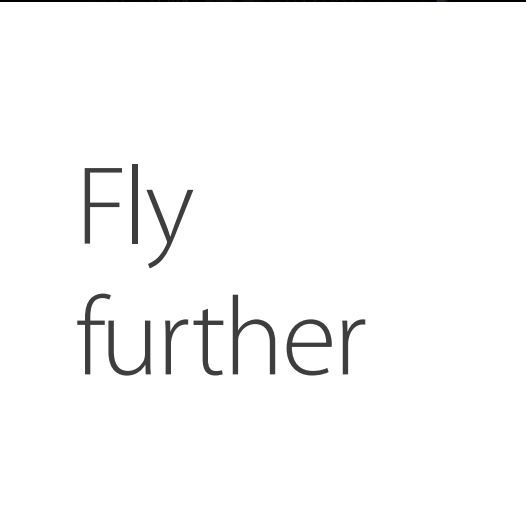




Powering the hydrogen future™



Fly
longer



Achieve
more

IE-SOAR Fuel Cells

IE-SOAR fuel cell systems replace your battery and unlock long endurance flight.

IE-SOAR™ is our range of lightweight hydrogen fuel cell modules for fixed wing, rotary wing and VTOL UAV applications, our systems unchain UAVs from the restrictive flight times offered by current battery technology.

Enable previously impossible applications

– your business is no longer constrained by flight time.

Unlock BVLOS operations

– Beyond Visual Line of Sight (BVLOS) makes sense with the range provided by fuel cells.

Increase operational efficiency

– spend 3x longer in the air and achieve more.

By replacing the battery with a fuel cell power module you can maximise productivity and minimise downtime meaning you can **fly longer, fly further and achieve more.**

IE-SOAR benefits:

✓ **Direct battery replacement (6S to 16S compatible)**

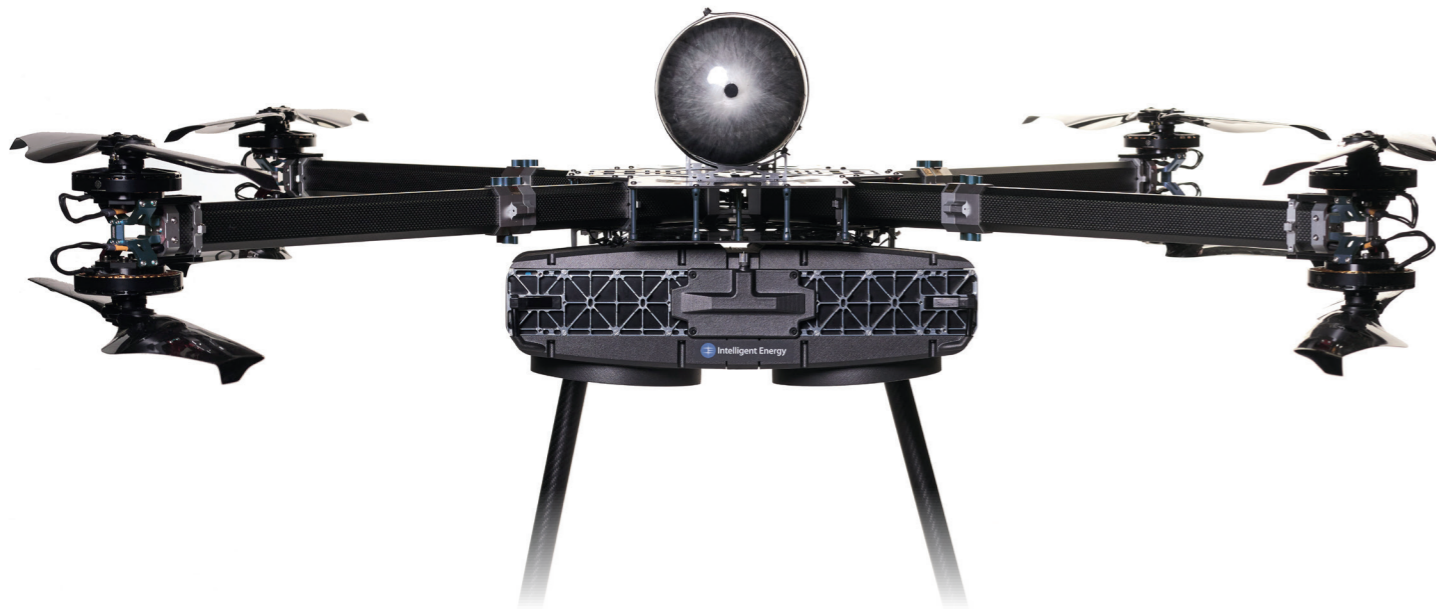
Automatically follows load demand just like a battery.

