

# PRESS RELEASE



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**Ricardo plc**  
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## Ricardo shares insights on high-efficiency natural gas engines for Euro VI heavy trucks

**At this week's 12th International MTZ Conference on heavy-duty on & off-highway engines, hosted in Augsburg, Germany, Ricardo presented some of the latest thinking on the use of lean-burn natural gas engines in heavy-duty truck applications capable of achieving Euro VI emissions and beyond**

Long haul heavy-duty trucks are an essential element of the transportation mix of modern, industrial economy. They are, however, inherently less amenable to the type of electrification and hybridization strategies that are already contributing to reduced carbon emissions and potential long-term sustainability for the light vehicle sector. The European Heavy-Duty Gas Engines integrated into Vehicles (HDGAS) project – in which Ricardo is a participating partner – aims to deliver improved fuel efficiency and reduced greenhouse gas emissions compared to current diesel-powered truck engines, while also meeting current Euro VI emissions standards.

In the paper to be presented earlier this week, Ricardo described some of the simulation and development work carried out as part of the HDGAS project, to develop the specification of a lean operating natural gas heavy-duty engine and aftertreatment system, meeting Euro VI emissions requirements, while also delivering 13 percent CO<sub>2</sub> benefit over an equivalent state-of-the-art diesel alternative. This work applied a sub-set of Ricardo's intensive CAE driven engineering tool set, the Integrated Model Based Development (IMBD) environment, together with software such as WAVE-RT, allowing faster than real-time evaluation. This enabled system optimization to be carried out over a large matrix of input conditions.



The appropriate combustion characteristics for lean operation were achieved through the development of a unique combustion system incorporating a tumble port architecture and direct gas injection, and the careful management of the air system from an optimised turbocharger, variable valve timing with early intake valve closing and selected use of EGR.

“Natural gas provides a compelling alternative to diesel for future low emissions, high fuel-efficiency – and hence low CO<sub>2</sub> – heavy duty road transport applications,” commented Dr Andrew Noble, head of heavy duty engines in the Ricardo commercial vehicle, off highway, industrial & defence market sector team. “Through our work as a partner on the HDGAS project, Ricardo is pleased to be able to address some of the technical challenges to the adoption of natural gas power in this market sector. In the paper that we presented at the MTZ Conference on heavy-duty on & off-highway engines, we demonstrated an approach that can deliver significant increases in efficiency in a combustion system capable of compliance with the requirements of Euro VI and beyond. We look forward to continuing this research with our partners on HDGAS to help bring this environmentally attractive technology forward towards commercial application.”

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## NOTES TO EDITORS:

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