

Urea Dosing Sensor For Heavy-Duty Trucks



Kavlico has introduced a new sensor for urea air dosing on diesel engines with SCR aftertreatment systems. Initially targeted at the on-highway market, Kavlico said the sensor could be used in any engine application employing urea dosing.

Kavlico, Moorpark, Calif., has developed a new sensor for selective catalytic reduction (SCR) systems that will be used in most 2010 heavy-duty trucks in North America. The urea dosing sensor is designed to provide feedback to the system controller and assist in optimizing the reduction of NO_x emissions by monitoring the SCR system and helping to determine the appropriate amount of aqueous urea reducing agent to be delivered to the catalytic converter module.

The aqueous urea reductant, commonly marketed in Europe as AdBlue, is a solution of 32.5% high purity urea and demineralized water. The solution is formulated to be clean, nontoxic and safe to handle.

Currently used throughout Europe, Japan, Australia, Hong Kong, Taiwan, Korea, New Zealand and Singapore, on-highway SCR systems will become widespread in North America beginning in 2010, when all but one

major U.S. heavy-duty truck manufacturer will employ it to meet the EPA NO_x reduction targets. SCR-equipped trucks and buses will incorporate urea tanks, and it is estimated that dosing will be done at a rate roughly 3 to 5% of diesel fuel consumption. Most truck manufacturers are aiming for low dosing rates to ensure extended refill periods and minimize the weight of the urea tank that will be integrated into the truck chassis.

Gary M. Beason, director, sales and application engineering, Custom Sensors & Technologies, said the sensor can be used with any urea solution, and the concentration of the solution has no effect on the performance since it uses a backside ceramic diaphragm that is impervious to virtually any media. Kavlico is an operation of Custom Sensors & Technologies and is a business unit of Schneider Electric.

Beason said the urea-dosing pressure sensor utilizes Kavlico's patent-

ed ceramic capacitive sense element for pressure ranges up to 363 psi and a thin film (TiON) sense element for pressure ranges above 363 psi. The sensor is packaged in an all stainless-steel housing. Requiring a 5 Vdc power supply, the sensor provides a 0.5 to 4.5 Vdc linear amplified analog output proportional to pressure.

Typically, the sensor is mounted in the feed line out of the holding tank (right after the pump) and before the injection point into the exhaust stream, Beason said. The sensor is port mounted rather than threaded, so it requires a compatible configuration to mount to. He added that while some equipment manufacturers may direct source the sensor, it is also supplied to the tank/system manufacturer or the supplier of the pump.

And while this initial launch is targeted at truck diesel engines, especially given the 2010 on-highway emissions regulations, Beason said the same product could be used for any heavy-duty or off-highway application.

Other significant features of the sensor include the ability to operate in high-vibration environments, the capability to withstand high overpressures and to operate over a temperature range of -40° to 266°F, Kavlico said. **dp**

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