✓ **Designed for safety and reliability**

Single point failure tolerant and with built in power system redundancy.

✓ **Modular**

Combine systems in parallel to increase outputs to 24kW.



Longer
flight time
compared to batteries

Less
downtime
with rapid refueling

Increase
productivity
a one-stop solution

Zero-emission
flight

Fast refuelling

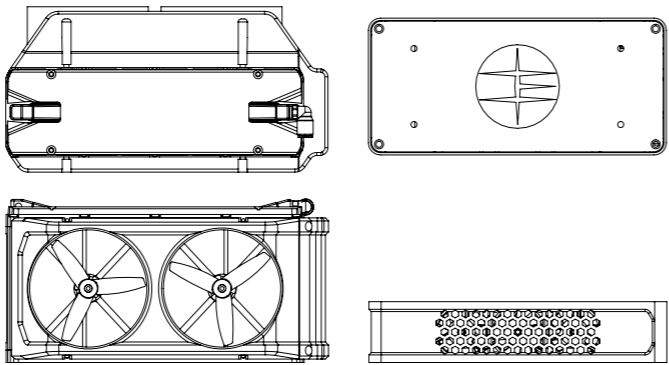
Increased
flight time



Our SOAR product range

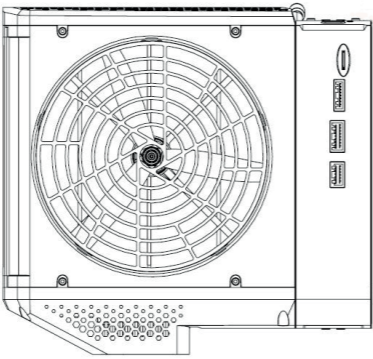
IE-SOAR™ 800

Through life power:	800W
Peak system power:	2400W
Module mass:	1450g
Direct battery replacement: 6S to 12S compatible	
VTOL and fixed wing applications	
Surveillance, inspection, surveying, mapping	
Can be operated in parallel to achieve up to 6400W	



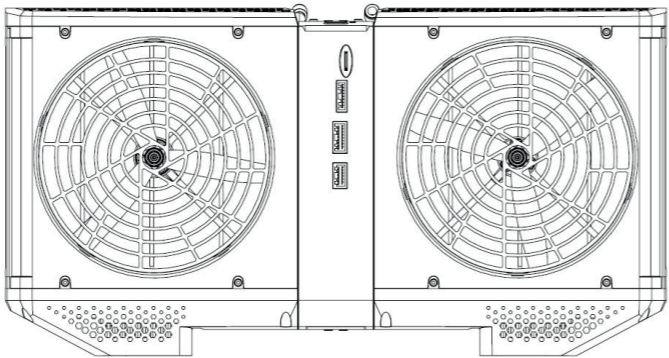
IE-SOAR™ 1.2

Through life power:	1.2kW
Peak system power:	8kW
Module mass:	2700g
Direct battery replacement: 12S to 16S compatible	
Multi-rotor, fixed wing and proprietary designed UAV applications	
Surveillance, inspection, surveying, mapping	
Can be operated in parallel to achieve up to 9.6kW	



IE-SOAR™ 2.4

Through life power:	2.4kW
Peak system power:	8kW
Module mass:	4800g
Direct battery replacement: 12S to 16S compatible	
Fixed wing, rotary wing and VTOL UAV applications	
Surveillance, inspection, surveying, mapping, parcel delivery	
Can be operated in parallel to achieve up to 24kW	



Applications



LINEAR INSPECTION SHELL

Unlock the range that makes sense for BVLOS operations. The longer flight range enabled by fuel cells equals less downtime and increased efficiency. Operations totaling to a fraction of the cost of a manned helicopter equivalent. Chosen by Shell to inspect pipelines BVLOS.



CINEMATOGRAPHY SAIL GP

Film the whole event in one flight. Stay in the air for the entire broadcast window. UAVs are heavily used in the film industry, but the need to land and recharge means important footage can be missed. Fuel cells enable you to stay in the air for longer with less downtime and continuous footage.



PARCEL DELIVERY

Compared with batteries, fuel cell powered UAVs have a higher range, resulting in more serviceable customers and a longer life, resulting in lower TCO. Generate your own fuel from clean energy and refill in minutes. Improved operational efficiency.



LIDAR AND MAPPING

Map larger environments thanks to reduced maintenance and downtime. With fewer stops to refuel, UAVs spend longer periods in the air. This means fewer calibration runs and more efficient operations.



