IE-POWER

Niftylift and Speedy Hire

Partnered with Niftylift and Speedy Hire to develop the world's first hydrogen powered MEWP.

Several hundred fuel cell powered MEWPs now available to hire.

AJC

Developed by AJC, the Ecosmart Zero is a zero emission, hydrogen fuel cell powered, site welfare cabin.

BMW

BMW have integrated Intelligent Energy's hydrogen fuel cell systems into DS Automotion built Automated Guided Vehicles at the Leipzig Factory.

Tokyu Construction

Tokyu Construction Co., Ltd. and Teijin Limited, are using hydrogen fuel cell generators as power sources at a construction site around Tokyo's Shibuya Station.

Sesame Solar

Intelligent Energy's fuel cell modules are providing renewable, quick response power for disaster recovery.

Tajima Motor Corporation

4kW fuel cell systems powering tow tractors at Haneda Airport with Tajima Motor Corporation.

SBB Energy

PKP Energetyka and SBB Energy have installed a fuel cell system to test the feasibility of using green hydrogen for powering railroads in the future.

Pestech

Supplying off-grid energy to remote areas in Malaysia.

The renewable microgrid solution is ensuring villages and hospitals have access to power.

IE-POWER

Case Study IE-POWER™ fuel cells provide zero-emission power for MEWPS

Niftylift & Speedy Hire

Intelligent Energy (IE) have partnered with mobile elevating work platforms (MEWP) manufacturer Niftylift and plant hire firm Speedy Hire to create a world-first for the construction industry. A new zero-carbon hydrogen- powered access platform was brought to market, hybridising hydrogen and battery technologies.

The zero-emission machines are designed to replace commonly used fuel-based vehicles and can run for up to one week on a single cylinder. They also offer reduced lifetime costs, AGM maintenance-free batteries, and on-board diagnostics.

Off grid charging requires the use of heavy polluting diesel generators. Integrating the IE-POWER™ 1 fuel cell module into the MEWPs combines the clean and efficient performance of the Niftylift All-Electric with cutting-edge hydrogen fuel cell technology. In doing so, continuous zero-emission operation is viable.

Since launching in 2023, over 100 new hydrogen-electric machines have been deployed in the UK and further afield.

"With our new hydrogen-electric HR15E and HR17E, Speedy Hire can provide its customers with a long-term net zero solution for on-site machine charging – a world-first and a massive step forward for the powered access industry."

John Keely, Managing Director at Niftylift

IE-POWER

AJC EasyCabin

Case Study IE-POWER™ fuel cells provide zero-emission power for construction sites

Ecosmart Zero Welfare Cabin

Developed by AJC, the Ecosmart Zero is a zero emission, hydrogen fuel cell powered, site welfare cabin.

It is the first viable welfare alternative for companies that are looking to reduce their carbon footprint and improve the environment for communities in the vicinity of its operation.

AJC has anticipated legislative demands on construction companies to reduce their CO2 emissions and the development of the Ecosmart is a clear move that the industry needs alternatives to those powered by diesel.

The IE-POWER was selected by AJC to power the cabin and it is capable of providing all the power it needs. IE-POWER offers quiet operation, minimal maintenance (simply an air filter inspection or change), and zero emission at point of use (the only output is water vapour) and are reliable.

"We have been asked by many of our customers to develop site welfare solutions that produce zero emissions at point of use.

We believe that the Ecosmart Zero range of welfare cabins offer an opportunity for companies looking to reduce their carbon footprint and emissions.

"IE-POWER has been straightforward to integrate and, importantly for us, there is no operating difference for the end user. It will just be quieter and cleaner."

Lisa Gillet, Sales Director at AJC Trailers

IE-POWER

Case Study IE-POWER™ technology proven in back-up and off-grid power solutions

POWERGENX

POWERGENX is at the forefront of innovation in energy technology, delivering advanced power generation systems designed for high efficiency, reliability, and sustainability. Whether it's for industrial, commercial, or remote applications, POWERGENX provides cutting-edge solutions that meet the growing global demand for cleaner and more resilient energy.

From compact mobile generators to large-scale grid-independent power systems, POWERGENX offers standard 4 kW and 8 kW generators.

The POWERGENX unit is designed to be a direct replacement for a diesel generator or battery unit to deliver AC single-phase power for a range of applications.

Each POWERGENX unit incorporates either one (4kW) or two (8kW) of IE's P4 fuel cell systems the unit. Capable of providing a continuous AC power output when connected to a supply of hydrogen gas

IE-POWER

Case Study IE-POWER™ technology proven in material handling

BMW AGVs

BMW isn't just testing hydrogen in passenger vehicles - it's applying the technology today in its supply chain.

