

Efficient Particulate Filter Cuts Truck and Car Emissions

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New filters from the Siemens company Emitec remove as much as 80 percent of particulates from the exhaust gases produced by trucks. This represents a significant reduction of the pollutant emissions from this source. In addition to the filters, special catalytic converters ensure that the trucks meet exhaust-emissions limits. The system has been tested and optimized in cooperation with the truck manufacturer MAN. The latest engines from MAN already feature the combined filter-catalytic converter system. Similar retrofit systems are also available for passenger cars.

BMW has been using Emitec filters in series-produced models for some time now and is planning to fit all its diesel-engine vehicles with particulate filters from 2006 onward. Furthermore, the manufacturer is to market retrofit systems for diesel models already on the road.

Unlike all-ceramic filter systems, the Emitec filters are made of metal. They are maintenance-free and have no impact on fuel consumption. In addition, they are of an open design and do not become blocked, even after several 100,000 kilometers. The soot particles are ejected from the exhaust gas and collect in the minuscule pores of a fleece-like metal foil, where they are continuously combusted at temperatures of around 200 ° Celsius and upward. Studies have shown that unlike conventional particulate filters, the new system also removes the very finest particles with a diameter of between 20 and 100 nanometers (a millionth of a millimeter), which penetrate deeply into the lungs and therefore pose a particular health hazard. At the same time, an oxidizing catalytic

converter changes nitrogen oxides from the exhaust emissions into nitrogen dioxide. The latter provides the oxygen required to combust the soot particles and is completely reduced to nitrogen oxide in the process. A greater reduction of the emission of nitrogen oxides will require the use of additional technology such as more effective engine-management or fuel-injection systems.

Emitec is a joint venture between the automotive electronics specialist Siemens VDO and GKN, a British supplier to the automotive and aerospace industries. Headquartered in Lohmar, near Bonn, the company is one of the world's largest manufacturers of metal substrates for catalytic converters. New diesel cars today emit only seven percent of the particulate emissions that were produced in 1990 by the diesel models of the day. What's more, the particulates produced by diesel cars now account for less than seven percent of the total emissions of particulate matter.

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