Technical Information

Electronics – Oil Sensors

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The availability of cost-optimized, reliable and high performance sensors is an essential prerequisite for Hella for ensuring its market leadership in the field of oil level sensors. The current range offers a relatively simple float switch as well as intelligent, continuously measuring sensors. In the near future, an oil condition sensor will complete the product range.

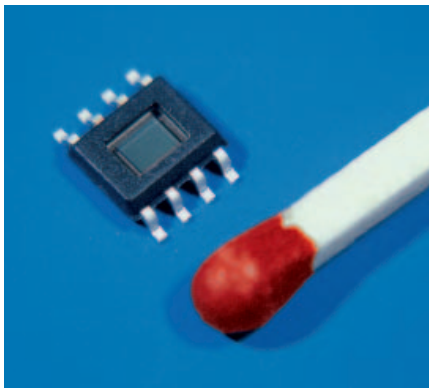
Oil level check using a dipstick

While the functional principle of float switches means they can only be designed for a fixed switching point, the thermal oil level sensors developed by Hella measure the oil level within a range of approx. 50 mm. As an option they can also be used for reading the oil temperature. Measurement takes place continuously while driving.
The sensor geometry is adapted to fit the various oil pans, allowing vehicle manufacturers to equip a wide range of vehicles and engines with the same sensor. Engine-specific switching and warning thresholds can be set using software, thus keeping the mechanical variants to a minimum.

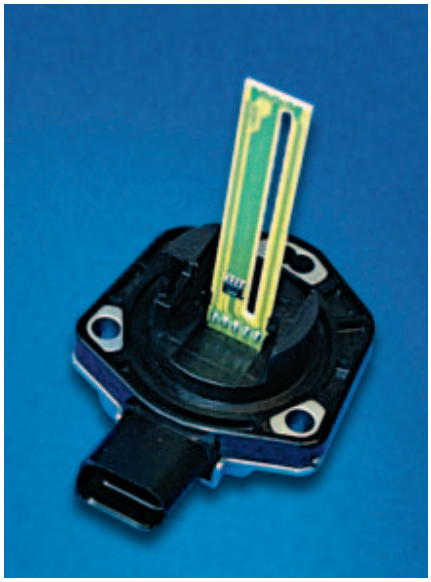
Oil level and oil temperature sensor

A µC-based integrated circuit (ASIC) allows for the generation of customer-specific output signals.

Nowadays the oil level sensor is being used for the recognition of the oil consumption and level. It is an integral part of a system for realizing flexible service intervals matched to the specific driving habits of the owner. The mechanical dipsticks, still common today, could be replaced by an “electronic dipstick” in the future.
A module for sensing the oil condition is presently being developed using micro-system technology for future applications. It will be available on the market from 2006, allowing sensing and evaluation of the viscosity, density and permittivity of the oil as mutually independent variables. The objective is to fully utilize the oil to its aging limits.



Oil condition sensor as SMD



Oil level sensor with modular integrated oil condition sensor.

In consideration of the cost/benefit aspects, sensors represent an extremely attractive product for:

- OEMs (standard part)
- Consumers (reduction in maintenance costs)
- The environment (reduction of superfluous oil changes)

The strategic approach in product marketing for future oil sensors is to accommodate customer requirements in a highly flexible manner through the use of a modular concept. Micro-system technology allows the oil condition module to be integrated into proven standard products such as float switches or level sensors. They can also be inserted into other areas of the oil system as separate components or as an integral part e.g. of the oil filter system. The functionality can also be further extended relatively easily to include a pressure sensor.

Hella KG Hueck & Co.
Rixbecker Straße 75
59552 Lippstadt /Germany
Tel.: +49 (0) 29 41/38-0
Fax: +49 (0) 29 41/38-71 33
Internet: www.hella.com

For technical enquiries:
PLE-6 Sensors
Tel.: +49 (0) 29 41/38-85 43
Fax: +49 (0) 29 41/38-83 57

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