

# MRFC – Methanol Reformer Fuel Cell

Highly efficient, low-emission, fuel cell solutions

An **MRFC power solution** incorporates a fuel cell and reformer enclosed in an outdoor cabinet with auxiliaries, such as fuel tank and power distribution. The MRFC is a hybrid system and works in parallel with an onsite battery bank external to the system. The embedded charge controller enables regulated DC power for most applications and battery storage types. The MRFC features catalytic start-up, enabling fast start-up and minimum power consumption in standby and during the start-up process.

The Methanol fuel used (H2Go) enables high power density and high fuel energy density which results in a highly energy efficient system due to reuse of waste heat from fuel cell in the reformation process.

## HIGH EFFICIENCY

Methanol used in fuel cells is highly efficient and, in many cases, it makes twice as good use of energy as a combustion engine.

## LOW PRODUCTION COSTS

Methanol is cheap to produce and can be made from a large range of accessible feedstock such as biomass and recycled carbon dioxide, which makes its production less affected by price fluctuations.

## ENVIRONMENTALLY FRIENDLY

Complete combustion of methanol produces significantly less CO<sub>2</sub> and other toxic chemicals than fossil fuels, thereby reducing the levels of greenhouse gas around the world.

## FOR EVERYONE, EVERYWHERE

The MRFC has multiple applications both off-grid or on-grid including critical backup power, supplemental power or continuous power. The rugged outdoor cabinet design is suitable for transport to remote sites and deployment under tough climatic conditions.

- ✓ No dangerous emissions
- ✓ No noise or vibrations
- ✓ High efficiency
- ✓ Lower fuel cost
- ✓ Compact with small footprint
- ✓ Flexible installation in- and outdoor
- ✓ Compact and light footprint
- ✓ Flexible installation in- and outdoor
- ✓ Remote monitoring & reduced need for service and maintenance
- ✓ Fast swap of power modules on site
- ✓ On site upgrade of power at low cost



**H2Go** is the brand behind the green and environmentally friendly fuel used by our MRFC range of systems. MBR will manage the logistics around the refuelling process if required.

# Applications





Continuous Power | Backup Power | PV Energy Extender | Battery Charging | Off Grid/Microgrid

## System Configurations



Power Output	5kW / 10kW	3kW / 5kW	1.5kW / 3kW	200 W
Rated Current	5kW / 10kW	3kW / 5kW	1.5 kW / 3kW	200 W
Nominal Voltage	42 – 58V DC	43.2 – 57.6V DC	24V (18V–28V); 48V (44V–55V)	10.5-14.4V DC / 21.0-28.8V DC
Nominal Current	104.2A / 208A @48V	62.5A / 104.2A @ 48V		16.6A @ 12V / 8.3A @ 24V
Emissions	CO2/H2 by-product, must be properly vented to outside		CO2 <3%, water 99.7%	CO2/H2 by-product
Operational	Operating temperature range -25°C – 50 °C, Humidity 0 to 95 % non-condensing, Altitude <3,000m			
Standby Power Cons.	<150 W		<80 W	< 2 W
Fuel Type & Spec.	Methanol-Water mix at Ratio of 61.5% methanol (IMPCA Specifications, 38.5% deionized water (ASTM Type II) by weight.		Methanol (DI water mix or pure) 50% to 100%	Methanol-Water mix
Fuel Consumption	0.89 L/kWh	0.8 L/kWh	0.8 L/kWh	1.2L/kWh
Fuel Cell Stack	PEM		DFMC	PEM
H2 Purity	99.99%		Not Applicable	99.99%
Cabinet Size (WxDxH)	800 x 960 x 1530mm	700 x 1150 x 2030mm	500x800x2000mm	470mm x 287mm x 352mm
Total system weight	480kg / 520kg	300kg / 350kg	100kg / 150kg	18 kg
IP Rating	54			Outdoors in suitable cabinet
Internal Tank capacity	200 Liters	200 / 100 Liters	200L	External to System
Communications	AUX, LAN (HTTP/SNMP), CAN			

## External Tank Options

200 L Barrel (Swappable)	1 MT IBC Tank (Fixed)	12 MT Poly Tank (Fixed)	25L Container (Swappable)
			
225 kWh	1,123 kWh	13,500 kWh	28 kWh