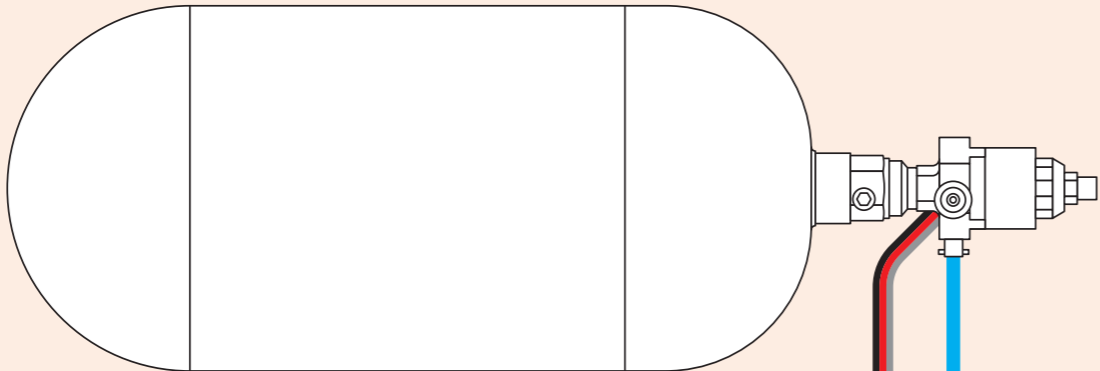
MILITARY SURVEILLANCE

Longer range and longer flight time equals higher quality data, better situational awareness and geospatial intelligence.

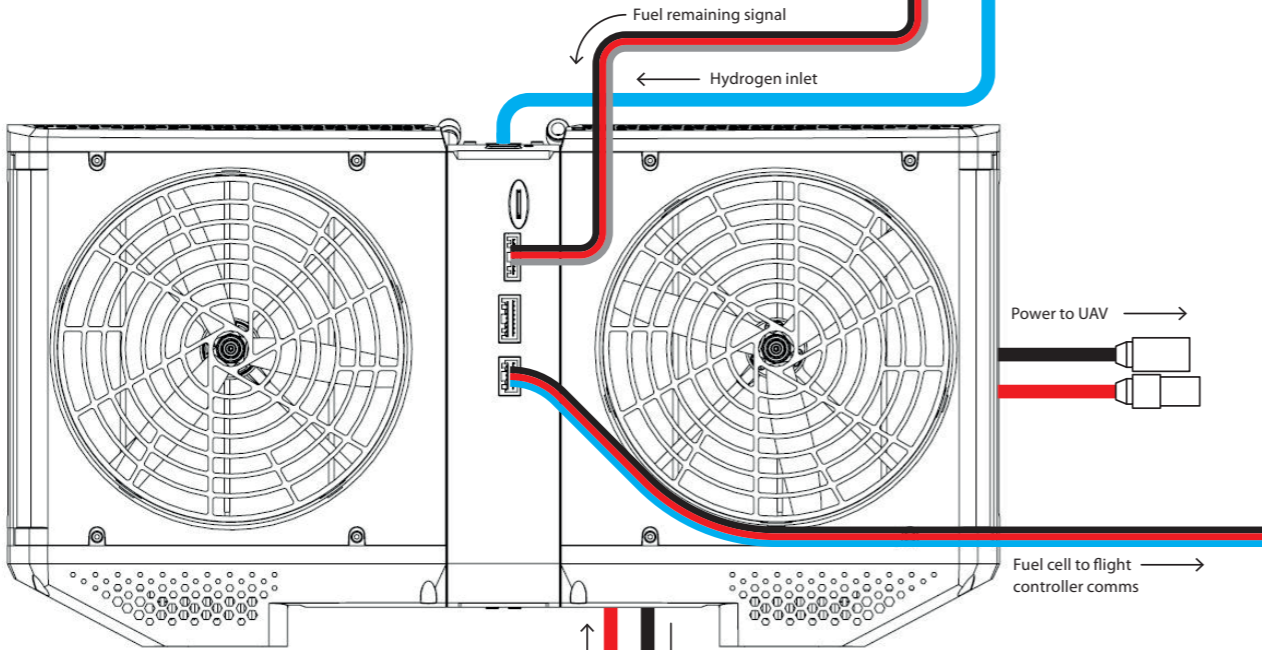
IE-SOAR Fuel Cell System Components

What you need to fly (all parts can be supplied by Intelligent Energy)

