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Oil separation system for high performance engines

Separating engine oil droplets in diesel and petrol engines

Each time a gasoline or diesel engine ignites, a small portion of the fuel-air mixture escapes into the crankcase through leaks from the combustion chamber. This gas must be removed and the droplets of engine oil contained in it separated. This reduces pollutant emissions and ensures the efficiency of the engine. The new BINE-Projektinfo brochure entitled “Keeping the oil in the engine” (16/2017) presents two newly developed active separation systems for small oil particles. The particular focus of the developers has been on modern, higher-density and compactly designed engines.

Very fine droplets of oil are produced during combustion in highly supercharged turbo engines. Securely separating them so that the emission limit values are met is pushing conventional passive separation systems to their performance limits. Instead active systems are required. Currently, however, these are only used in commercial vehicles due to their design limitations.

In a joint research project, Stuttgart University and the component manufacturer ElringKlinger AG are aiming to develop compact active separation systems that are also suitable for passenger cars. It is also intended that these should be inexpensive to produce and require little drive power. To achieve this, they have developed two different concepts: a wet scrubber and a disc centrifuge. Both systems have been developed to series maturity and are currently undergoing series testing.

Powerful oil mist separation systems can also help to increase the efficiency and reduce emissions in stationary engines, for example in combined heat and power plants.

The BINE-Projektinfo brochure, which can be obtained free of charge from the BINE Information Service at FIZ Karlsruhe, is available online at www.bine.info or by calling +49 (0)228 92379-0. The brochure cover and additional image material can also be downloaded from this web portal in the press section.

Contact
Uwe Milles
presse@bine.info

BINE information service
Kaiserstraße 185-197
53113 Bonn
www.bine.info