PRESS RELEASE

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Details of advanced Ricardo Motorcycle cost-effective AMT innovation revealed

- The Ricardo Motorcycle AMT concept shows significant promise in improving comfort, fuel-efficiency and performance in a cost-effective package

- Details on the system were revealed today in public to the capacity audience of delegates at the Ricardo Motorcycle Conference hosted in Milan

- Provides comfort and convenience of automatic and semi-automatic operation with better-than-manual fuel efficiency

Ricardo has created and demonstrated an advanced and cost-effective motorcycle Automated Manual Transmission (AMT) concept that offers the comfort and convenience of automatic and semi-automatic operation with better-than-manual fuel efficiency. While manual transmissions predominate in almost all non-scooter two-wheeler categories, and automated alternatives can be expensive and bring efficiency penalties, the Ricardo concept avoids these drawbacks and is comparatively simple to integrate into an existing product range.

“I am pleased that we are able to announce the very promising results of our AMT research in public for the first time today at the Ricardo Motorcycle Conference,” commented Ricardo Motorcycle head of sales Paul Etheridge. “The Ricardo Motorcycle AMT is a highly attractive concept that offers the advantages of a high quality automatic transmission solution, but at a fraction of the cost of competitor systems. We look forward to working with customers on commercial applications of the Ricardo Motorcycle AMT across a wide range of applications from city bikes to luxury, high capacity tourers.”
Advantages of the Ricardo Motorcycle AMT

Other than the ubiquitous CVTs of scooters, and the specialist hydrostatic and Dual Clutch Transmissions (DCTs) used on some premium or specialist products, motorcycles around the world are almost universally fitted with manual transmissions. These offer a comparatively low cost solution, but one that is unable to deliver the convenience or comfort of automatic operation. In addition to issues of packaging, weight and cost, almost all automatic transmission technologies available for use on two-wheels come with a further significant drawback: efficiency. The simple fact is that from hydrostatics, to DCTs, CVTs and conventional automotive-style planetary automatic transmissions, almost no automatic transmission can match the manual for fuel efficiency.

However, as Ricardo’s AMT demonstrator bike – based on a BMW K1300S – has shown in rigorous testing, an advanced AMT implementation can be offered as an option to an existing manual product using exactly the same clutch and gearbox, manufactured on the same production line. Not only can this enable an option that provides riders with the comfort and convenience of an automatic, but in automatic mode it can actually exceed the efficiency of the manual.

Technical configuration

The Ricardo AMT demonstrator concept is based on the use of an unchanged manual gearbox from the base model, making it an ideal candidate for an add-on solution enabling manufacturers to offer a high quality automatic without significant manufacturing, supply chain or parts inventory costs. Clutch and gear actuation – in this case using the original clutch, slave cylinder and shift system – can be via electric motors and/or hydraulic actuation. A Ricardo AMT transmission control unit (TCU) integrates with the original product’s ECU to provide complete control of pre-programmed ‘comfort’ and ‘sports’ modes, and allow a semi-automatic mode via push buttons on the handlebars for up and down shifts. In each case, automatic pull-away and ‘creep’ functions are controlled by the TCU and there is no clutch lever. Shift interrupt is possible in all automatic and semi-automatic modes but as with the manual mode, for safety and to protect the engine/transmission internals, this is only available within the permitted engine speed range for the selected ratio.
“We are particularly excited at the results we have obtained from our motorcycle AMT research,” commented Stefano Di Palma, AMT lead engineer for Ricardo Motorcycle. “We’ve demonstrated how an AMT solution can be provided as an adaptation of an existing manual transmission product comparatively easily and maximizing component commonality. As such, it provides a cost-effective option that can be offered by manufacturers, providing customers with a dynamic driving solution with the comfort of an automatic but with no loss of performance or efficiency. In addition, the shift calibration can be developed to suit the particular requirements of bikes in very different sectors, for example a fast shift for a sports bike or a more relaxed gear change for a cruiser bike.”

For motorcycle manufacturers, the Ricardo AMT offers the advantages in platform strategy and modularity, with the ability to offer an automatic and semi-automatic option at comparatively low cost in terms of development, parts count and inventory costs. For drivers, it provides the comfort of an automatic product which is not only more efficient than existing automatic technologies available for two-wheelers, but in fully automatic mode it can also be more efficient than even a manual transmission, without loss of the typical motorcycle riding style and fun.

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NOTES TO EDITORS:

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