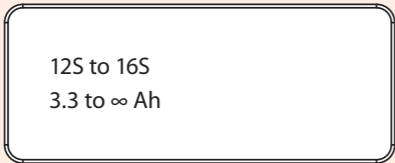
Hydrogen fuel



Fuel Cell



Hybrid battery



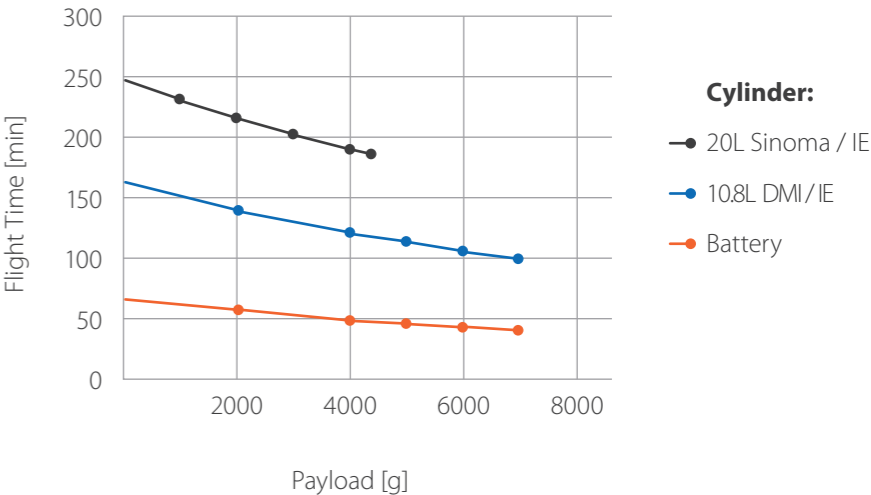
- Configurable Voltage and Capacity. Sized to suit your application
- Provides
 - Backup power
 - Extended peak power (e.g. VTOL)

- Single stage lightweight regulator up to 350 bar inlet
- Fast refuel or cylinder swap
- Accurate fuel level reading
- Range of certified hydrogen cylinders available
- Range of refill options available

- Typical 2000-hour product life
- Direct battery replacement system
- Single point failure tolerant
- 800W and 3kW fuel cells available
- Modular and configurable design to fit most power requirements
- Our fuel cells are natively supported by the Ardupilot flight controller software
- System integration support from dedicated team

Payload vs Flight Time with different cylinder options

Typical 25kg Rotary Wing



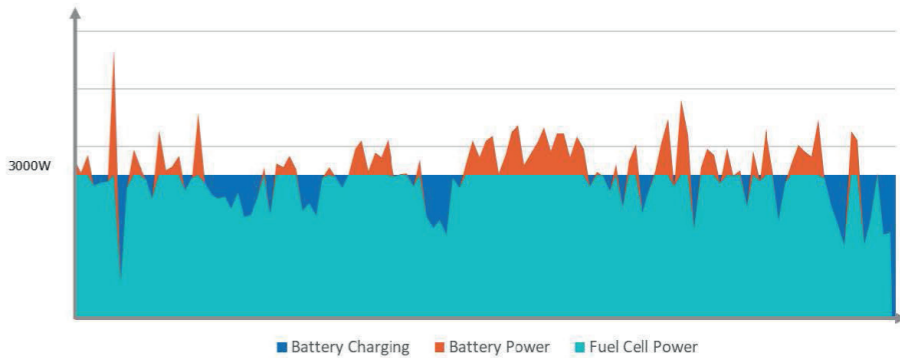
Hybridisation = best of both technologies

Peak Power (>3000W) will come from the hybrid battery

While load is less than 3000W, hybrid batteries can be recharged in flight.

Hybrid battery cannot be switched out of the circuit, meaning it also acts as power system redundancy.

Typical Load Profile of a UAV



Example Integrations



HARRIS AERIAL H6 Hydrone

Hex rotor platform carrying 5kg for 90 minutes. Typical applications are mapping and LiDAR. Shell have recently employed this platform for its North American pipeline inspections.



ZEPHER FLIGHT LABS Z1 VTOL

A Group 2 UAS with significantly better endurance and payload capacity than other Group 2 electric aircraft. Also offers low noise signature, rapid deployment and military supply chain.



GRYPHON DYNAMICS

120 minutes flight time with 5kg payload at 23kg take-off weight. 7kg payload for 90 minutes at 25kg. All OTS components and built in power system redundancy.



UNMANNED AEROSPACE GH-4

Efficient gyrocopter platform powered by the IE-SOAR 2.4kW. Extremely low noise signature and designed to fly over water. Naval logistics, ISR (intelligence, surveillance, and reconnaissance) and coast guard applications.



