

Motive power

Intelligent solutions for the vehicles of the future

Intelligent solutions™

Intelligent Energy is an energy solutions company, with proprietary PEM fuel cell and pure hydrogen generation technology at its core.

Our portfolio includes PEM fuel cell stacks and power plant systems at a range of scales to suit a broad spectrum of applications.

These power plants are suitable for motive and stationary power applications including hybrid vehicles, distributed generation, portable power and residential and commercial cogeneration systems.

We offer partners the opportunity to license our technology for use in their own end products and applications.

We operate globally working directly with leading Original Equipment Manufacturers OEMs and public-private consortia to develop solutions for real market applications.

What we do

We are developing advanced fuel cell stacks and systems for future motor vehicle technology.

Highly compact Our PEM fuel cell stacks have achieved class leading power densities in excess of 2.5kW/L. Our stacks are compact because we employ extremely thin metallic separator plates, with plate thicknesses as low as 0.5mm.

The use of such plates is also well suited to low cost mass-production processes as well as enabling high power densities.

Unique cooling and water management Our unique cooling and water management methodologies remove the need for any complex cooling circuit or external humidification, as these functions are achieved largely within the operating confines of the stack itself.

This innovative approach provides significant benefits for power train developers: no cooling plates are used, cell balance is vastly improved and stack performance enhanced.

Simple systems We have reduced the component count for both stack and system, leading to a reduction in system size, weight and overall complexity. As a consequence, overall system cost can be dramatically reduced.

Cold start With our unique stack design full power can be achieved almost instantaneously at room temperature, and takes less than 60 seconds at -25°C.





10kW automotive system



The **Core** fuel cell system



The **ENV** bike – powered by the **Core**



75kW PEM fuel cell stack

Our applications

Our main focus is on powertrain development for motor vehicles, but we are also developing auxiliary power unit technology.

Our expertise also reaches beyond road vehicles, to include both aerospace and marine.

For example, we are working in partnership with Boeing to develop specialised lightweight fuel cell systems for the aerospace industry.



Integrated 20kW fuel cell system

20kW example specification

Parameter	Specification
Voltage output (unregulated)	192 V
Electrical power output	20kW
Current output	130 Amps max
Fuel composition	99.95% Hydrogen
Fuel consumption	280 SLPM (at rated power output)
Fuel stoichiometry	1.01
Air stoichiometry	2.0
Operating pressure	0.2–1.5bar _g
Emissions	3.0 litres/hr (max) water

For further details please contact:

London, England

E: unitedkingdom@intelligent-energy.com

T: +44 (0)20 7958 9033

Long Beach, California, USA

E: unitedstates@intelligent-energy.com

T: +1 562 997 3600

Albuquerque, New Mexico, USA

E: unitedstates@intelligent-energy.com

T: +1 505 314 8145

Johannesburg, South Africa

E: southafrica@intelligent-energy.com

T: +27 11 258 8792

<http://www.intelligent-energy.com>

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