BOC
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BOC HYMERA®
Hydrogen Fuel Cell Generator.

Clean, silent affordable power for off-grid applications.

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When jobs just can't be done effectively with traditional diesel or petrol generators, there's BOC HYMERA®.

It's the world's first commercially-viable, low-carbon, hydrogen fuel cell alternative to small petrol and diesel generators or large battery banks. It can provide up to 175 watts of peak power whenever and wherever you need it.

The new HYMERA® can easily cope with today's high efficiency, lower power electrical loads and it offers cost savings of up to 75% for loads up to 150 watts.

Supplied with readily available compressed hydrogen from BOC, HYMERA® can support a wide range of commercial and industrial off-grid applications, such as task lighting (for railway and tunnel maintenance work, for example), security cameras, environmental monitoring and process control systems.

This flexible, effective alternative solution to traditional generators incorporates ground-breaking hydrogen fuel cell technology, which produces electricity from the reaction between hydrogen and oxygen from the air.

The HYMERA® is also environmentally-friendly, producing water as the only by-product. And it is extremely quiet, typically less than 45 decibels at five metres – similar to a desktop computer

Reap the benefits.

Cost saving

For many applications, the BOC HYMERA® can offer very significant cost savings compared to conventional diesel generators with lower fuel costs and much lower service costs. The lower the power of the application, the greater the cost savings.

Carbon saving

Carbon savings with HYMERA® can be very significant. A 50W camera powered by a conventional diesel generator will emit 2.5kg of CO2 per hour. The CO2 footprint of the same camera, when powered by HYMERA® and hydrogen will be less than 20g per hour.

Quiet operation

HYMERA® is almost silent in operation providing an ideal power solution for covert operations or in environments where noise pollution must be avoided.

Operates in all weather conditions

The unit is rated to operate at -10 degrees and in temperatures up to 40 degrees. It can self start* in low temperatures ensuring you do not waste hydrogen keeping the unit warm to operate when needed.

Emission free

The only exhaust is water vapour so HYMERA® is good for the environment and it can be used in sensitive areas such as near water and in tunnels and other restricted spaces.

Markets and solutions.

CCTV remote monitoring

Until HYMERA® came on the market, the only commercially sensible power solutions for intelligent CCTV systems applications were diesel generators, batteries, or in some cases, solar power – all of which have technical and economic limitations.

HYMERA® is the intelligent power source for intelligent CCTV systems. With typical power demands of around 60 watts and used for site surveillance and protection, off-grid CCTV is an active and low-cost alternative to manned guarding.

Within its power range, HYMERA® costs much less than diesel generators to run and hardly needs any servicing throughout its life. Batteries are heavy and impractical and solar PV only works for very low loads during winter months. HYMERA® is much more practical than batteries and is a viable alternative to solar PV or it can work together with solar PV to provide the lowest cost solution possible.

Process monitoring and control

For process and control applications, used widely by many service industries such as water and power, HYMERA® is the only system which can give all year round power without the limitations of stand-alone solar and/or battery systems.

Other relevant applications include: noise and pollution monitoring, filming wildlife and security alarm systems.

HYMERA® can also be used on projects where conventional diesel generators cannot, due to risks of environmental damage from diesel spillage or emissions.

In many cases the HYMERA® unit can be placed into a BOC supplied cabinet which houses the fuel cell, external battery and the application control electronics. This system can also be used with renewable energy sources, such as solar, for the most economical solution available.

BOC also offers cabinets or cages which hold the cylinders in a separate compartment for both protective and aesthetic purposes.

Lighting the way

For decades, the construction and rail industry has relied on diesel generators to power temporary lighting for safety access or area tasks at night or in winter.

These noisy, inefficient units were the only viable power solution until HYMERA® came along.

Now the low noise and low emission solution offered by HYMERA® allows lighting systems to be operated in the most demanding environments with a minimum amount of support, while providing higher functionality periods for your lighting system.

It works with today's efficient LED light systems to provide an affordable, silent and truly green alternative to the diesel generators you're used to.

- → Low noise to avoid disturbing neighbours
- → Ideal for use in demanding environments
- → Cleaner than sooty diesel fuel
- → Zero risk of fuel spill
- → Minimal glare and light flicker
- → Affordable, green alternative to diesel

Stronger together. GENIE® hydrogen cylinder.

GENIE® cylinder

The HYMERA® generator runs on hydrogen and is supported by the new lightweight 54-G20, GENIE® hydrogen cylinder.

