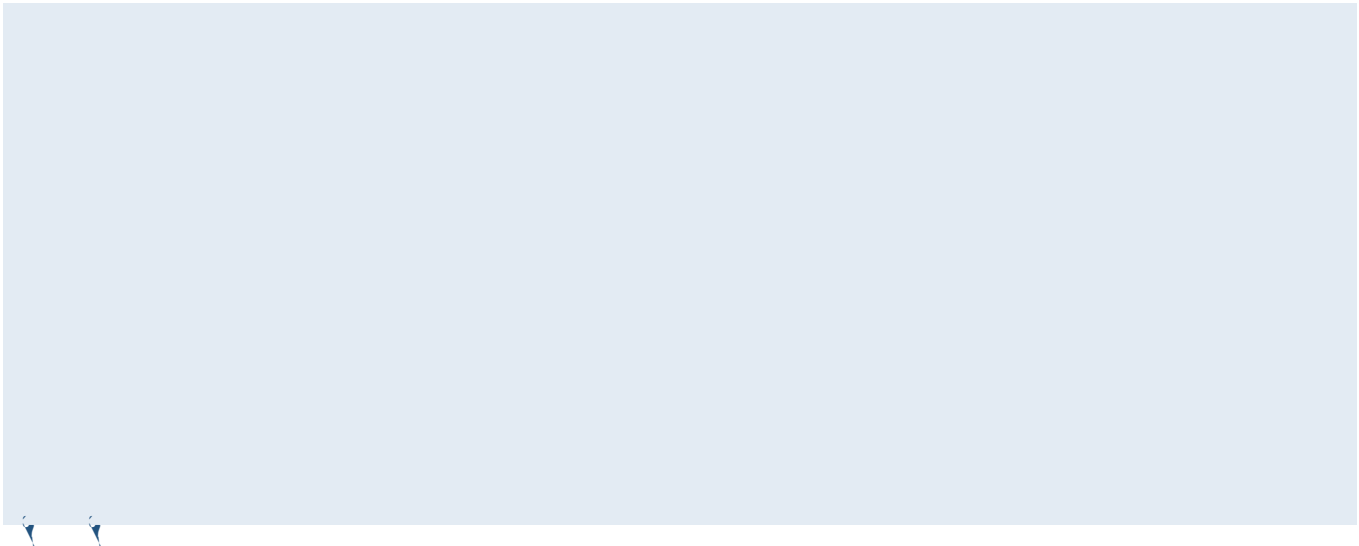
Balancing outstanding power feel with low environmental load



The motorcycle is a vehicle that tends to be used for recreation, so the pleasure of riding and fun of handling are important factors in determining the marketability of the product. However, social demands for lower environmental load get stricter every year, as seen in emission standards. Moreover, better fuel efficiency is required to control global warming, a problem that affects society all over the world.

In such a climate, we are working to develop technology for improving fuel efficiency and reducing harmful substances contained in exhaust gas without

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However, O_2 feedback control has the problem that the O_2 sensor installed at the upstream side of the catalyst tends to degrade as distance traveled adds up. This can prevent the system from operating near the stoichiometric ratio and cause an increase in harmful substances in exhaust gas (Fı . 6 ( )).

To address this, we install another O_2 sensor at the downstream side of the catalyst to check the condition of the exhaust gas after catalytic conversion. This sensor's signal is used to correct the degradation of the O_2 sensor installed at the upstream side of the catalyst. With this, we have developed dual O_2 feedback control, enabling operation at the stoichiometric ratio even after long travel distance (Fı . 7). Such control makes it possible to control the increase in harmful substances in exhaust gas after long travel distance (Fı . 6 ( )).

* Stoichiometric ratio: The air-fuel ratio at which the air and the fuel can react with each other with no shortage or surplus of either

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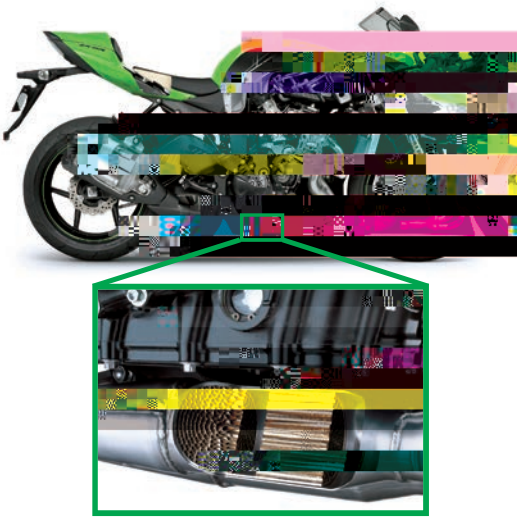
The development of technology to meet emission standards requires more than reducing harmful substances using engine control before catalytic treatment: it is also essential to improve the cleaning performance of the catalyst itself. As catalytic conversion efficiency degrades with distance traveled, there is a need to develop durable catalysts that can withstand long travel distance (Fı . 8).

However, if catalyst development were to involve evaluating durability performance by actually driving a vehicle tens of thousands of kilometers, it would require an extremely long development period. Therefore, a technology important to catalyst development is performance evaluation predicting in a short time exhaust gas emission after tens of thousands of kilometers traveled.



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use conditions (temperature and air-fuel ratio). Next, based