

Oil quality in electrification

The electrification of vehicle drivetrains is resulting in new challenges in oil filtration, demanding high levels of cleanliness and cooling, and reduced friction losses

▶▶ As development of new propulsion solutions continues, Filtran is focusing on innovative applications in hybrid and electric vehicles, using proven technology from automatic transmissions and transferring this expertise to new applications. Filtran analyzed the requirements of new propulsion systems in relation to the filtration and oil supply, resulting in a range of new products that are already in series production.

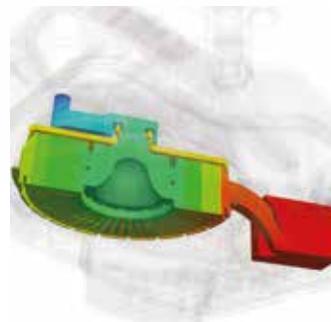
Responding to the changes in the market, Filtran is enlarging its product portfolio. As one of the market leaders in filtration for automatic and automated transmissions, as well as in plastic oil pans, Filtran is continually developing new solutions.

Generally speaking, Filtran is focusing on two technologies. The hybridization of vehicles causes, in most cases, a change in the gear application. In addition to the changes in the gear spread, an electrical motor is often integrated in the gearbox housing. This leads to higher requirements for oil cleanliness. Here, the focus is on electrified double clutch and power split gearboxes because of the integrated clutches.

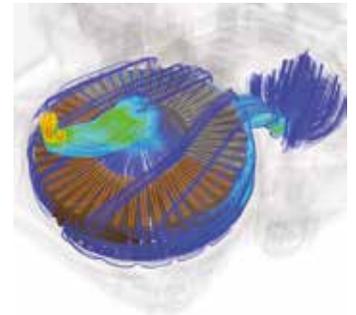
Beside the oil contamination caused by wear, the clutches pollute the oil, mainly with metallic and non-metallic particles. If the amount and size of the particles is not reduced, this can result in a shortened lifetime of the electrical motor when the oil is used for its cooling. Because of these changes in the basic gearbox architecture, Filtran has focused on the development of more efficient filter material. This means that



Module with filter, heat exchanger and oil pump for electrified drivetrains



Pressure drop between the filter inlet and outlet



Stream lines around a pleated filter

with hybrid vehicles. Electrified drivetrains don't have a classic oil sump because of the high rotor speed of the electrical motor, which leads to higher oil share and associated losses.

To avoid this, Filtran offers modular solutions to supply the gears and the motor with clean oil. These modules can be designed to suit the requirements of a customer's application. The range of products includes external oil reconditioning systems as well as fully integrated modules with filtration, heat exchanger and oil pump. These subsystems can be designed and equipped with sensors and shiftable valves to route the oil flow as it is needed for different operational conditions.

Filtran technology not only makes it possible to ensure the functionality of the next generation of propulsion systems, it also helps to reduce the amount of oil needed, and reduce the losses caused by sharing oil. ©

proven solutions, such as oil pans with integrated filter systems, can be used to fulfill new requirements as well.

The second technology that Filtran is focusing on is the drivetrain of fully electric vehicles. These tend to use a gearbox with fewer functions and a lower number of gears. The challenge here is different from those associated

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