In 2022, BMW began integrating Intelligent Energy's hydrogen fuel cell systems into the DS Automotion built Automated Guided Vehicles at the Leipzig Factory.

Intelligent Energy's IE-POWER 1 fuel cell modules offer advantages such as a fast-refuelling time, zero emissions, retrofitting, durability and very low maintenance.

This compact, plug-and-play fuel cell delivers 1 kW of continuous power, built to comply with the IEC 62282-4-101 standard for industrial trucks.

These features contribute to higher vehicle availability and thus reduce the costs during operation.

With over 27 fuel cell powered AGVs running the production line in the factory, fuel cells are enabling zero-emission operation. This collaboration at Leipzig is a leading example of hydrogen fuel cells advancing industrial applications.

Case Study IE-POWER™ technology proven in portable power

Tokyu Construction

Tokyu Construction Co., Ltd. and partner of Intelligent Energy, Teijin Limited, trial hydrogen fuel cell generators as power sources at a construction site around Tokyo's Shibuya Station.

The successful trial, which ran from late June to mid-July 2023, evaluated reductions of noise and carbon dioxide emissions achieved by using hydrogen fuel cell generators instead of conventional gasoline generators. It revealed that the hydrogen fuel cell generators reduced noise from approximately 80 decibels to 60 decibels (*) compared to gasoline generators. It also cut CO2 emissions approximately 6kg (reference range) in ten hours, or more than 1,000 kg per year.

In addition to testing noise and emissions, Tokyu Construction and Teijin verified the workability and portability of the fuel cell and pressure vessel units. No special equipment was required to load and unload the fuel cell and pressure vessel units onto a vehicle for transport to the Shibuya construction office.

The hydrogen fuel cell generators are comprised of a fuel cell unit, featuring the IE-LIFT 1T fuel cell, and a companion pressure vessel unit, which supplies hydrogen fuel. The pressure vessel unit is a portable hydrogen fuel supply device equipped with three Ultressa® lightweight, corrosion resistant, composite pressure cylinders developed by Teijin Engineering Limited, a subsidiary of Teijin.

The generators have been used at the construction site to supply electricity for lighting and warning signs during nighttime construction work. They have helped to avoid the issues caused by existing gasoline power generators, which can disturb local residents with unwanted noise, odours and ground vibrations.

Case Study IE-POWER™ technology proven in back-up and off-grid power solutions

SBB, Poland

In Poland, railway electrification has reached 98%, with only one remaining unelectrified route. The trains run directly on electric power supplied via overhead lines.

At Garbce Traction Substation in south-west Poland, PKP Energetyka, an electricity distributor to the Polish railway network, and SBB Energy have installed a system to test the feasibility of using green hydrogen for powering railroads in the future.

The station where the container is located is a substation equipped with a battery backup, which is used to buffer power outages in the railway network.

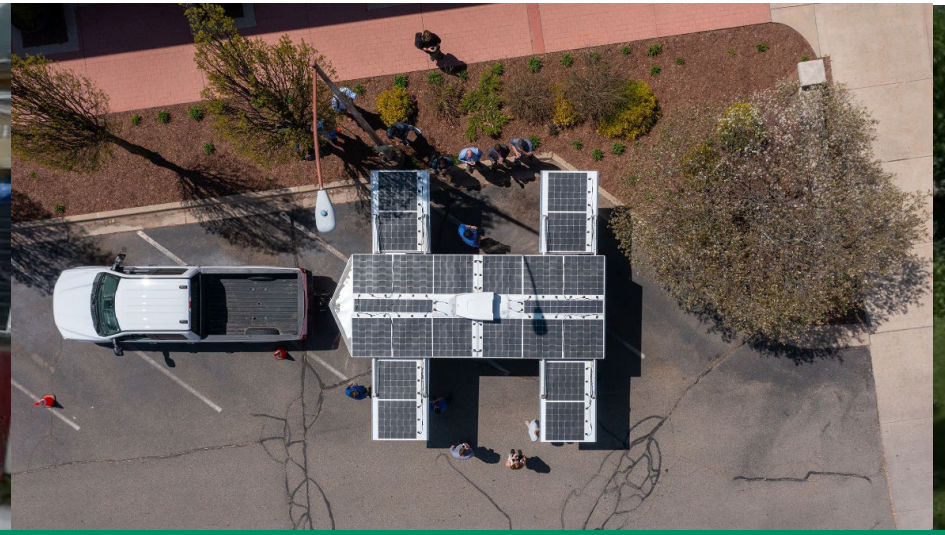
When there's a surplus of solar power, the local 150 kWp PV array supplies 15 AEM Electrolysers to produce onsite green hydrogen for long-term energy storage. Thanks to its modularity, Enapter's flexible 36kW green hydrogen system can ramp up and down quickly to harvest as much sunshine as possible.

