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DENSO's New Diesel Engine Control System Improves Fuel Efficiency By Up to 2 percent

- The World's First Autonomous Fuel Injection Control System

Significantly Reduces Exhaust Emissions -

With their ability to deliver higher torque at lower speeds and offer better fuel economy, diesel-powered engines are the most efficient of the internal combustion engines. We all know diesels are a mainstay in the European marketplace - and their popularity is increasing in other markets like China and India.

To meet the increasingly stringent and worldwide emissions regulations, and in an effort to further increase the efficiency of the diesel engine, DENSO has developed a new, more simplified engine control system. Called intelligent-Accuracy Refinement Technology (i-ART), it features the world's first closed-loop control system -- Meaning, the system autonomously adjusts the fuel injection quantity and timing to their optimal targets based on feedback from injectors. To do this, each injector is equipped with a pressure sensor that communicates its fuel pressure to the engine ECU.

Reduces Emissions and Improves Fuel Efficiency

i-ART significantly reduces exhaust emissions and increases fuel efficiency, compared with the conventional open-looped technology that does not have feedback function from the injectors. Also, each injector can adjust injections to meet target performance even if the injectors' deteriorate over time or if there are differences in performances with each injector. In company tests, the i-ART system installed in a 2-liter diesel engine has complied with the upcoming Euro 6 Standards scheduled to take effect in 2015 and also increased fuel efficiency by about 2 percent compared to the company's previous engine control systems.

Also, since the i-ART system increases precision of fuel injection quantity and timing, and has more flexibility in controlling injections, it significantly reduces the engine calibration efforts.

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DENSO was the first in the world to commercialize a common rail system in 1995 and now produces systems that can operate at injection pressures of up to 2,000 bar. The company is now working to increase the common rail injection pressure to 2,500-3,000 bar, which will atomize fuel more finely for passenger and commercial vehicles, as well as farming and construction machines. These efforts will make diesel engines more environmentally friendly.

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