

Development of New Generation 3.3-Liter Clean Diesel Engine (Third Report)

- Technology of inline six-cylinder engine structural parts that achieved lightweight, low fuel consumption, low vibration and high reliability -

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Considering the transition to vehicle electrification and carbon-neutral liquid fuel as a future option, the authors have been pursuing the ideal state of the internal combustion engine and aiming to offer multi-solutions at any era with driving pleasure and excellent environmental performance. In the recent development, they aimed to achieve powerful torque, world-level fuel consumption and clean emissions at the same time by simultaneously realizing an increase of engine displacement and evolution of combustion. A new 3.3-liter I6 clean diesel engine was developed through the effort.



Fig. 1 Engine External View

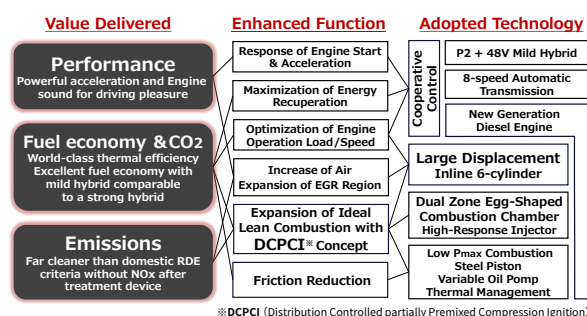


Fig. 2 Evolution Roadmap to ideal ICE

The newly developed diesel engine uses Pmax-lowering combustion technology and structural parts whose functions have been evolved, optimized and integrated. These features have solved weight and friction loss issues associated with an increase in engine displacement. As a result, the new engine has achieved best-in-class lightness and friction loss even smaller than that in a former four-cylinder engine while maintaining low vibration, which is an advantage of a six-cylinder engine, and ensuring high reliability.

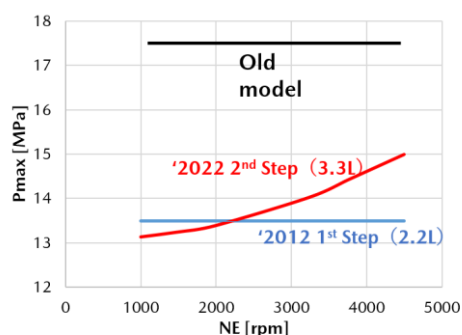


Fig. 3 Cylinder Pressure Limitation

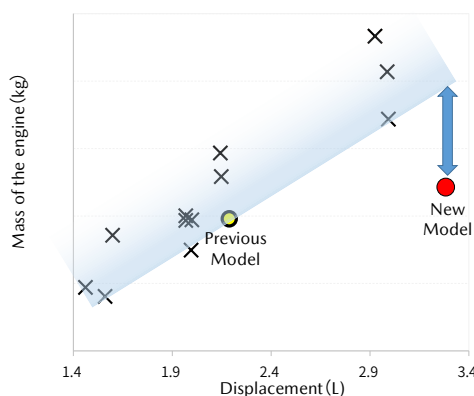


Fig. 4 Engine Mass

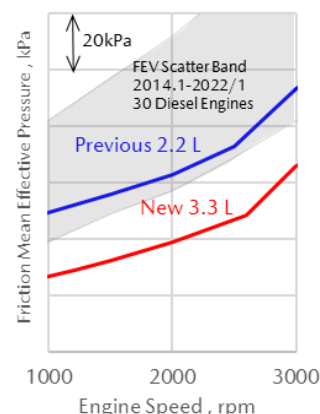


Fig. 5 Engine Friction