

Product Flyer

HSense - ICE

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V&F
Analyse- und
Messtechnik
GmbH

Process Mass Spectrometer HSense

Dynamic Online Measurement

Highly sophisticated analytical techniques can be a leading factor towards the success in applications for engine emission for internal combustion engines (ICE). The HSense had been introduced to the industry in order to fulfill the demand of a highly dynamic hydrogen and helium analytical instrument.

Proven Technology

Robustness and reliability together with proven components for gas inlet and vacuum system, optimized serviceability and a mini-mum of operational cost reflect more than 40 years of experience within the field of the mass spectroscopy. Combining well proven technology with our unique and highly dynamic sampling system, the HSense offers a reliable low maintenance operation.

ICE Emission Analysis

HSense offers high-precision hydrogen analysis for a wide range of combustion engines, regardless of the fuel used, such as diesel, gasoline, natural gas, ammonia or hydrogen. As a stand-alone device or in ideal combination with our proven IMR mass spectrometers AirSense, ComboSense or TwinSense, almost all applications for gas analysis on engine test benches can be implemented. Our user friendly software package takes over all systems setup and data reporting issues.



Applications

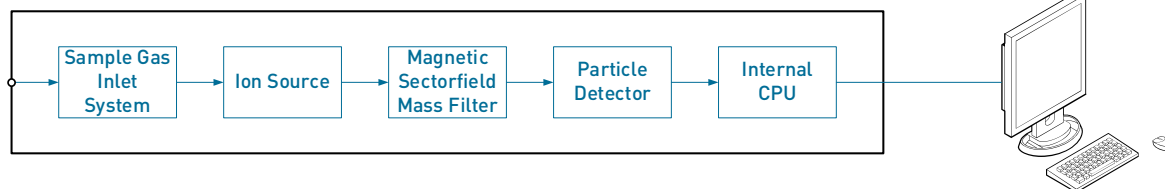
- Exhaust gas analysis from internal combustion engines (ICE)
- Automotive catalyst research

Function principle

The HSense is an online mass spectrometer using an electron impact ionization together with a magnetic sector field mass filter. The analyzer is optimized to measure hydrogen and helium fast and reliably. By using the electron ion source the gas sample ions are energized, focused and separated further on in a magnetic field in order to detect the mass range of 2-4 amu with the overall response time less than 200 msec (less than 4 sec including the delay time during the gas transfer through the gas cooler).

HSense

Hydrogen & Helium Mass Spectrometer



The HSense is available with unique and fully automated gas inlet systems in order to compensate pressure variations, optimize the amount of withdrawn sample gas and thus guarantees the correct measurement. Any contamination due to condensation or particulate matters is minimized by the integrated 2 micron fine filter in combination with a cross flow sample conditioning system, which takes care of any potential water content.

Features, benefits

- fast, reliable and robust measurement
- automatic pressure regulation – depending on the type of gas inlet
- proven temperature controlled gas inlet
- dynamic range from 1ppm up to 100 Vol%
- integrated chiller to remove the moisture within the engine emissions
- operator interface with 4-button control
- user friendly software package for manual operation
- 100% automated via the AK interface

Specification, technical data

Technical Data	SF-MS	Technical Data	SF-MS
Mass range	2 – 4 amu	Repeatability	≤ 3 % range full scale
Resolution	< 1 amu	Accuracy / Linearity	≤ 1 % range full scale or ≤ 3 % measurement point in the range 10 – 100 % of range whichever is smaller
Analysis time	≥ 20 msec/amu	Ambient temperature	10°C – 35°C
Measuring range	0 – 50.000 ppm, 0 – 100 Vol%	Humidity max.	80 % (non-condensing)
Response time	T90 ≤ 4 sec on pumped inlet with gas cooler	Power	230V/50Hz or 115V/60Hz 600 W
Lower detection limit	< 1 ppm for H ₂ , < 20 ppb for He	Dimension (W x H x D)	534 x 743 x 639 mm
Concentration drift	< ± 3% over 24 h	Weight	65 kg

Technical Data	Sample conditioning	Technical Data	Sample conditioning
Sample inlet filter	2 µm	Gas inlet temperature	max. 190°C
Gas consumption	max 150 l/h	Gas outlet temperature	< 5°C



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