integrated design, requiring more advanced fluids, i.e. dielectric fluids, to cool and lubricate.

Although the industry has responded by developing smaller and more efficient engines, these tend to generate more heat. While it is therefore not only important to provide the right lubrication, the associated thermal challenges—such as heat conductivity—must also be properly managed, notes Rittig.

Other important properties of modern lubricants and oils for e-mobility applications must include electrical conductivity properties, copper protection and compatibility with varied materials, such as plastics, coatings and the insulating materials of plugs and wires.

Modern engines are under constant strain, particularly given their rapid acceleration and the associated impact on the gears. They have to reliably and safely operate at extreme temperatures, so it is important to select sophisticated oils with very specific properties to ensure a positive and safe driving experience.

Selecting the right chemistries and carefully choosing the additives and base stocks has therefore never been more important—particularly when it comes to the thermal and electrical properties, and the high and still emerging performance requirements.

With electric vehicle demand gathering pace, the lubricant industry is in true need of innovative players to enable the next evolution in technologies for future mobility. “Our significant innovation and sustainability resources, together with our broad portfolio of lubricant components, means BASF is particularly well placed to collaborate with our customers to ensure their success in the future,” concludes Rittig. “We are an international team of engineers and chemists, located in all major regions, with long term experience and in-depth expertise in the lubricant industry, covering many different competencies supported by established global R&D centers. We are passionate about sustainability and strive to offer customized solutions to support the industry in this transformation.”

To find out more about e-mobility and how BASF’s Fuel and Lubricant Solutions business is helping shape the future, visit www.basf.com/future-mobility-fuel-lubes or contact fuel-lubes@basf.com.