



Sustainable Power Solutions

Mark Chamberlain - Business Development Director

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INTRODUCTION



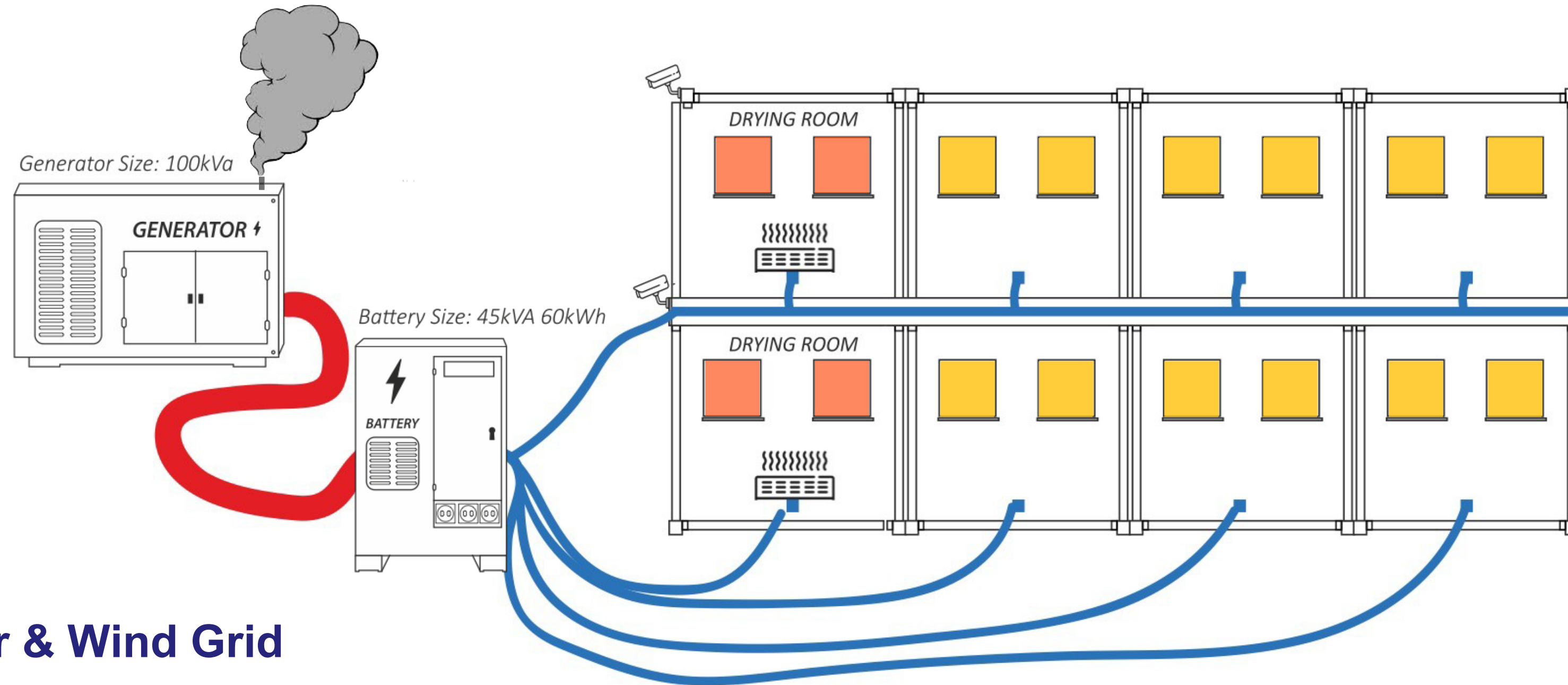
BATTERY STORAGE



- 45kVA
- 45kWh
- 75kWh
- Portable
- Trailer
- Easily Deployed
- Zero Emission
- Hybrid Power Solution
- EV Charging
- Events
- Construction Sites
- Cranes
- All temporary power applications



