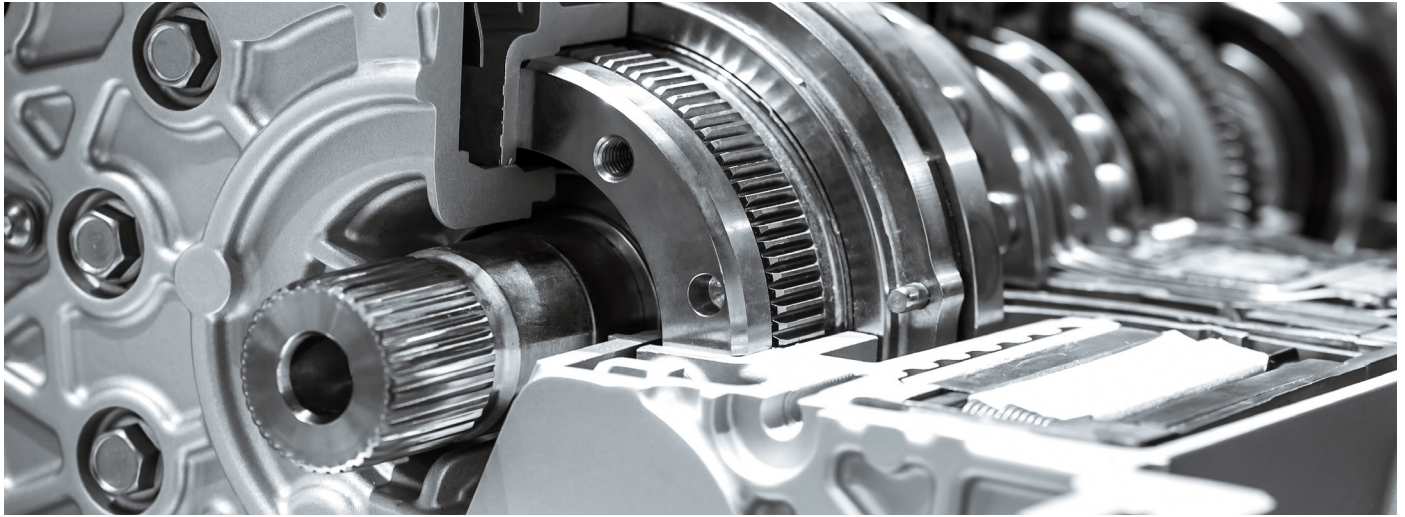


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## CASE STUDY

### Automotive Filtration

Mercedes-Benz 9G-tronic transmission



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The Mercedes-Benz 9G-tronic transmission relies on a specially designed Filtran module for a quieter, safer ride.

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**ON THE LEADING EDGE OF MODULARIZATION IN THE AUTO INDUSTRY, FILTRAN'S COMPACT OIL PAN HOUSING WITH INTEGRATED SMARTMEDIA® MINIMIZES TRANSMISSION WEAR AND PROTECTS CONTROL VALVES FROM CONTAMINANTS.**

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## THE CHALLENGE

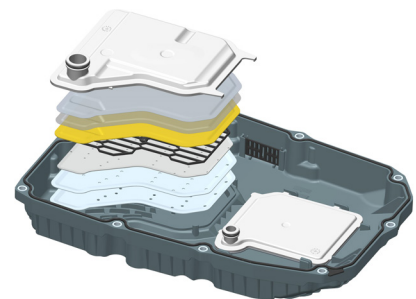
Mercedes-Benz needed a filter for their 9G-tronic transmission that could hold up to the demands of higher efficiency requirements for sensitive components and comply with limited installation space and cost requirements.

## THE SOLUTION

A plastic oil pan module, which integrates a sump filter system and considers fine filter media in front of the hydraulic pump rather than of behind it. In cold conditions, when the automatic fluid is highly viscous, most of the flow will bypass the fine media layers. However, in warmer operating conditions when the viscosity of the oil is lower, a certain amount of flow runs through the fine filter media layers resulting in a higher level of cleanliness over time. This is accomplished by having multiple flat layers stapled in a progressive way for improved filter efficacy.

