

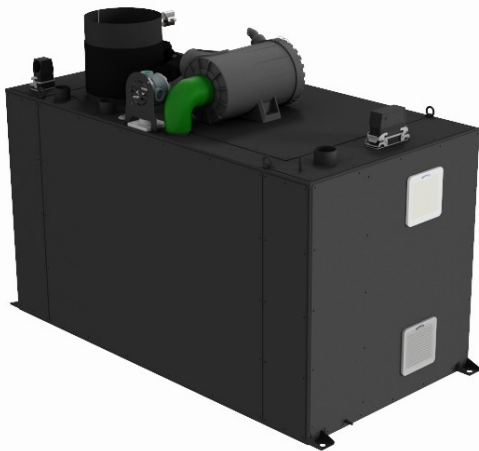


**BluEnergy**  
Revolution

PEM Fuel Cell

# ZEN 1.0

45-60 kW



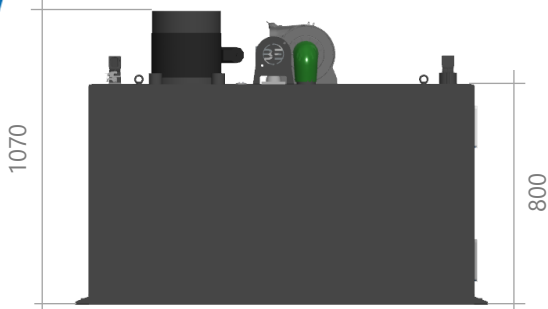
Bluenergy Revolution ZEN Fuel Cell (Zero Emission Energy) is a standardized, integrated, plug-in system able to produce 45 to 60 kW of net power at zero emission. The ZEN has been designed to comply special applications like rail or marine and to comply with ATEX rules to ease its integration onboard.

Inlet H <sub>2</sub> pressure range	bara	12.5 – 15
Required H <sub>2</sub> quality		> ISO14687 Type I Grade C
High voltage DC BUS	VDC	600 – 800
Maximum Net Electrical Power (BOL - EOL)	kW	58 - 45
Maximum Heat Output (BOL – EOL)	kW	70 - 83
Start-up time under normal conditions	min	< 5
Estimated life	Ore	10000
Maximum H <sub>2</sub> consumption	H <sub>2</sub> g/s	up to 1.1
Condensate production at maximum power	l/h	up to 31
Enclosure protection rating	IP	54
Length	mm	1500
Width	mm	760
Height	mm	1020
Curb weight	kg	≈500
Operating Ambient Temperature	°C	-25 .. 45
Condensate outlet temperature	°C	up to 65
Low voltage DC BUS	VDC	24 VDC
Maximum power consumption at low voltage	kW	1.5
Integrated temperature control	-	YES
Remote monitoring and control	-	YES
Integrated SIL safety circuits	-	YES
Maximum coolant inlet temperature and nominal flow rate	l/min	140 @ 50°C
Cathode air consumption + ventilation flow	l/s	50 + 190 (@ 35 Pa)

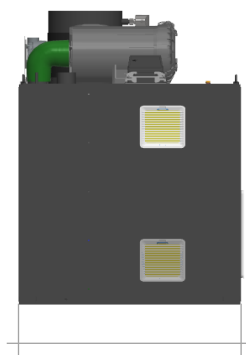


PEM Fuel Cell  
ZEN 1.0

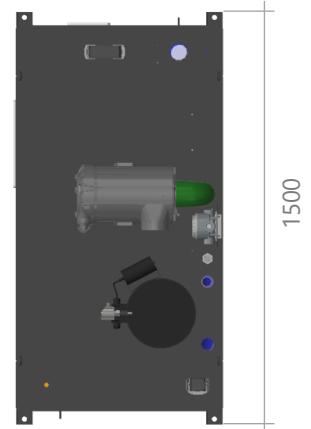
[www.bluenergyrevolution.com](http://www.bluenergyrevolution.com)



Weight: ~500 kg



760



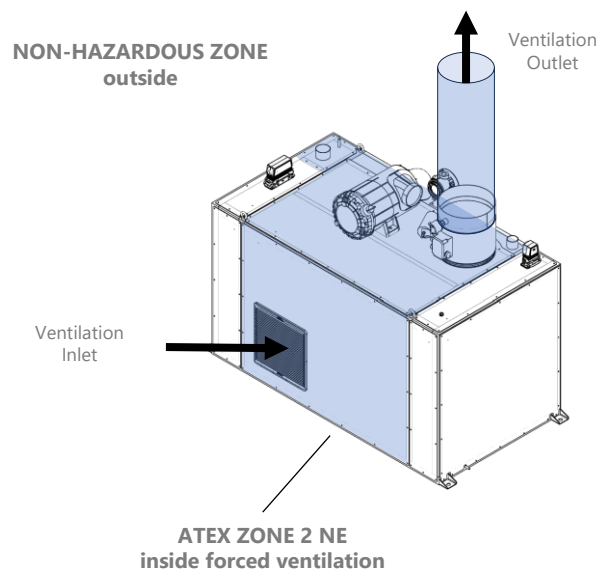
1500

### Design

- IEC 62282-2
- IEC 62282-3
- IEC 60079-10
- IEC 63341
- IEC 61508 / IEC 50129
- EN 15085
- IEC 61373

### Applications

- Rail
- Marine (designed for, not certified)
- Stationary



### Custom products available

Bluenergy Revolution is able to supply custom version of the ZEN optimizing the Balance of Plant to comply with specific requirements in terms of technical or normative aspects.  
ZEN systems are powered with the Nuvera Fuel Cell 45-60 Engines.