HYBRID SETUP EXAMPLE



Solar & Wind Grid
connection
Hydrogen HVO

BENEFITS & FEATURES



- **Lithium Ion Battery System** The latest battery technology, longer life, faster re-charge and higher energy density.
- **Quiet Hours Charging** Ability to run full hybrid mode AND overnight quiet hours simultaneously.
- **Advanced Remote Monitoring System** Realtime and historic data of generator runtimes, fuel savings, CO2e reduction and power/energy profiles.
- **Silent Operation** The battery system is inaudible over the background noise.
- **16a Maintenance Charging** No need to run huge 125a cables across the depot to charge the system. 16a single phase in/out installed on the front of the unit.
- **GPS Tracking** The battery has an integrated GPS logger that reports the battery position even whilst the system is in standby, great for tracking during delivery.
- **10 Remotely Programmable Output Sockets** Control power to site, turning off the non essential loads during the night and intermittently powering drying rooms to minimise power consumption.
- **Daylight Sensor** Any socket can be controlled based on daylight, automatically turn on and off your site perimeter.
- **Auto Fail Safe Bypass** In the event of a fault the system will automatically bypass itself restoring power to site.
- **7 Day Remotely Programmable Timer** Control the generator start/stop times on different days of the week to minimise generator running and avoid weekend running where possible.
- **Generator Battery Charger** Dedicated 16a output connection for direct plug in of generator battery charger. Avoids generator start failures.

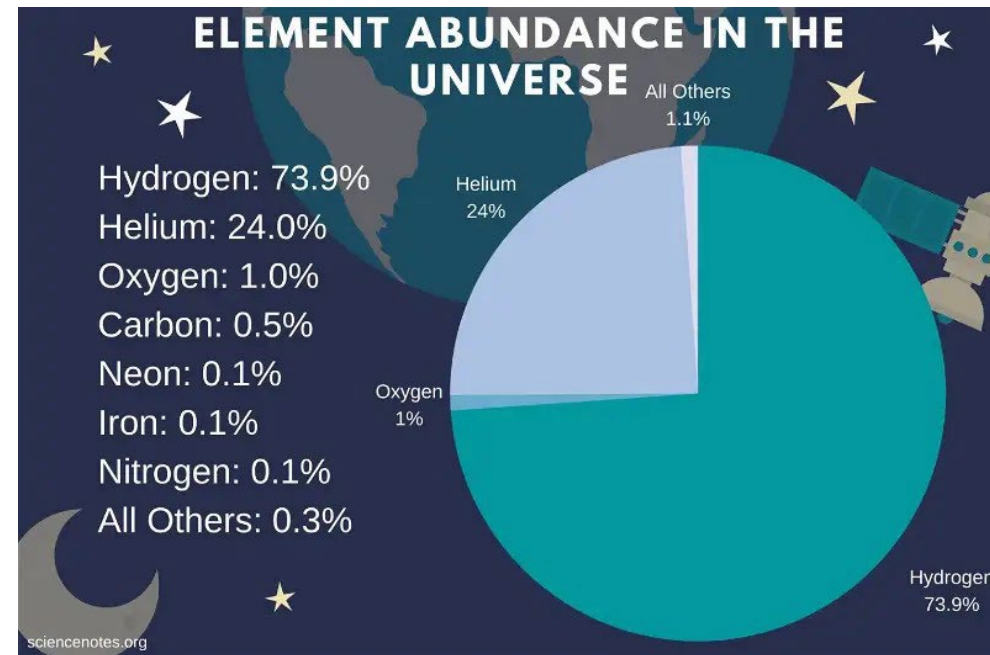
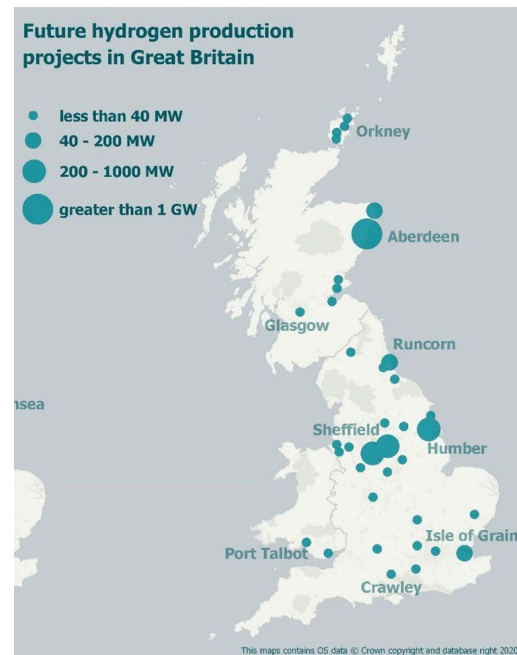


