Cummins **doubles up**

With tougher emissions targets ahead for diesel engines, Cummins used IAA to introduce an updated turbocharger and new two-stage aftertreatment system, reports Kevin Swallow

Driveline and component manufacturer Cummins has unveiled new technology to reduce diesel emissions.

Cummins' components division revealed its roadmap towards 2024 and beyond with a combined system that uses a new close-coupled selective catalytic reduction (SCR) component, a new AdBlue dosing injector and its updated Holset Fixed Geometry turbocharger with an integrated rotary turbine control. Speaking at the Cummins site in Huddersfield, West Yorkshire, Jonathan Wood, executive director for research and engineering in its emissions solutions department, explained that it is putting a second SCR system next to the turbocharger, as well as ahead of the diesel particulate filter and the original SCR unit.

He explains: "Temperature drops from the engine to the turbine, but the more heat that is converted from the engine, the more efficient the turbine, and the aftertreatment uses heat to reduce emissions. But below a certain temperature, the aftertreatment system efficiency drops significantly, and heat is lost downpipe as it heads to the original SCR unit on the chassis. Putting a second close-coupled SCR unit with an AdBlue dosing injector utilises more of the heat, as it's closer to the engine and better reduces NOx, PM (particulate matter) and CO_2."

The integrated RTC (rotary turbine control) enables exhaust gases to bypass the turbine stage and enter the close-coupled SCR unit after the gas has been injected with AdBlue (by the new Cummins UL4 injector). This immediate conversion enables exhaust gases to be 70°C hotter than when they reach the SCR catalyst in traditional aftertreatment systems.

However, this arrangement does require a two-stage aftertreatment system with two AdBlue dosing units. Cummins feels this is necessary in the battle to meet future emission standards. It's likely the European Union will introduce two more Euro VI incremental emission standards (currently Euro VI-C); D is expected next year and E in 2021. Cummins hinted that Euro VII will arrive in 2024.

Wood added: "This new technology will work on small and heavy-duty engines, with the amount of AdBlue injected depending on the demands of the engine."

The technology is likely to be launched around 2024. For development, Cummins' components division will work with its own driveline division and with third party groups using a technology firewall to protect it from driveline competitors.

In tackling issues like low vehicle speed and stop-start deliveries, where there is not much heat to work with, such a system could be revolutionary. TE

NEW TURBO, TOO

Brett Fathauer, executive director of research and engineering of Cummins' turbo technologies division, introduced the seventh-generation Holset VGT (variable-geometry turbo) in the product's 20th anniversary year. "This will save the customer fuel and achieve greater turbo efficiency, compared to its predecessor. It has improvements to the turbine stage efficiency through advancements made to its patented nozzle and shroud design," he claimed.

In Hanover, Cummins also lifted the lid on current research and development investment focusing on pulse optimisation, air-handling valves, oil seal improvements and electrified turbochargers.