HEVENDRONES H2D 55

A 25kg (55lb) UAV platform able to carry 5kg for 100 minutes. Designed for logistics. The H2D 55 Drone boasts 5x longer flight times and operates in extreme conditions.



HYFLY H510

A logistics UAV designed to carry heavy payloads long distances. World's first hydrogen powered tilt rotor VTOL with a 120km range.

Replace your battery and unlock long endurance flight



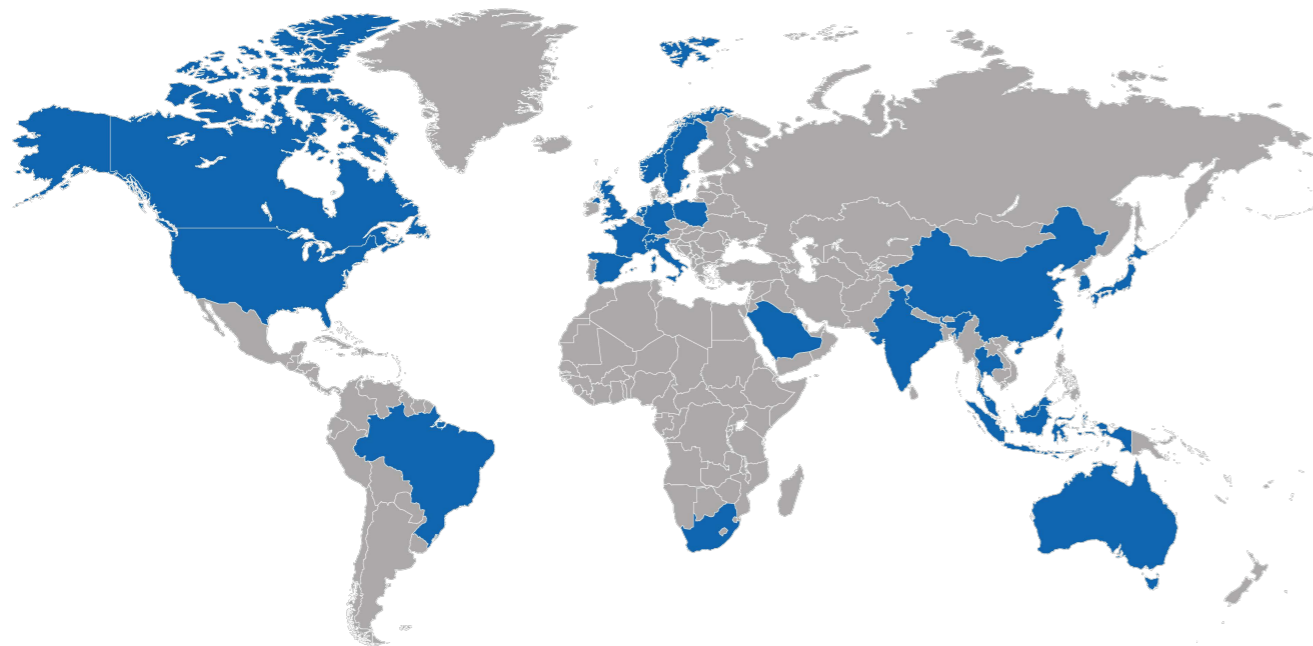
Who are we?

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

The fuel cells range from sub-1kW to 100kW+ for demanding applications across automotive, aerospace, power generation, 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.



Intelligent Energy Headquarters

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

Increase
operational
efficiency and
unlock BVLOS
operations



Powering the hydrogen future™

www.intelligent-energy.com

© Intelligent Energy Limited 2024. The Intelligent Energy name, logo, and other trade brands/names referenced herein are trademarks or registered trademarks of Intelligent Energy Ltd or its group companies, whether or not they are used with trademark symbol "TM" or "®".

Disclaimer: The information contained in this publication is intended only as a guide and is subject to change as a result of the constant evolution of Intelligent Energy's business and its technology. This publication and its contents (i) are not definitive or contractually binding; (ii) do not include all details which may be relevant to particular circumstances; and (iii) should not be regarded as being a complete source of information. To the fullest extent permitted by law, Intelligent Energy offers no warranty as to the accuracy of the content of this publication, shall not be liable for the content of this publication and no element of this publication shall form the basis of any contractual relationship with a third party or be used by any third party as the basis for its decision to enter into a contractual relationship with Intelligent Energy. Published by: Intelligent Energy Ltd, Charnwood Building, Holywell Park, Ashby Road, Loughborough LE11 3GB (Registered in England with company number: 03958217). Printed March 2024. All information correct at time of going to print. 75984-IE-BR-202304