

Optimisation of Variable Length Intake Manifolds for a Gasoline Turbocharged Downsized Engine

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Abstract

Gasoline downsizing has become a key contributor to reducing fuel consumption in the short term with small capacity turbocharged engines replacing larger naturally aspirated engines. However in order to gain acceptance downsized engines need to achieve the “big engine” feel, with good low speed torque and transient response. Variable Length Intake Manifolds are an established method of improving an engines full load performance on naturally aspirated engines. This paper investigates this technology applied to a 1.4-litre turbocharged gasoline direct injection engine. It demonstrates improvements in low speed torque and transient response and the options available at higher engine speeds.