FE SENSOR

Continuous Monitoring of Ferromagnetic Particles

The FE SENSOR is designed as a screw-in device to monitor continuously the condition of lubricating and hydraulic oils with regard to iron abrasion, erosion in the oil system and, therefore, contamination with ferromagnetic wear particles. The metal particles which are found in different quantities in the oil are the result of the wear of the internal engine components. The wear of the engine parts happens according to the principle of metal-to-metal contact: during the cold starting the smallest particles damage slide faces which in their turn produce further particles. An illustrative example of such contacting is the intensive wear in gear boxes. Accordingly, the degree of concentration of the ferromagnetic particles corresponds to the level of the engine components wear and deterioration of the oil quality in general.

Technical Features:

- Measuring range: 0-100%
- Accuracy: +/- 1%
- Voltage: 9-33 VDC
- Max. fluid pressure: 20 bar
- Temperature: -40°C up to +85°C
- Protection class: IP 67
- Interface: RS 232/ CAN/ 4 – 20 mA

For measuring the number of ferromagnetic particles, the FE SENSOR applies the inductive measuring method. The sensor head is equipped with a permanent magnet which enables accumulation of the particles for the further assessment. The sensor is able to make distinction between fine particles (micrometer range) and coarse particles (millimeter range). The output signal helps to determine the distribution of particles at the sensor surface ranging from 0 to 100 %. The obtained data is constantly transferred to the special display unit DATALOGGER and stored.

As the sensor has automatic cleaning function, the accumulated particles are released after some time and the new ones are then accumulated. A change in wear can be then assumed in-between two cleaning processes.

Therefore, the semi-intelligent sensor assesses the current condition of the oil under examination in accordance with the in-line monitoring principle without a necessity of manual inspection or sample taking. Early detection of ferromagnetic wear particles allows one to take corresponding corrective actions and to establish the maintenance intervals based on the actual condition of the oil and the machine parts.