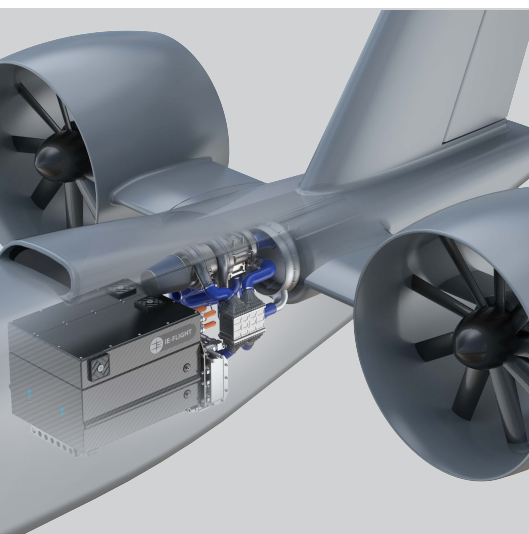




Powering the hydrogen future™



Fast
dynamic
response



Zero
emission
flight



High
power
fuel cells

IE-FLIGHT fuel cells

Delivering zero-emission flight for hydrogen electric aircraft

IE-FLIGHT™ is Intelligent Energy's fuel cell solution for the aviation sector. From 120kW to multi-megawatt scale, these systems have been developed to deliver zero-emission flight for heavy lift drones, eVTOLs, Part-23 and Part-25 aircraft serving sub-regional and regional markets.

With the limitations of batteries, and focus on zero emissions, companies within the aviation sector are now looking to fuel cells to meet their power requirements.

Targeting >1.5kW/kg, Intelligent Energy's systems could power a wide range of aircraft.

IE-FLIGHT benefits:

Patented direct water injection cooling

- no external humidification required.

Smaller heat exchangers

- enabled by highly convective condensing flow.

Fast dynamic response

- opportunity for reduced mass energy storage system.

Low coolant mass

- Reduced mass and volume requirements.

Fuel cell benefits:

- ✓ Zero emissions
- ✓ High power density at system level
- ✓ Scalable for multi-MW fuel cell installations
- ✓ Longer flight time
- ✓ Fast refuelling, quicker turnaround
- ✓ Improved operational efficiency

Longer flight time compared to batteries

Fast power response to demand changes

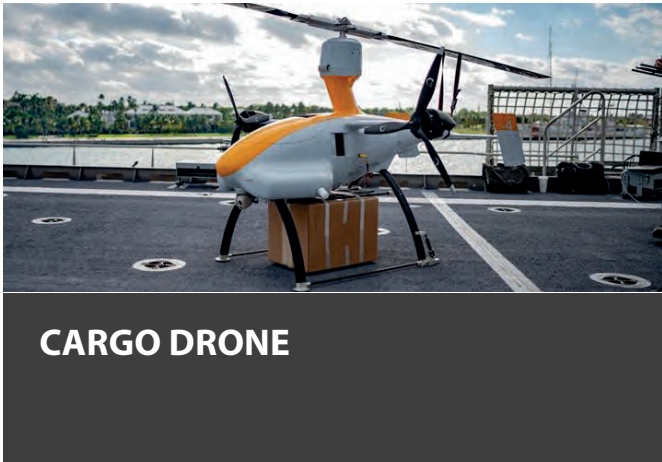
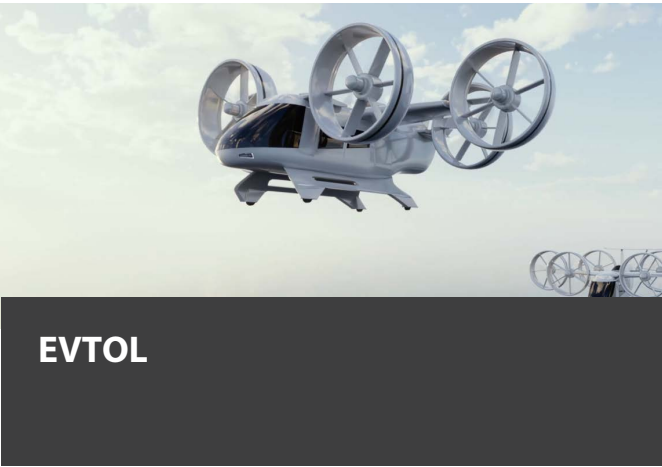
Smaller heat exchangers

