TECHNICAL
innovations

NOx reduction solutions from Solectron

For the last few years, heavy-duty industry's OEMs, engine manufacturers, and emissions-control suppliers have been feverishly developing technologies that satisfy new EPA rules. At the SAE 2003 World Congress, Kavlico, a Solectron company, said it has developed new sensors to help meet EPA regulations for heavy-duty diesel engines, especially those requiring lower NOx emissions.

Its new exhaust-pressure sensor helps meet EPA standards as well as improve system efficiency, says the company. The sensor sends an electronic signal that opens and closes the exhaust gas recirculation (EGR) valve. The high accuracy (1%) device monitors and controls pressure by way of the company's ceramic capacitive sensing technology. It uses a combination of unique internal features engineered to withstand high temperatures and pressure pulses, and it tolerates the high-soot and acid-rich media found in the engine exhaust.

"We enhanced our proven ceramic capacitive technology by listening to our customers' requirements and focusing on the physics of this unique application," said Gary Beason, Kavlico Director of Sales and Marketing.

The stainless steel sensor is available in a pressure range of 6.5-90 psi (45-620 kPa) and operates on 5-V dc power while providing a 0.5-4.5 V dc linear output. Standard features include over-voltage, reverse-polarity, short-circuit, and EMI/RFI protection.

Kavlico also introduced its Model P321 OEM diesel engine EGR differential pressure sensor. The dPFE sensor is available in pressure ranges of 0-5 through 0-10 psi (0-34 through 0-69 kPa) and is engineered to withstand up to 100-psi (690-kPa) common line pressures in a high-vibration, high-soot, and acid-rich environment while continuously providing very precise output voltage.

According to Beason, the differential pressure sensor uses Kavlico sensing technology that has been enhanced to support the demanding environment that exists in diesel exhaust gas applications.

The sensor measures pressure drops across an orifice, and then provides the control system with a proportional measurement that is used to regulate EGR flow rate, which then reduces NOx formation. The sensor can be configured with flush-mount pressure connections or supplied with a mounting bracket with threaded pressure connections. Operating on a 5-V dc power supply, the sensor provides a 0.5-4.5 V dc linear output. Standard features include over-voltage, reverse-polarity, short-circuit, and EMI/RFI protection.

At the SAE 2003 World Congress, Solectron introduced exhaust-pressure (top) and EGR differential pressure sensors to help heavy truck and engine makers meet new EPA NOx mandates.

The P321's rugged polyetherimide molded housing as well as ceramic- and Teflon-coated stainless steel diaphragms withstand exposure to a variety of caustic media. Key to the sensor's high performance is Kavlico's ceramic, variable-capacitance sensing element with programmable ASIC on hybrid circuit for reliable signal conditioning.

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