Product Flyer

PEMSense

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V&F
Analyse- und
Messtechnik
GmbH

PEMSense – analyzer for PEM fuel cell testing

Technology under change

In recent months, internal combustion engines and the exhaust gases they produce have come under severe criticism. Battery-powered electric vehicles are in the starting blocks for short distances as a transitional technology.

In contrast to the purely electric car, fuel cell vehicles with their hydrogen tank are also suitable for longer ranges or long distances. A further advantage is that refuelling now takes place as quickly as in the case of cars with combustion engines.

Developers of fuel cells and manufacturers of fuel cell test stands need fast gas measurement technology to enable function testing of fuel cells during operation.

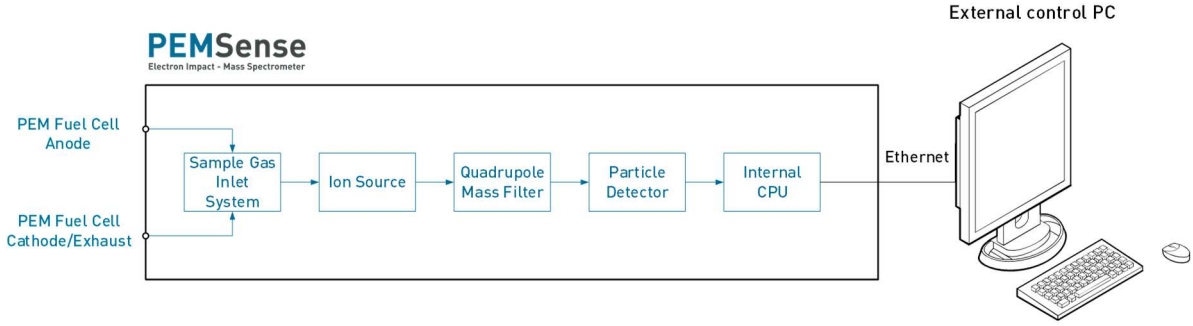
The PEMSense is the tool of choice for this application and offers extremely selective and rapid analysis for gas components like H_2, N_2, O_2, H_2O, Ar, CH_4 and CO_2. In parallel the PEMSense doesn't ask for much maintenance at the same time. Our new designed software allows intuitive handling and easy adaptation to any application. Various interfaces permit easy integration of the analyzer into existent test bench control system.

Typical Applications

- Fuel cell testing
- Fuel cell development

Function principle

The PEMSense is a classic quadrupole mass spectrometer with electron impact ionization (EI-MS). The ionization takes place at 70eV and the mass range is from 1 to 100 amu with a resolution of 1 amu.



Equipped with two separate sample gas inlets – one for the anode and another one for the cathode/exhaust side of a PEM fuel cell, the PEMSense has been optimized to fulfill the diverse requirements for online multi component gas analysis for PEM fuel cell development and testing.

Key benefits

- Fast H_2, N_2, O_2, H_2O, Ar, CH_4 and CO_2 measurement for PEM fuel cells
- Dual temperature-controlled sample gas inlet
  - Low flow inlet for anode
  - Standard flow inlet for cathode and exhaust
- Analysis within mass range 1 – 100 amu (200 amu optional)
- Measurement range from 100 ppm to 100 Vol% (depending on the compound)
- Operator interface with 4-button control
- Time saving, easy installation and operation
- Minimized service and operation costs

Specification, technical data

Technical Data	EI-MS	Technical Data	EI-MS
Mass range	1 – 100 amu	**Ambient temperature**	20°C - 35°C
Resolution	‹ 1 amu	**Humidity max.**	80 % (non-condensing)
Analysis time	›= 10 msec/amu	**Gas consumption cathode**	3000 ml/min
Measuring range[1]	100 ppm – 100 Vol%	**Gas consumption anode**	3 - 60 ml/min
Response time cathode	T90 < 100 msec	**Gas inlet temperature**	50°C – 190°C adjustable
Response time anode	T90 < 2 sec @ 4 bar(g)	**Gas inlet pressure cathode**	1 – 2 bar(a)
Lower detection limit[1]	› 0,01Vol%	**Gas inlet pressure anode**	0.75 – 6 bar(a)
Concentration drift	‹ ± 5% over 24 h	**Power**	230V/50Hz or 115V/60Hz 800 W
Reproducibility	‹ ± 3%	**Dimension (WxHxD)**	534 x 743 x 639 mm
Accuracy	‹ ± 3%	**Weight**	62 kg

[1] depending on the measured components, system setup and the settings

V&F Analyse- und Messtechnik GmbH
Andreas-Hofer-Str. 15 · A-6067 Absam
Tel +43 (5223) 43105 · Fax +43 (5223) 45170
office@vandf.com · www.vandf.com