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Cooper and Ricardo unveil state-of-the-art engines for world markets

The long and highly successful engineering collaboration between Ricardo and Cooper Corporation of India has been highlighted with the launch of the first of a completely new range of Cooper engines at the prestigious Delhi Auto Expo

The 2 cylinder vertical in-line engine family unveiled at the Delhi show is available in diesel, CNG and LPG versions ranging from 26 to 55 HP and is intended for both domestic Indian and export markets. Part of a complete range which will ultimately include in-line 4 and 6 cylinder variants of up to 280 HP, the new Cooper engines are intended to provide robust, durable, high fuel economy and low maintenance power for applications including automotive products as well as generator sets, pumps, construction equipment and industrial and off-highway vehicles. Moreover they are future-proofed in terms of meeting both the current automotive Bharat IV emissions regulations (Euro IV equivalent) as well as being capable of upgrade to meet even tougher future norms.

The new engine is the result of a very close collaboration between Cooper and Ricardo engineers, using the very latest in design processes and computer aided engineering (CAE) technology to deliver a truly world-class design. The new product incorporates the latest 1400bar common rail direct injection technology for its diesel variant or multipoint gas injection for CNG and LPG applications, using centrally mounted injectors for optimum combustion. Performance and emissions were optimised using Ricardo's market-leading WAVE engine performance and gas dynamics simulation software. The cylinder head incorporates double camshafts with roller finger followers for low friction, actuating four valves in each cylinder for excellent engine breathing. Extensive use of finite element analysis was made using both the Ricardo FEARCE product as well as other industry standard software, to produce a durable, thermally and mechanically efficient cylinder head design. The robust nature of the engine and its superior NVH signature are assisted by the use of a structural bed plate configuration, with the crankshaft and crankcase subjected to stress and fatigue analysis using the Ricardo ENGDYN coupled crankshaft and cylinder block analysis product.



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Low cost of ownership was of paramount importance to the design team, and the new engine boasts excellent longevity and ease of service. This longevity is evidenced by an impressive B10 life of 7000 hours (the service life for a statistical expectation of 10 per cent attrition) or 250,000 km in a vehicle application. With a highly competitive regular oil change interval of 500 hours, all service points are provided on one side of the engine and hydraulic lash adjusters help to avoid the need for periodic tappet adjustment. The new engine is also designed for straightforward long term maintenance, for example with the inclusion of wet cylinder liners for simple replacement.

Commenting on this highly successful collaboration with Ricardo, Cooper Corporation's chairman and managing director Farrokh Cooper said:

"A man either lives up to his father's expectations or makes up for his father's mistakes. I am doing the former with the strategic objective of leaping in the automotive value chain from a foundry and component manufacturer to an engine and vehicle manufacturer. For the engine project, the brief which was given to Ricardo was that the engines must meet the latest emission standards comparable to those currently applicable in advanced markets like Europe and USA; the objective was to achieve 'power without pollution'. Ricardo took this assignment and the joint effort of this fruitful collaboration has resulted in the present 2 cylinder engine family launched today. Together with the 4 and 6 cylinder engine families under development, these products will meet the needs of users ranging from small passenger cars to large commercial vehicles, reducing overall emissions while improving the conservation of fuel."

Paul McNamara, managing director of Ricardo UK Ltd, added:

"Ricardo is proud to have been able to continue our very long-standing relationship with Cooper Corporation to help create the first of what promises to be a truly world-class range of engines for both Indian and international markets. I am convinced that the new engine will provide Cooper's customers with an excellent choice for a very wide range of applications, and wish the company tremendous success with this product. Ricardo is honoured to have been selected by Cooper to help turn its future vision into reality."

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NOTES TO EDITORS:

Ricardo plc: With technical centres and offices in the UK, USA, Germany, the Czech Republic, France, Italy, Russia, China, Japan, India and Korea, Ricardo is a leading independent technology provider and strategic consultant to the world's transportation sector and clean energy industries. The company's engineering expertise ranges from vehicle systems integration, controls, electronics and software development, to the latest driveline and transmission systems and gasoline, diesel, hybrid and fuel cell powertrain technologies, as well as wind energy and tidal power systems. Ricardo is committed to excellence and industry leadership in people, technology and knowledge; approximately 70 per cent of its employees are highly qualified multi-disciplined professional engineers and technicians. A public company, Ricardo plc posted sales of £178.8 million in financial year 2009 and is a constituent of the FTSE techMark 100 index – a group of innovative technology companies listed on the London Stock Exchange. For more information, visit www.ricardo.com.

Cooper Corporation is a market leader in centrifugal castings and has consistently delivered high quality castings for over 75 years. The Cooper commitment to quality and service is its driving force since inception and something which has enabled the company to scale new heights. The Cooper Group comprises of three companies, spread across a total built-up area of 6,939.97 square meters. Cooper employs over 1600 people comprising engineers, quality control personnel, workmen and administrative staff recruited from the leading educational and technical institutions following a rigorous induction process that strikes a judicious blend of academic expertise and professional exposure.

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