

Powertrains that combine the joy of driving with environmental performance

Mazda's aim is to make vehicles that harmonize the joy of driving and outstanding environmental performance. One engineer working in this field talks about his passion to achieve this goal.

If you searched the whole world over, I think you might not find another engineer as happy as I am." Asked for an honest description of his feelings about his current job, Fujiwara gives this unexpected answer.

In June 2008, Mazda announced its plan to improve the average fuel economy of all its vehicles sold worldwide by 30% compared with 2008 levels. To achieve this plan and reduce CO₂ emissions from all Mazda vehicles, the company is renewing its powertrains and moving forward with the development and introduction of a new type of platform. As the General Manager of the Powertrain Development Division, Fujiwara is in the vanguard of powertrain development in areas such as gasoline engines, diesel engines and transmissions. He describes this responsibility as "the greatest joy possible."

The lifecycle of an engine, from development to end of production, usually spans 10 years or more, and in some cases over 15 years. Of course, the engine will continue to undergo improvements during this time, but changing the basic design is not a simple matter. "Now, we're working on revising gasoline engines, diesel engines, and transmissions all at once. This sort of chance won't come again—you could search the entire world without finding another engineer in the automotive industry who's been given the opportunity to develop this many different types of powertrain at the same time," says Fujiwara, which is why he wears a broad smile while describing his job as "really enjoyable."

Fujiwara and his team are attempting to create vehicles that, he says – Zoom-Zoom feeling – look inviting to drive, are fun to drive, and make you want to drive them again. Such vehicles must be outstanding, combining exciting design with driving performance and environmental features such as superior fuel economy. "However good the driving performance may

be, people won't want to drive a car again if its fuel economy is poor."

Powertrains are needed that will make it possible to design such cars. In the seven-year period between 2001 and 2008, Mazda improved the average fuel economy of its vehicles sold on the domestic market by around 30%. During the next seven years, the company plans to improve the fuel economy by a further 30% or so through the evolution of base technologies. But achieving this target with Mazda's entire lineup, including vehicles sold overseas, will be a real challenge. If Mazda can achieve this, through the complete renewal of its powertrains, Mazda will be able to provide high-level environmental performance for every single customer. "If we're really going to think about the planet, every vehicle Mazda sells must be environmentally friendly," says Fujiwara.

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"Zoom-Zoom" for Fujiwara began when he was a student with an encounter with a red Familia (the fifth-generation, front-engine front-wheel-drive "Red XG (grade)"). "It was really light and snappy, completely unlike anything I'd ever driven before. It was like experiencing a whole new dimension in driving."

Fujiwara eventually decided to become an automobile developer, and he encountered a range of different cars that let him feel the joy of driving. At the





Kiyoshi Fujiwara, General Manager, Powertrain Development Division

same time, many exciting cars were disappearing from the market because they didn't meet updated exhaust gas regulations or crash safety standards.

If vehicles are damaging the planet or its inhabitants, this must be remedied before we try to make them more enjoyable to drive, or else people will not choose them. This is what is required of Mazda, and it is set out as the company's long-term vision for technology development in the Sustainable Zoom-Zoom.

As he works to renew Mazda's powertrains, Fujiwara sets all his engineers the goal of reducing by half each factor that imposes a negative effect on fuel economy. Even for a single engine, research and development is split into separate areas such as pistons, valves, and exhaust. Fujiwara explains, "All the individual engineers strive to do their utmost in their own area. Then, by bringing the whole team together, we can be sure to achieve the best result."

Fujiwara tells the engineers engaged in this development work that they should "enjoy hard work." He says that, "the targets may be hard, but that just makes it all the more enjoyable to rise to the challenge."

His motivation arises out of consideration for each engineer's own desire for Zoom-Zoom. He is passionate about continuing to produce cars that everyone will be excited about.

Prototype evaluation of the next-generation engines and transmissions has already begun. Mazda's engineers have succeeded in creating powertrains that combine unprecedented levels of fuel economy and power output, and the development process is accelerating in anticipation of their launch onto the market.

"I plan to go to Stuttgart in a few years," confides Fujiwara. Stuttgart, Germany, is the venue for the presentation of the International Engine of the Year Award. By voicing this secret goal, Fujiwara has expressed his confidence that he will be able to produce an excellent engine that will surprise the world.