Enabling zero emission flight

Fewer batteries & supercapacitors

Modular & scalable systems

Example integrations



Our FLIGHT range

IE-FLIGHT™ 120

Conceptual specification

Rated net power output at up to 6,500ft	120kW
Rated net power output at 15,000ft	90kW
Mass	143kg
Transient response	Up to 60kW/s
Run time without ram air	Up to 3 minutes
Gross current output	Up to 470A
Gross voltage output	370VDC at maximum output end of life
System voltage input	LV: 18 – 32VDC, up to 35A HV: 650VDC, up to 40A
Volume (L x H x W)	1350 x 1050 x 800mm
Operating temperature without derate	-15°C to +43°C
Fuel type	Gaseous hydrogen to ISO 14687:2 grade D
Peak efficiency	56% (40kW at sea level)
Fuel flow rate at rated power (6500ft)	<3.04g/s (<10.9kg/h)
Fuel supply pressure	13 to 15.5bar absolute

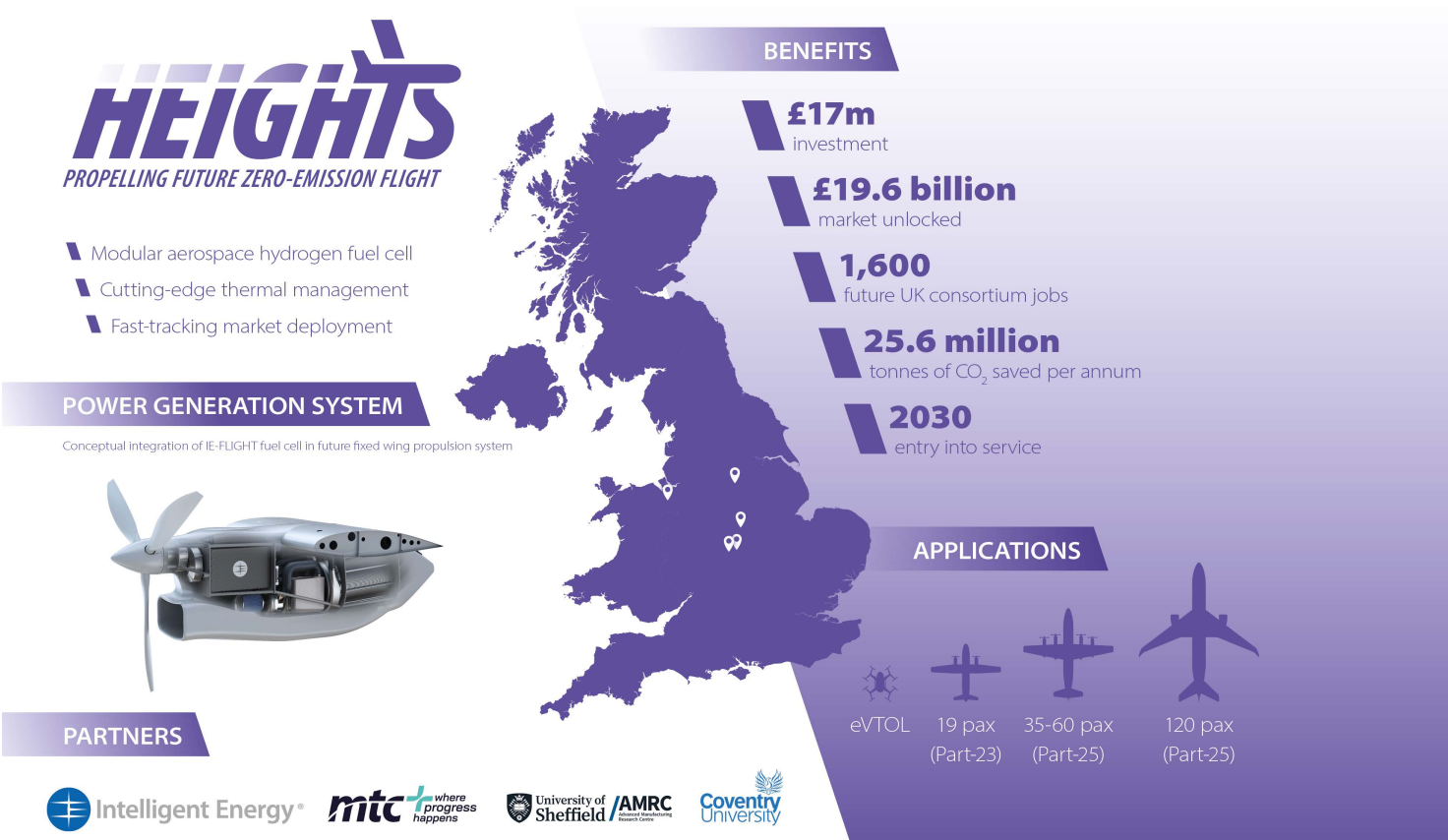
IE-FLIGHT™ 300

In development within the HEIGHTS programme to TRL5

Rated net power output at up to 6,500ft	300kW
Rated net power output at 15,000ft	180kW
Mass	248kg
Transient response	Up to 120kW/s
Run time without ram air	Up to 2 minutes
Gross current output	Up to 500A
Gross voltage output	710VDC at maximum output end of life
System voltage input	LV: 18 – 32VDC, up to 70A HV: 650VDC, up to 120A
Volume (L x H x W)	1631 x 1256 x 813mm
Operating temperature without derate	-15°C to +43°C
Fuel type	Gaseous hydrogen to ISO 14687:2 grade D