Filtran refers to this extremely compact design of fine filtration inside a suction filter 'SmartMedia®'. This advanced solution increases filter performance by combining the benefits of different media types in one compact housing. It also provides the benefit of air extraction which avoids pump cavitation and reduces noise.

In the development phase'...it's not necessary and start the sentence with Filtran analyzed more than 1,000 oil samples and hundreds of filters that had undergone durability transmission testing and confirmed that an additional costly pressure filter was not required.



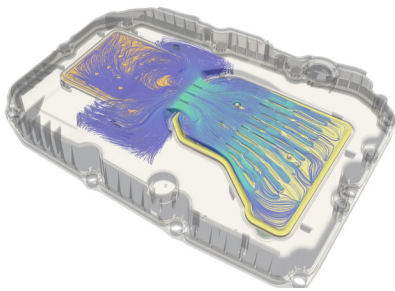
CASE STUDY

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The SmartMedia® construction is considered only in the bigger, fully integrated, main suction filter in front of the mechanical pump. The smaller secondary filter is mounted in front of the electrical pump so that the position tolerances can be offset during assembly of the module to the transmission. Both filters are manufactured using clean laser-welding technology.

Today, oil pan modules act as function-carriers – here the pan includes a reusable twist-lock plug; devices for oil-level management; lightweight plastic bonded magnets for capturing iron particles; integrated gasket; and outer fixing elements.

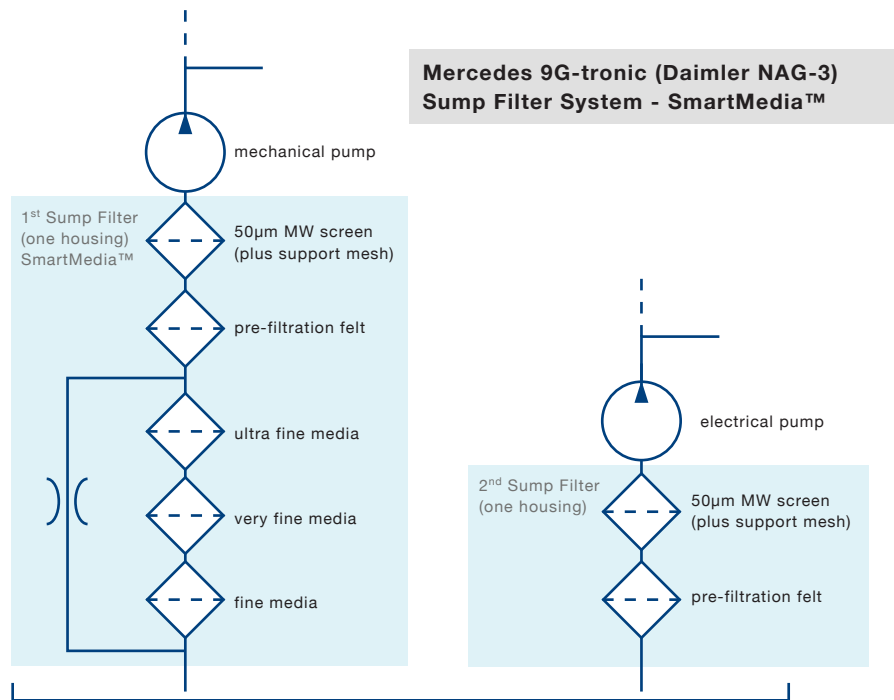


THE RESULTS

This plastic oil pan module demonstrates the industry trend toward modularization and system supply where interfaces and single components are eliminated. This means that the number of suppliers, logistical efforts and assembly processes are complying with budgetary requirements. In accordance with the injection molding process and plastic component design, this pan is 1.3kg lighter in weight and has additional integrated functions.

In the future, a higher level of functional integration will be achievable. Heat exchangers, sensors, valves and pumps will be adapted to transmission pans or side covers. Filtran continues to optimize this technology through refinement of the design, materials and functionality of the final product.

Since bringing the plastic oil pan module to market in 2001, Filtran has produced almost 20 million units. In preparation for future demand, Filtran has added to its production capabilities in Germany, USA, China, Japan, Korea and has established a new plant in San Luis Potosí, Mexico.



The diagram illustrates the hydraulic circuit system in the new Daimler NAG-3 gearbox.