Automobile emission control through optimized exhaust system design with DoE method

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The concern of global air pollution is becoming more serious. As a result, severe legislation has been laid down to limit noxious emissions from automobiles. Automobile emission control methods could be roughly divided into the two categories of prevention and destruction. Preventive method has led to minimize amount of emissions. Destructive method means led to maximize efficiency of exhaust system. Among them, destructive method is quite flexible to adopt in automobile.

In this study, DoE method was adopted in exhaust system design. Exhaust system catalysts were consisted with CC1, CC2 and UCC position bricks. L-4 design factors were OSC amount and PGM amount of each position catalysts. Automobile emissions were measured at inlet position of CC1, outlet position of CC1, outlet position of CC2 and outlet position of UCC. Bag emissions were also measured along with modal data collection.