

eSupercharging for Heavily Downsized Gasoline Engines

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ABSTRACT

The next generation of heavily downsized-gasoline engines will demand advanced charge-delivery systems. High-pressure charge-air is required across a broad engine speed range, and to meet drivability requirements, this high pressure charge-air needs to be available almost instantly. Gasoline engine downsizing is already established as a proven technology for reducing CO₂ emissions by up to 25 %.

Further benefits are possible through greater downsizing. However, there is a trade-off between the CO₂ reduction achieved and vehicle drivability, which currently limits the level of engine downsizing adopted. An objective of this project was to demonstrate a high specific power and torque output combination for a gasoline engine targeted for the road car market, whilst retaining an excellent drivability and fuel economy.