HYDROGEN AS A FUEL



- Scalable and sustainable solution
- Zero CO, NOx and SOx emissions - only by-products are water vapour and heat
- Most abundant chemical element in the universe
- Zero CO, NOx and SOx emissions - only by-products are water vapour and heat

- Creating the demand
- Ammonia cracking
- Hydrogen infrastructure plans
- Grading, Green, Blue, Grey



Brown Hydrogen	Grey Hydrogen	Blue Hydrogen	Green Hydrogen
Hydrogen produced when coal is transformed under high pressure conditions, and the resulting carbon dioxide is released back into the air.	Hydrogen produced when natural gas is transformed by burning methane and the resulting carbon dioxide is released back into the air.	Hydrogen produced from natural gas , but the output carbon dioxide is captured and stored thereby avoiding carbon emissions.	Hydrogen extracted from water using a method called electrolysis that is powered by renewable energy such as wind/solar (as per picture below)

BENEFITS & FEATURES



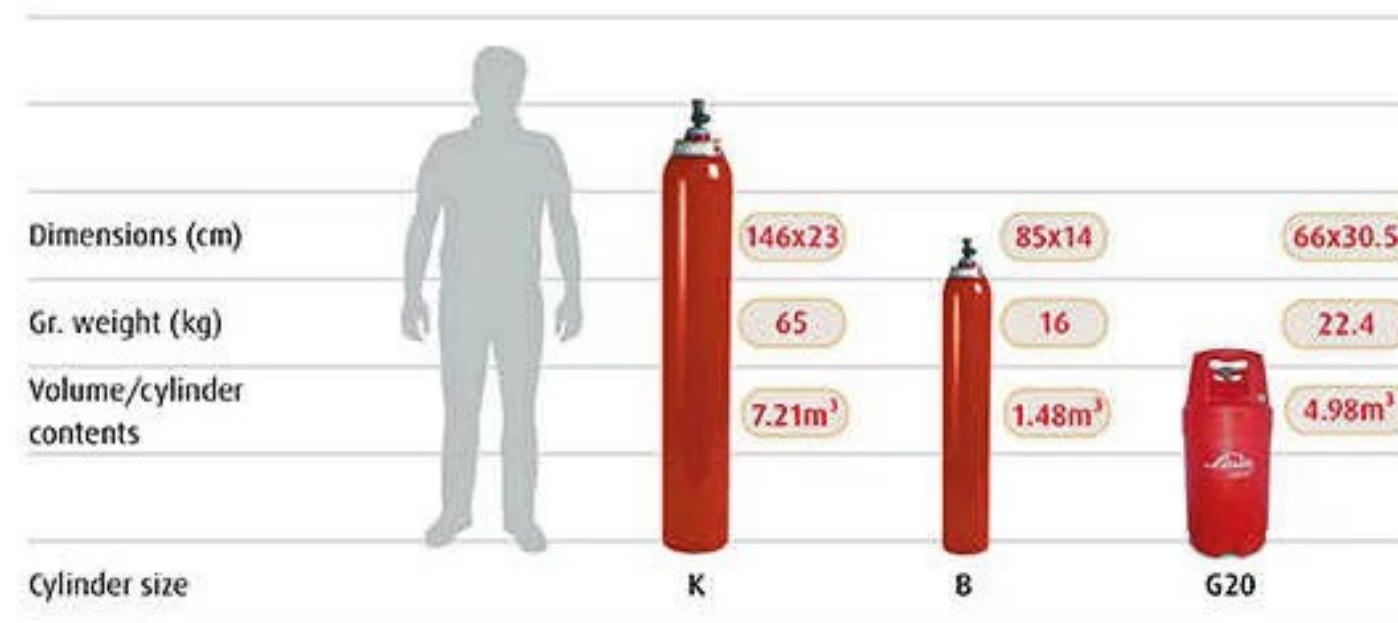
- **Generates clean** electricity from a simple electro-chemical reaction - no combustion.
- **Higher fuel efficiency** (c.50-55%) versus diesel.
- **Improved performance** in low load operating conditions.
- **Rugged design** generator canopy (target IP54 rating) - expected life of >10 years.
- **30kW in output** and paired with the battery could replaced a generator upto 60kVA.
- **Quiet operation** (low noise from fan and blower) and no smell.
- **Three moving parts** within the generator system = low maintenance.
- **Zero CO, NOx and SOx emissions** - only by-products are water vapour and heat.



