

# 48V 10kW Electric Supercharger

For automotive applications

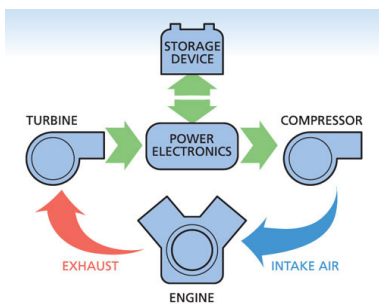


## Aeristech Ltd

Aeristech leads the world in breakthrough engine turbocharging technology. Aeristech has “game changing” proprietary patent technology using ultra high speed motors. The heart of the solution is our ability to control and use the world’s fastest and fastest accelerating permanent magnet motors to provide substantial power on demand, eliminating perceived turbo lag... even from rest.



Our Full Electric Turbocharger Technology (FETT) reflects the culmination of significant investment following intensive research & development by some of the world’s most capable electrical engineers and scientists. Aeristech has solved one of the auto industry’s key issues: how to reduce emissions, enable engine downsizing and improve driving performance whilst managing cost and weight.



## World’s fastest accelerating, most compact and efficient E-motor

Our leading and patented permanent magnet electric motor and motor controller technology is at the heart of our range of advanced engine boosting systems.

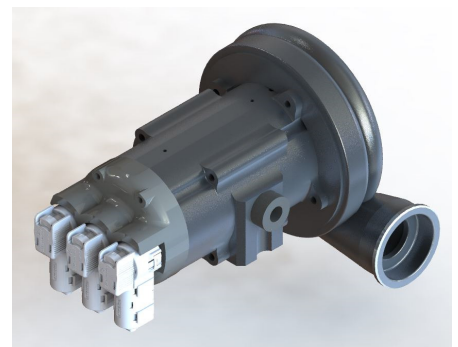
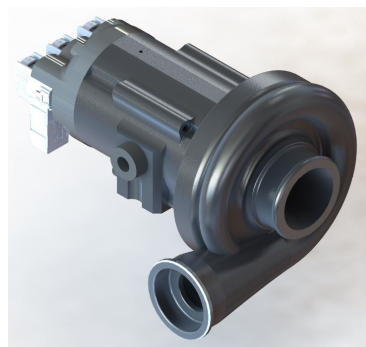
Aeristech’s motors and generators are unique in their energy density and transient response. This uniqueness comes from Aeristech’s control technology and proprietary design know-how. Aeristech’s control technology is particularly relevant in variable, high-speed and rapidly accelerating motor/generator applications.

Electrical switching frequency is lower than conventional motor drives delivering higher efficiency and torque density. This allows exceptionally accurate high-transient motor control.

## 48V 10kW Electric Supercharger

Aeristech’s 48V 10kW electrically driven supercharger provides high levels of boost (2 bar) to small engines (2.0 litre or less) when running at low speeds (less than 2000 RPM) with a compact, efficient and cost effective turbocompressor.

This enables further engine downsizing, leading to fuel economy and reduction in CO<sup>2</sup> emissions for similar engine performance.



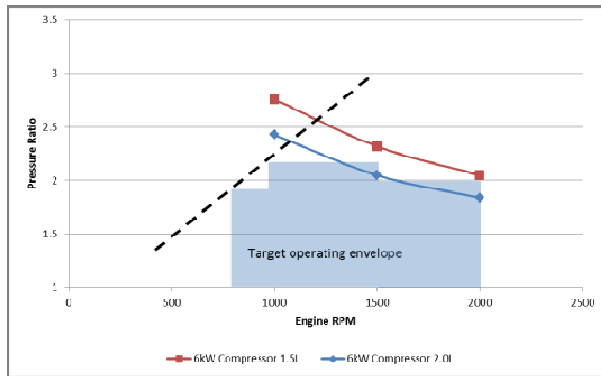


Aeristech’s technology leadership was recognised by the Energy Institute, when in 2012 it named Aeristech winner of the prestigious Energy Institute Technology Award.



In 2010 Aeristech was declared Regional Winner and UK finalist of the Shell Springboard Award for new green technologies.

**Operating Envelope**



**48V 10kW Electric Supercharger**

<b>Application</b>	Target engine	2.0L Petrol or Diesel (or less)
<b>General</b>	Air compressor type	Centrifugal (bespoke design)
	Motor type	High Speed Permanent Magnet
	Max speed	120 000 RPM
	Bearings	High Precision Ceramic Hybrid Rolling Element
	Input voltage	46V – 50V (48V nominal)
<b>Performance</b>	Nominal rated flow (Engine at 1750rpm boosted to 2bar)	0.0715 kg/s
	Pressure ratio (at nom. flow)	2.0 bar
	Minimum rated flow (Engine idle speed of 750rpm)	0.0153 kg/s
	Max boost pressure	2.0 bar
	Range of max boost pressure	1000-1750 RPM
	Flow range at max boost (Engine Speed 1000–1750rpm)	0.0408 – 0.0715 kg/s
	Max Flow	0.0797 kg/s
<b>Transient</b>	Idle to max flow, 1.8bar boost	< 0.5s
<b>Packaging</b>	Motor / Compressor Mass	4.7kg
	Motor / Compressor Volume	< 1.4ltr

**Oil Free E-Compressor for Hydrogen Fuel Cell Applications**

Aeristech has developed an oil-free variant to satisfy the requirements of hydrogen fuel cell applications by implementing an oil-free ball bearing arrangement, with speed capability of up to 120,000 RPM.

Aeristech’s e-Compressor for fuel cell application can be powered directly from the fuel cell stacks with a variable DC input voltage depending on load (typically from 200V to 400V).

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