The idea is to complement an existing short-term battery system with a storage system able to hold up to 23kg of hydrogen at 99.999% purity that can be reconverted to electricity via five Intelligent Energy 4kW fuel cells to buffer power outages in the railway network.

- 3 x HydroCab 4.0, 99.999% purity (5.0)
- 15 x EL, 3 x Dryer (37kW electrolysis capacity)
- 1 x Fuel Cell Cab
- 5 x FC with 4kW (20kW FC power)
- 35 bar buffer tank
- 4 pcs. 200 bar flexible high-pressure storage
- 1 x Compressor System (electromechanical) 13 Nm^3/h, 200bar
- 1 x Water Purification System + conductivity check
- Installation, commissioning, project support

IE-POWER

H2 CoreSystems



Case Study IE-POWER™ technology proven in back-up and off-grid power solutions

Sesame Solar, US

Extreme weather and natural disasters have made power outages a real threat to millions. While backup diesel generators run on fossil fuels, Sesame Solar is decarbonizing off-grid power with its mobile Nanogrids.

Sesame Solar Nanogrids make renewable power fast and easy, leveraging solar power and green hydrogen to provide mobile, reliable and renewable energy.

These solutions provide weeks of autonomy to support communities impacted by disaster. The structures, some as large as a shipping container, have rooftop solar panels that can generate power in as little as 15 minutes.

Intelligent Energy's 4kW fuel cell modules are being used to provide this renewable, quick response power. With electricity and water vapour as the only by-products, the fuel cells are a cleaner than diesel alternatives currently being used.

The fuel cells are scalable and when combined with H2 Core Systems' technology, create a self-sustaining ecosystem.

- Customized Indoor HydroCab
- 1 to 3 Electrolysers (2.4-7.2kW)
- 1-2 Fuel Cells (4-8kW)
- Dryer & water storage
- 7 systems built until 12-2023
- High future volume announced





Case Study IE-POWER™ technology proven in back-up and off-grid power solutions

EGAT, Thailand

The Electricity Generating Authority of Thailand (EGAT) Learning Center functions as an education and research hub and was designed to provide insights about the use of renewable energy to the public, as well as prepare businesses for the country's future carbon-neutral energy targets.

Based in Bangkok, the EGAT Learning Center has a hydrogen energy system featuring 10 AEM Electrolysers, 2 Dryers, and a water tank module, all integrated in an indoor cabinet by our partner H2 Core Systems. It also has 2.5 kg of H2 storage capacity and three fuel cells with a total capacity of 12kW.

In the daytime, excess power from solar PV is used to produce 100% green hydrogen through AEM Electrolysis. During the nighttime, the three hydrogen fuel cells power the EGAT energy efficient house using the stored hydrogen.

H2 Core Systems' cabinets host IE-POWER 4kW fuel cells, generating electricity through the use of green hydrogen as and when required.

IE-POWER

PESTECH

Case Study IE-POWER™ technology proven in back-up and off-grid power solutions

Sarawak, Malaysia

In 2021, PESTECH finalised a project in Kampung Batu 23, Jalan Pahang, Tapah as the second phase installation of a renewable-based microgrid solution was completed.

The second phase of the installation saw an additional four solar panels and a complete Hydrogen Self Recharging Fuel Cells (SRFC) Solution added to the site. The solution consisted of an electrolyser and IE-POWER 4 hydrogen fuel cells integrated into a cabinet system, alongside a 0.5m3 hydrogen gas storage vessel.

The main function of the solution is to convert elements of water and solar energy via electrolysis into green hydrogen, which will be stored in the gas storage vessel and can be used anytime later. Electricity is then delivered from the fuel cell itself. This is mainly how the solution operates in producing electricity supply to areas nearby the facility.

The installation is expected to bring benefit to Orang Asli seeing that a total of nine brick houses can now get access to affordable electricity as it is sustainable and cost-efficient solution due to its high durability and low maintenance cost, with a storage life cycle of 45 years at minimal replacement and disposal costs.

The first installation was kicked-off back in 2020, a project initiated by PESTECH together with the state of Perak with the aim to bring improvements towards the life and well-being of Orang Asli at Kampung Batu 23, Jalan Pahang, Tapah, which has no access to electricity for the past 20 years due to its remote location.