

A Study on the correlation between Urea-SCR system package and ability of De-NO_x

-Optimized Urea-SCR system package for improving the ability of De-NO_x

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Automobile exhaust gas generated by engine combustion is a major cause of environmental pollution, and all countries around the world have implemented emission gas environmental regulation policies, allowing automobiles to be sold only in compliance with the laws. For this reason, automobile manufacturers are trying to respond to regulations by installing emission reduction devices in their exhaust systems, but they feel it is difficult to improve the performance of the reduction devices due to the accelerating tightening of regulations.

The main environmental pollutants of diesel engines are nitrogen oxides (NO_x, nitrogen oxides), which are generated when nitrogen is oxidized during high-temperature and high-pressure combustion. Nitrogen oxide is strongly regulated as a major cause of environmental pollution, such as causing acid rain, killing plants, and irritating the eyes and respiratory tract. Urea-SCR (Selective Catalytic Reduction) is the system that automobile manufacturers around the world are actively researching to respond to the regulation of nitrogen oxides.

This paper is a study on the correlation between package and De-NO_x performance of Urea-SCR system. In the past, many studies have been conducted to improve the performance of De-NO_x by improving the performance of parts themselves, such as catalysts and mixers, which are components of the Urea-SCR system. On the other hand, this paper explains that by changing the Urea-SCR system package, the De-NO_x performance can be greatly improved. Through this study, we optimized the conventional package which lacks design freedom and cost competitiveness, and led the competitive design of Urea-SCR system.

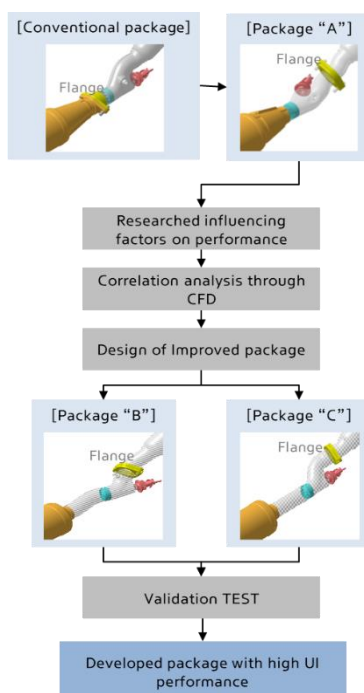
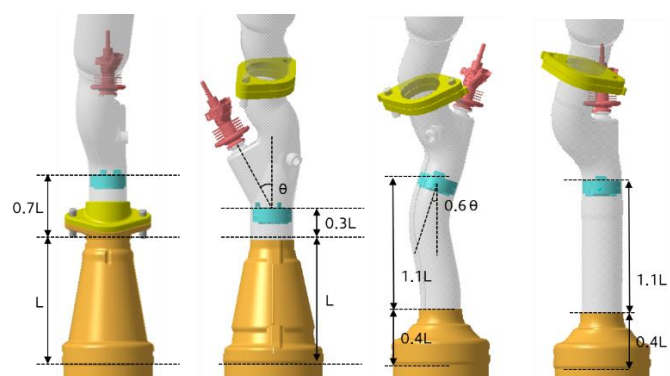


Fig.1 Research procedure



	Conventional package	Package A	Package B	Package C
parameter 1	0deg	θ	0deg	0deg
parameter 2	0.7L	0.3L	1.1L	1.1L
parameter 3	L	L	0.4L	0.4L
parameter 4	0deg	0deg	0.6θ	0deg
Cost competitiveness	△	○	○	○
NH ₃ Uniformity Index	△	△△	○	△

Fig.2 Comparison of studied packages