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Examination of Internally and Externally Coated Cr3C2 Exhaust Pipe of a Diesel Engine via Plasma Spray Method

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Abstract : In this experimental study; internal and external parts of an exhaust pipe were coated with a chromium carbide (Cr₃C₂) material having a thickness of 100 micron by using the plasma spray method. A diesel engine was used as the test engine. Thus, the results of continuing chemical reaction in coated and uncoated exhaust pipes were investigated. Internally and externally coated exhaust pipe was compared with the standard exhaust system. External heat transfer occurring as a result of coating the internal and external parts of the exhaust pipe was reduced and its effects on harmful exhaust emissions were investigated. As a result of the experiments; a remarkable improvement was determined in emission values as a result of delay in cooling of exhaust gases due to the coating.

Keywords : chrome carbide, diesel engine, exhaust emission, thermal barrier
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