

# Explore our Technologies

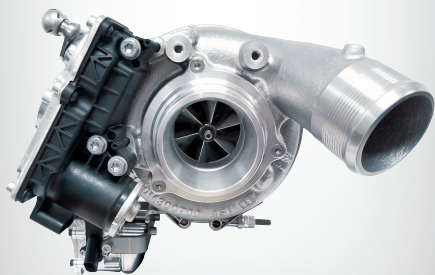
## eTurbo™

for Passenger Cars

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## CHALLENGES FOR PASSENGER CARS

- Better fuel economy
- Lower emissions
- Driver enjoyment and productivity



## Turbocharged Engine

### Challenges (Standard Setup)

- Turbo lag: low rpm engine torque, slow time-to-torque
- Larger engine or higher speed engine used to make up acceptable levels of torque and response
- Fuel economy suffers due to larger or higher speed engine
- Under certain conditions there's an excess of energy in the exhaust stream that goes under-utilized
- Excessive waste gating leads to high T4 which challenges aftertreatment design

## Turbocharged Engine

### Benefits with eTurbo™

- Single-machine solution for electrified boost assistance and recuperation
- Reduced turbo lag: better low rpm engine torque, faster time-to-torque
- Smaller engine or lower speed engine can be used and have exceptional levels of torque and response
- Fuel economy improves due to downsized or lower speed engine
- Wasted exhaust energy is converted to electrical energy
- Recuperation reduces T4 temperature for less costly after treatment construction

- Improve performance for new combustion concepts (lambda1 no scavenging) due to electrical assist over complete engine speed range
- Reduction of battery size due to eCharging effect (1 kw eCharging leads to 8 to 10 kW performance gain)

## eTurbo™

### How it works

- A turbocharger with a (single-shaft) motor attached, can serve as either a motor or a generator
- Electric motor can assist the turbine to provide supplemental boost air to the engine
- Electric motor (generator) can be driven by excess turbine energy from the exhaust flow
- Electrical function can be turned off to return it to normal turbocharger function
- Can help drive EGR on demand due to intentional back pressuring of the engine

### Product Features

- Full performance 48V architecture and HV\_2B and HV\_3 compliant high voltage architectures
- Integrated and semi-integrated power electronics options including using engine coolant

### Specifications

<b>Platform eTurbo™</b>	<ul style="list-style-type: none"> <li>■ 48V 3 kW → 17 kW</li> <li>■ 400/800V 6 kW → 34 kW peak</li> </ul>
<b>Versions available</b>	eB40, eB50, eB60 and eB80 samples with alternate motor length and voltage classes for each frame size

