Fuzzy controller of the air system of a diesel engine: Real-time simulation

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Abstract

In this paper a fuzzy controller is proposed to regulate the intake manifold pressure and the fresh mass airflow of diesel engines simultaneously. The instrumentation set usually embedded in a mass-produced passenger car has been considered. Unlike many multi-variable controllers, the proposed structure requires neither an internal model nor identification algorithms. In comparison to controllers embedded at present in standard engine control units (ECUs), it improves the trajectory tracking of desired outputs during simulation of EURO cycles. Because of its performance, the fuzzy controller has been implemented in an electronics control unit. Some real-time results are presented.

Keywords: Fuzzy control; Diesel engine; Real-time simulation