

Ricardo plc

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PRESS RELEASE

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Digital methods promise reduced hybrid and EV development time, cost, and risk

As automakers seek to use digital engineering to speed-up development and improve real-world product quality and efficiency in electric and hybrid vehicles, Ricardo has been awarded funding from the Office for Low Emission Vehicles (OLEV) – delivered through Innovate UK – to develop ‘digital twin’ based design and optimization solutions for electrified powertrains

Digitalisation is revolutionising the complete product lifecycle: from development and production to testing, in-service maintenance and recycling. A digital twin is a representation of any physical product that can be used for monitoring, simulating and optimizing design and assessing operational performance. Digital twin technology will bring a significant reduction in electric powertrain development time, cost and risk: through up-front design analysis, optimization and testing in a virtual environment, and thus reducing the need for multiple prototypes.

The key objective of Ricardo’s project which will run for the next six months, is to assess the impact of digital twin techniques on product development. A secondary objective is to evaluate the application of digital twin technology to in-service product maintenance. Ricardo’s intention is to apply its expertise in powertrain reduced order modelling for

real-time applications and propose innovative business models for virtual product maintenance solutions. For the project, Ricardo has received £113,000 in funding from the Office for Low Emission Vehicles (OLEV) – delivered through Innovate UK.

In this project, the first focus will be to define digital twin requirements for each of the key sub-systems within an electrified powertrain. The second focus will be developing digital twins for each sub-system which meets these requirements. The third point of focus is the integration of each sub-system, to create an electrified powertrain digital twin. This system level digital twin will be used, as part of the virtual product development process, in the design and optimisation of the electrified powertrain.

The expectation is that the project will deliver three innovations, key building blocks in the digitalisation of electrified powertrain development and in-service maintenance, which will enable Ricardo to deliver clean and efficient propulsion systems with significantly reduced timescales, saving tens of millions of pounds per product. The first of these is the definition of a digital twin for electrified powertrain sub-systems, including model hierarchy, data exchange, historical data management and standardised interfaces. Secondly, simplified models using automatic model reduction, that allow faster interactions when results are required at small time scales. Lastly, the use of digital twins as part of a virtual product development process.

Ricardo's head of digital engineering, James Mullineux, said: "We are very pleased to have received this award from OLEV through Innovate UK. Ricardo develops and delivers innovative sustainable, efficient and secure energy, environmental and mobility solutions and products. To realise this, we create products and services which are enabled by digitalisation and supported by applied innovation. Research and development are at the heart of everything we do at Ricardo. Taking a very focused approach to R&D means that, as with this project, we can leverage digital to find transformative solutions for vehicle manufacturers which add real value in terms of improved efficiency and quality, and offer very significant reductions in cost, time and risk."

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NOTES TO EDITORS:

Ricardo plc is a global, world-class, multi-industry consultancy for engineering, technology, project innovation and strategy. Our people are committed to providing outstanding value through quality engineering solutions focused on high efficiency, low emission, class-leading product innovation and robust strategic implementation. With a century of delivering excellence and value through technology, our client list includes the world's major transportation original equipment manufacturers, supply chain organizations, energy companies, financial institutions and governments. Guided by our corporate values of respect, integrity, creativity & innovation and passion, we enable our customers to achieve sustainable growth and commercial success. Ricardo is listed in the FTSE4Good Index, which identifies global companies that demonstrate strong environmental, social and governance (ESG) practices. For more information, visit www.ricardo.com.

About the Office for Low Emission Vehicles (OLEV)

The Office for Low Emission Vehicles (OLEV) is a team working across government to support the market for ultra-low and zero emission vehicles. OLEV is providing over £2.5bn to position the UK at the global forefront of electric vehicle development, manufacture and use. This will contribute to economic growth and will help reduce greenhouse gas emissions and air pollution on our roads.

OLEV is part of the Department for Transport and the Department for Business, Energy & Industrial Strategy.

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