HYDROGEN FUEL STORAGE



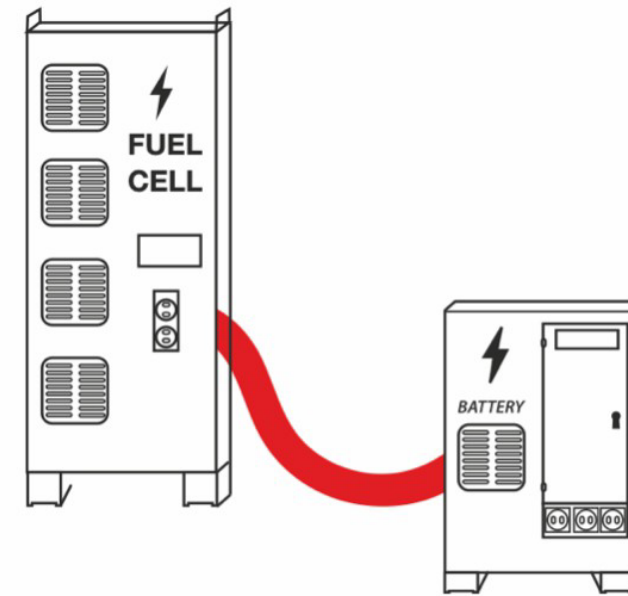
- Multi Cylinder Pack – MCP
- Hydrogen Tube Trailer
- Nanosun Pioneer



THE COST OF ZERO EMISSIONS



- 7 hours per day fuel cell operation
- £60 per kG h2
- Refuelling costs included but training encouraged
- Application ideas

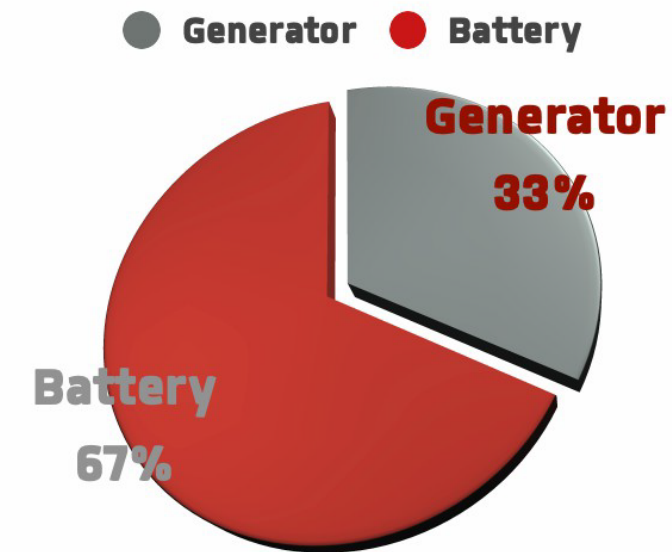


Hydrogen Fuel Cell

Fuel Cell Size	30 kW
Battery Storage Capacity	45 kWh
H2 Storage Option	BOC MCP
Anticipated H2 Consumption	21.28 Kg
Anticipated CO2e Emissions	0 Tonnes
Anticipated H2 Cost	£1276.80 Pounds
Anticipated Weekly Refuel Visits	2 Visits
Anticipated Weekly Cost	£4,899.97 Pounds

Benefits

Time period	1 Weeks
H2 Consumption	21.28 Kg
Reduction in diesel consumption	96.13 Litres
Silent Hours	100%
CO2e saving	0.30 Tonnes
Equipment Costs	£3002.50 Pounds
Refuelling Costs	£620.67 Pounds
H2 Cost	£1,276.80 Pounds
Total Cost	£4,899.97 Pounds



THANK YOU ANY QUESTIONS



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