

HYMERA®.

## Hydrogen fuel cell power generator

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### Description

Developed by BOC, a member of the Linde Group, HYMERA® is a hydrogen PEM (proton exchange membrane) fuel cell generator capable of delivering 150W of DC electrical power for off-grid and backup power applications.

It is ideal for supplying power to continuous loads running on 12V or 24V rechargeable batteries.

Typical applications include remote monitoring and lighting systems or security cameras.

HYMERA is fuelled with readily available industrial hydrogen, delivered in standard steel cylinders or in GENIE®, Linde's lightweight user-friendly cylinder.

Combined with HYMERA, a 300-bar H2 GENIE cylinder is capable of generating up to 7000Wh of electrical energy. This means that it could keep a high-specification security camera (25W to 50W) powered for one to two weeks or a 5W alarm system powered for more than a month.

The H2 GENIE weighs just over 20 kg but delivers more energy than 200 kg of lead-acid batteries.

HYMERA is designed for ease of integration into OEM applications and can work in parallel with solar-powered systems, ensuring an uninterrupted power supply at night or in the dark winter months.

### Advantages

- Clean, silent and portable
- Works with H2 GENIE cylinder and can deliver battery-like performance with 10 times the energy density of a lead-acid battery
- Requires minimal annual servicing
- Suited to today's high efficiency electrical applications such as LED lights and displays
- Zero emissions (eg CO<sub>2</sub>, CO, NO<sub>x</sub>) at point of use
- Very low carbon footprint
- Substantially lower total cost of operation than petrol or diesel generators, particularly at lower loads (<100W)
- Ideally suited to continuous long-running applications.

HYMERA® and GENIE® are trademarks of The Linde Group.

### Sample applications and estimated runtimes

Application	Industrial H2 cylinder 45 litres @ 175 bar	H2 GENIE cylinder 20 litres @ 300 bar
2 x 50W LED flood lights (equivalent to 2 x 500W halogen lights)	~100 hours	~70 hours
50W professional security camera	~8 days	~6 days
Small site office (lights, laptop, hot water for tea/coffee)	~8 days	~6 days
10W traffic light	~5 weeks	~4 weeks
4W alarm system	~3 months	~2 months

#### Other applications

- Battery extender for UPS systems
- Domestic emergency backup power for lights, computer, fridge etc.
- Noise monitoring system
- Security lights
- Advertising displays

**Manual mode** – typically used to run DC applications, either directly or by placing a 12V/24V lead-acid battery between HYMERA and the load. Manual mode requires an operator to start and stop the unit.

**Automatic mode** – HYMERA is connected to an external battery which is constantly or periodically placed under load. The HYMERA unit monitors the charge state of the external battery and when the battery reaches a preset discharge level, HYMERA automatically starts to recharge the battery using charge settings, such as voltage and duration, that can be set by the user.

**Remote operation mode** – HYMERA can be switched on and off remotely, either via a GSM modem controller or by a local controller. HYMERA outputs a continuous stream of data for troubleshooting and process optimization.

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