By combining the HYMERA® and the new GENIE® cylinder you get an ideal solution to today's new low-power electrical devices and operating costs. It's just one of the benefits this solution can offer when compared to today's traditional power generation units. Another is that it provides the user with a greatly reduced carbon footprint.

When the cylinder is full it weighs approximately 22kg and a single cylinder contains enough hydrogen to generate 6-7kWh of electricity. When used with a battery, for example, it can support a 3W monitoring and alarm system for nearly three months or a 20W security camera system for almost 300 hours.

Cylinders can also be manifolded together for much longer run-times or alternatively the unit can be coupled with solar powered panels for further prolonged energy requirements.

Linde hydrogen GENIE® cylinder

BOC name	54-G20
Product	high purity hydrogen (99.995%)
Contents (g)	424 @ 300 barg
TARE weight (kg)	22.4
Fill pressure (barg)	300
Max height (mm)	660
Max diameter (mm)	325
Handle diameter (top)	270
Handle diameter (bottom)	294
Base width (mm)	305
kWh electrical (assuming 50% efficient fuel cell)	7kWh @ 300 barg*

GENIE® Hydrogen 10 bar regulator.

GENIE® Hydrogen 6 bar regulator.

Approximate Cylinder Run Times for range of DC electrical loads

	Cylinder Options and H2 contents in grams				
	GENIE	Other Standard Cylinder Options			
	54-G20	54-B	54-ZB**	54-K	54-WK
	425g	120g	170g	621g	9315g
Constant Electrical Load (Watts)	Approximate run time in hours at constant load				
0	1100	310	440	1600	24100
20*	300	85	120	438	6575
40*	164	46	66	239	3595
60	121	34	48	176	2655
80	88	25	35	128	1930
100	70	20	28	100	1535
120	57	16	23	83	1250
140	48	14	19	70	1050
150	45	13	18	65	990

*for powers below 40W, recommend using HYMERA in hybrid mode (with external battery)
** not available until March 2016

Accessories

Product	Part number	Item description
0-10 barg H2 GENIE® Regulator	77004	0-10 barg variable hydrogen regulator for GENIE®
fixed 6.5 barg H2 GENIE® regulator	79005	fixed 6 barg hydrogen regulator for GENIE®
3 Way manifold	72618	3 cylinder, low pressure manifold with pressure switch
4 Way manifold	75385	4 cylinder, low pressure manifold with pressure switch
5 Way manifold	75216	5 cylinder, low pressure manifold with pressure switch
Hose Assembly	19318971	1.2 Metre Reinforced hydrogen hose for manifold systems with hand tight regulator fitting
Hose Assembly	73328	3 Metre Reinforced hydrogen hose for manifold systems with hand tight regulator fitting
Battery Watch	72619	Prevents external battery running totally flat, when system out of gas

BOC – turning ideas into solutions.

BOC is a member of The Linde Group, the leading global gases and engineering company. BOC is the UK's largest provider of industrial, specialist and medical gases, as well as related products and services. As a leader in the application of technology, we are constantly looking for new ways to provide our customers with high quality products and innovative solutions.

At BOC we help our customers to create added value, clearly discernible competitive advantage and hence greater profitability. To achieve this we have a comprehensive range of products and services, and technical support which can be customised to meet the individual requirements of our clients.

To keep ahead of the competition in today's market, you need a partner for whom quality, service, process and productivity optimisation are an integral part of customer support. We are there for you and with you, helping to build your success.

BOC's reputation has been forged through partnerships – with customers, with relevant regulatory authorities and with key suppliers. In this way, we deliver comprehensive and consistent benefits to you.

BOC – world-leading knowledge and resources adapted to local requirements.

To find out more about HYMERA and how it can help your business, contact us at:

BOC
Customer Service Centre,
Priestley Road, Worsley,
Manchester M28 2UT

Tel 0800 111 333
Fax 0800 111 555

custserv@boc.com

BOC Ireland
PO Box 201,
Bluebell, Dublin 12,
Republic of Ireland

Tel 1890 355 255
Fax (0)1 409 1801

irelandsales@boc.com

BOC Limited
The Priestley Centre, 10 Priestley Road, The Surrey Research Park, Guildford, Surrey GU2 7XY, United Kingdom
Tel +44 1483 579 857, Fax +44 1483 505 211, www.BOConline.co.uk

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