

ABSTRACT

Downsizing the engine and forced induction charging is a widely used technology to reduce the fuel consumption of spark ignited engines and diesel engines while retaining the maximum power output. However, a considerable loss in drivability must be expected due to the occurrence of the turbo lag. This lag of a turbocharger results from the additional inertia that the turbocharger rotor adds to the system. Supplying air by an external source, the boost air, to the intake manifold can be used to overcome the effect of the turbo lag at low engine speeds. The aims of this study are to show the effectiveness of compressed air anti-lag system on a turbocharged spark-ignited engine and to show that compressed air anti-lag system can be used to improve the engine performance of a gasoline engine. A literature review has been carried out on the projected scope to improve the performance. Guidelines for the dimensioning of the pressure tank, auxiliary air flow rate and a control strategy is presented. The consumption of pressurized air during the turbo lag compensation is discussed.

