



Case Study IE-Soar™ 800W Power Module

SKYCORP's e-Drone Zero

Developed by SKYCORP, the e-Drone Zero is a powerful, long endurance quadcopter powered by hydrogen fuel cells.

The e-Drone Zero has been designed around IE-Soar™ 800W to provide significantly more flight time than traditional batteries. Fuel cells provide a unique solution to extend flight times to UAVs, something that is currently constrained by the limitations of batteries.

Flight times of up to three times that of batteries have been achieved and the e-Drone Zero can offer flight times between 60–120 minutes, depending on the payload.

SKYCORP has cleverly designed the main body of the e-Drone Zero to house the hydrogen cylinder where it can be easily accessed and removed for refilling or replacement.

The UAV has been designed for use in mapping, survey and inspection, surveillance and security, and smart city management. The payload can be integrated easily on the compact frame.

Intelligent Energy's air cooled fuel cell systems run on hydrogen and ambient air to produce clean DC power in a simple, cost-effective, robust and lightweight package.

“Not only did Intelligent Energy solve our main obstacle in being able to realise our vision of the future Smart Drone with their IE-Soar™ module, but they've also been providing incredible support during our integration and design period to make sure we can get the maximum benefit from hydrogen energy.”

Marek Alliksoo, CEO at SKYCORP

They have a higher energy to mass ratio than battery based systems and can be refuelled in a few minutes.

Intelligent Energy's hydrogen fuel cell technology enables your UAV fleet to fly significantly longer and can improve the run-time of other mass sensitive electrically powered technology. The IE-Soar™ modules can be integrated into a variety of UAVs including motor rotor and fixed wing. They can directly replace the battery in most existing applications.

e-Drone Zero features

- Extended flight times (60–120 minutes+)
- Quick refuelling (~2 minutes downtime)
- Built in advanced AI
- Custom military grade frame
- Increased safety
- Military grade security (NATO validated)
- Advanced ease of use
- Fully autonomous flight controls and missions
- BVLOS operating capabilities
- Increased productivity

Technical specification

Performance

- | | |
|-----------------|----------------|
| • Flight time | 60–120 minutes |
| • Refuelling | 2–5 minutes |
| • Flight speed | Up to 22 m/s |
| • Mapping speed | Up to 17 m/s |

Nvidia Jetson TX2 for on-board processing

Power System

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|----------------------------|----------------------|
| • Maximum continuous power | 800W |
| • Maximum peak power | 1400W |
| • Output voltage | 19.6V–25.2V |
| • System lifetime | 1000h (non-decaying) |
| • Hybrid battery | 1800mAh (aux.) |

Features of IE-Soar™ 800W for UAVs

- Higher energy to mass ratio than batteries
- Lightweight
- Can be refuelled in minutes
- Modular, scalable systems
- Simple balance-of-plant
- Zero emission
- Can be retro-fitted onto existing UAV or built into proprietary design
- FCC and CE certified

Applications for the IE-Soar™ 800W

- Survey and inspection
- Search and rescue
- High quality aerial photography
- Precision agriculture
- Parcel delivery
- Warehouse inventory
- Law enforcement
- Military
- Robotics
- Portable power



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