

# PRESS RELEASE



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## Ricardo to share insights on latest engine and driveline technology at JSAE show

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**The challenges of selecting and optimizing the architecture of next generation automatic transmissions (ATs) with high numbers of ratios, developing the highly fuel efficient Magma gasoline engine concept, and achieving acceptable urban diesel emissions under forthcoming real driving emissions (RDE) regulations – are amongst the subjects of papers to be presented by Ricardo at the JSAE’s annual congress in Yokohama, Japan**

The paper *New Automatic Transmission Synthesis process - identifying optimum conventional and hybrid planetary automatic transmission architectures* sets out a new AT synthesis process that uses algebraically-based software tools to rapidly identify the most suitable gear-train layout option for a defined set of attributes. This can be a significant challenge for ATs with high numbers of ratios – for example, a 10-speed planetary system may have over 300 million possible layout options. Vehicle fuel economy can be improved by up to 10 percent over lower number of speed variants, whilst ensuring improved shift response times and improved vehicle performance. The Ricardo process described in the paper can also be applied to hybrid ATs.

Focusing on the highly topical issue of urban diesel emissions – especially for products targeted at the European market – the paper *The Challenge for Diesel Aftertreatment in the Urban Environment* describes Ricardo research into the definition of processes for the development of future diesels under the new European RDE regulations. For future diesel cars, advanced NOx aftertreatment is expected to become the norm, with a particular focus on the urban environment where thermal management is increasingly important. In the paper, Ricardo outlines the opportunities to maximize aftertreatment performance through powertrain system architecture and technology selection.



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The Ricardo Magma engine concept is described in the paper *Development of the Magma Combustion System – A High Compression Ratio Miller Cycle Engine*. This concept comprises a high compression ratio, central injector combustion system employed in a downsized direct-injection gasoline engine. An advanced boosting system and Miller cycle intake-valve closing strategies are used to control combustion knock while maintaining specific performance. The paper focuses on the development of the combustion system using a single-cylinder engine, including valve event, boosting and injection strategies. The research described also demonstrates the significant fuel consumption benefits that are achievable by the Magma engine concept under both part-load and full-load operating conditions.

A further paper will be presented by Ricardo on the use of the Ricardo VECTIS CFD package to simulate engine combustion using detailed chemistry models for both diesel and gasoline engine applications.

“The automotive industry is facing significant challenges both in terms of developing increasingly refined and high quality products that customers want, while also delivering the environmental performance required by both existing and forthcoming fuel economy and emissions regulations,” commented Ian Penny, managing director – engines business, Ricardo. “This is reflected in the papers that Ricardo will present and the exhibits that we will be displaying at the JSAE annual congress – Japan’s premier automotive engineering event. We look forward to discussing these and other topical technology based subjects with our colleagues from the Japanese automotive industry at the JSAE show.”

*Ricardo will be exhibiting at the JSAE annual congress, Yokohama, Japan, May 25-27, booth number 314.*

Ends



## NOTES TO EDITORS:

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