Peak efficiency	55% (90kW at sea level)
Fuel flow rate at rated power (6500ft)	<6.67g/s (<24kg/h)
Fuel supply pressure	13 to 15.5bar absolute

Aerospace development programmes

Projects supported by the Aerospace Technology Institute (ATI), the Department for Business and Trade and Innovate UK



Who are we?

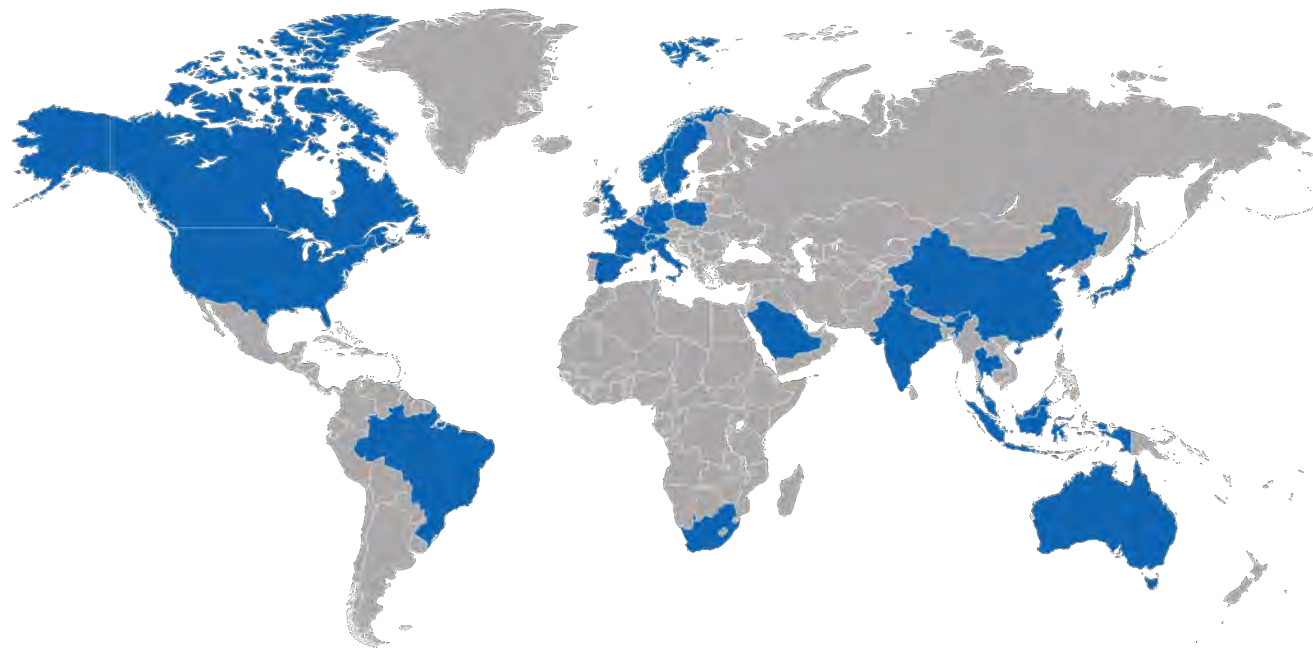
Since 2001, Intelligent Energy has been building a successful hydrogen fuel cell manufacturing business focused on the development of its lightweight, robust, fuel cell systems.

The fuel cell modules range from sub-1kW to 100kW+ for demanding applications across aerospace, stationary power, automotive, telecoms, unmanned aerial vehicles, and material handling equipment.

Where are we?

Our headquarters and manufacturing are based in the UK, with our systems being used by our partners and customers worldwide.

Located within the 750-acre Chelveston Renewable Energy Park in Northamptonshire, UK, Intelligent Energy's test facility is a dedicated site for advancing hydrogen fuel cell systems for aerospace and high-power stationary applications.



Intelligent Energy Headquarters

Charnwood Building, Holywell Park, Ashby Road, Loughborough. LE11 3GB. United Kingdom

Dedicated UK
aerospace fuel
cell test facility
& production
site





Powering the hydrogen future™

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