press release

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Pierburg GmbH

Optimized emission control with new exhaust gas recirculating valve for medium and heavy duty applications

Given the worldwide tighter emission standards ahead of us, commercial vehicle diesel engines, off- or on-road, will require further emission-reduction measures. Alongside such aftertreatment recipes as SCR or particulate filters, one indispensable potential for cutting back on raw engine emissions consists in external exhaust-gas recirculation (EGR), a technique also used on car engines. Pierburg GmbH in Neuss has developed an electronically controlled exhaust gas recirculation valve for heavy-duty operation which will shortly go into series production for several customers.

Commercial vehicle diesel engines will in future require highly responsive, continuous and precise measurement of the recirculated exhaust gases. An analysis of existing systems has shown that this can only be accomplished by electrically actuated valves. These allow simpler operation by dispensing with auxiliary energy sources as air pressure and thus allow applications in a wide variety of vehicle segments, both off- and on-road. These valves can also communicate via the CAN bus with other control units.

The EGR valve has been developed and engineered to address the special needs of this segment, in particular operation at the hot end upstream of the EGR cooler. This location was selected to avoid unnecessary dead volumes. It also offers the advantage of less pressure pulses on the cooler.

Ingenious overall system

The valve comprises a temperature-resistant, cooled actuator and a valve body connected to the actuator by a rod. This is an arrangement that prevents heat transfer and is essential in view of the high exhaust-gas temperatures. The parallel arrangement of the valve and actuator axis has advantages for the engine and vehicle in terms of package footprint.

Because of the challenging thermal, mechanical and chemical environment, heat- and corrosion-resistant steels are required in the manufacture of these valves. Other basic criteria to be satisfied include low flow losses and good adjustability, especially in case of small flow rates.

Modules for a variety of applications

The actuators and valve bodies are basic components which can be combined in modules. Available are both single- and dual-flow EGR valves with flap diameters of between 32 and 100 mm to cover engine displacements of between 4 and 16 l and outputs between 100 and 600 kW.

Actuator cooling is an option and flexibly designed also for general engine actuating functions.

Photo no. 8
EGR valve in double-flow design for commercial vehicle engines.

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