PEM ELECTROLYSER SYSTEM

MAKE : MMI
MODEL : MMIHG-FCS-001

The PEM Electrolyzer & Fuel Cell System is an integrated hydrogen generation and power generation platform designed for research, laboratory training, and renewable energy studies.

The system produces high-purity hydrogen using PEM electrolysis and utilizes the generated hydrogen in a 200 W PEM Fuel Cell for electricity generation.

The complete system is integrated with DAQ-based monitoring, LabVIEW software interface, and RS485 communication for real-time data acquisition, load control, and performance analysis.

System Components

The system consists of the following modules:

- PEM Electrolyzer Unit
- PEM Fuel Cell Stack (200 W)
- Hydrogen Cylinder with Safety System
- Hydrogen Flow Monitoring System
- Modular Aluminum Framework
- DC Loading System
- Software Interface (LabVIEW)
- Laptop / PC for System Monitoring

MMI Since 2011
MICRO MECH INSTRUMENTS
An ISO 9001 : 2015 Certified Company
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Email - sales@micromechinstruments.com, Web - www.micromechinstruments.com

PEM ELECTROLYSER SYSTEM

PEM ELECTROLYSER

Hydrogen Output Flow	**0 – 300 ml/min**
Hydrogen Purity	99.99 %
Output Pressure	0 – 0.3 MPa
Input Power	<150 W
Input Voltage	AC 220 ±10 %
Water Tank Capacity	2 Liters
Membrane	Dupont N117
Catalyst	100% Platinum
Electrodes	100% Titanium

PEM FUEL CELL :

Number of Cells	40
Rated Power	200 W
Rated Performance	24V @ 8.3A
Hydrogen Supply Valve Voltage	12V
Purging Valve Voltage	12V
Blower Voltage	12V
Reactants	Hydrogen and Air
Ambient Temperature	5 - 30 ºC; (41 - 86 ºF;)
Max Stack Temperature	65 ºC (149 ºF)
Hydrogen Pressure	0.45- **0.55 Bar**
Humidification	Self-humidified
Cooling	Air (integrated cooling fan)

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PEM FUEL CELL :

Cooling	Air (integrated cooling fan)
Controller Weight	400g (± 30g)
Stack Weight (with Fan & Casing):	2230g ± 50g
Stack Size	118 x 183 x 94mm (4.6" x 7.2" x 3.7")
Hydrogen Purity Requirement	≥ 99.995% (dry H2)
Start up time	≤ 30s (ambient temperature)

HYDROGEN CYLINDER AND SAFETY SYSTEM

Component	Specification
Cylinder Standard	**IS 7285 (Part 2):2017, IS: 3224 BIS**
Valve Standard	**IS 3224**
Certification	**PESO Approved**
Working Pressure	**10 Bar**
Cylinder Capacity	**20 – 47 Litters**
Flash Back Arrester	**ISO 5176-1 Certified, Working pressure 0 -10 bar**
Hydrogen Regulator	**Double Stage Regulator**
Max Inlet Pressure	**110 bar**
Max Delivery Pressure	**10 bar**

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PEM ELECTROLYSER SYSTEM

INSTRUMENTS

H2 MASS FLOW METER	
Medium	**Hydrogen**
Flow rate	**0.6 – 30 LPM**
Display	**H2 Output Pressure and Flow Feature**
Typical Response Time	**< 100 ms (Adjustable)**
Typical Warm-Up Time	**<1 s**
Supply Voltage	**12 to 30 Vdc**
Warm-up Time	**< 1 Second**
Communication	RS 485 for Data logging
DC LOADING SYSTEM	
Capacity	**300 W**
Display	**Digital**

PANELING FRAME:

Modular Chassis : Constructed from 40 x 40 mm heavy duty T - Slot aluminium profiles providing a robust , vibration - resistant backbone for mounting the stack, generator and accessories.

Centralized software : Features a Lab view Virtual Instrument interface for real time load toggling , Hydrogen consumption tracking, and automated polarization curve generation

DAQ : A Data aquistion scanner to capture transient load changes with submilli volt precision for superior signal integrity

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