

Sensata Technologies' industry-leading Differential Pressure sensors enable diesel automakers to meet the world's toughest emissions standards

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ALMELO, Netherlands, March 7, 2013 /PRNewswire/ -- Sensata Technologies, Inc. (NYSE: ST), a leading manufacturer of sensors and controls, has developed a generation-2 Differential Pressure Sensor (DPS) that diesel-automotive customers value for its industry-leading accuracy and durability in controlling emissions.

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"Ten years ago, there were hardly any sensors for exhaust systems," observes Tim Tiek, Sensata's global marketing manager for Combustion & Exhaust. "Today, exhaust systems are so complex that automotive OEMs must continually add sensors to operate them properly."

DPS measures the pressure difference between the upstream and downstream sides of exhaust particle-filter systems that capture harmful particulate emissions from diesel passenger and light-commercial vehicles. When the pressure difference between the two sides of the exhaust filter reaches a certain threshold, DPS pressure readings trigger filter regeneration: an increase in exhaust temperature that destroys captured particles and prevents filter clogging.

Unsurpassed product

"Several variables make Sensata's DPS unique," declares Arnout van den Bos, Sensata's micro-electrical-mechanical systems (MEMS) engineering manager in Europe. "Competitors' products, for example, use two sense elements to determine pressure difference. Sensata measures differential pressure using only one sense element, which enables very high accuracy."

Tiek adds that based on customer feedback, Sensata's sensor beats competitors' on robustness as well as accuracy.

Ginamaria Espinoza-Garcia, the company's MEMS design engineering manager in the United States, says several elements of the product's design make it particularly robust and accurate. "Sensata's sensor performs with greater than 97% accuracy at lower temperatures to greater than 99% accuracy at higher temperatures for superior emissions control even at pressures below 1Bar." She says DPS operates at temperatures ranging from -40 degrees C to 140 degrees C [-40 degrees F to 284 degrees F].

In addition, DPS's signal enables a vehicle's electronic control unit to verify that the particle filter is operating correctly, which is legally required. This and the Sensata product's other capabilities enable automakers to comply with the world's toughest emissions standards.

Key challenge

The key difficulty for DPS makers is ensuring that acidic diesel exhaust doesn't damage the sensor and cause inaccurate pressure readings. Inaccurate readings can trigger filter regeneration at the wrong time, seriously damaging exhaust systems.

Partnering with leading OEMs, Sensata conducted research and development that pinpointed the materials, processes and designs that best withstand acidic exhaust. Sensata combined this knowledge with its leading-edge MEMS and signal-conditioning that features a Single Edge Nibble Transmission (SENT) digital output to produce a unique generation-2 DPS (patent-pending) viewed as the industry benchmark for accuracy and durability.

Major advantages of MEMS, SENT

"Sensata's MEMS technology and SENT digital signal deliver high accuracy throughout the sensor's life," Tiek resumes. "SENT technology also equips Sensata's DPS to transmit temperature, transfer-curve, and other data simultaneously without extra connectors and wires. Therefore, customers need just one DPS to measure what they want to monitor."

DPS is one example of several robust sensor families that Sensata offers for exhaust and after-treatment systems, he continues. Another is Sensata's High Common Mode (HCM) sensor for emission control in the heavy vehicle off-road (HVOR) market.

HCM utilizes the same superior DPS technologies to provide low-pressure accuracy in high-pressure environments.

"Sensata serves customers in difficult-application environments that few companies want to tackle," Tiek emphasizes. "We continue to leverage our extensive knowledge of exhaust environments and superior technologies to further enhance our DPS, HCM, High Temperature Sensor, and other products designed for harsh operating environments."

About Sensata Technologies

Sensata Technologies Holding N.V. is one of the world's leading suppliers of sensing, electrical protection, control and power management solutions with operations and business centers in eleven countries. Sensata's products improve safety, efficiency and comfort for millions of people every day in automotive, appliance, aircraft, industrial, military, heavy vehicle, heating, air-conditioning and ventilation, data, telecommunications, recreational vehicle and marine applications. For more information, please visit Sensata's website at www.sensata.com.

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