

## H<sub>2</sub>IMS- Quality Control at Hydrogen Fuel Stations

The online quality control system - H<sub>2</sub>IMS - measures and continuously logs the hydrogen gas quality and sends an alarm if any substance is out of a specified range. The unique advantage of H<sub>2</sub>IMS is that it also sends a notification, if unknown substances are detected. This gives the possibility to take action (e.g. plan the next service earlier) before the gas quality gets out of range and thus reducing the time where the fuel station is out of operation.

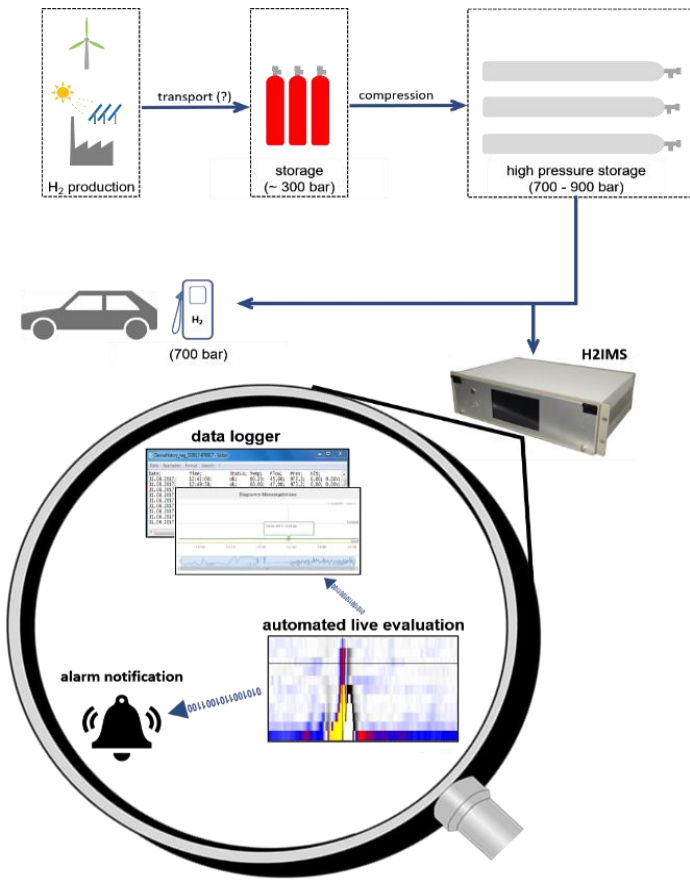


With the highest quality of emission standards nowadays to protect the environment, hydrogen fuelled modes of transportation is the future for Mobility. With only water vapour emissions from the engine, this mode of transportation does not emit any gases that may be critical to the environment.

One of the most expensive parts of a fuel cell is the catalyst on the inner electrodes. This catalyst is vital for the efficiency of the fuel cell and thereby generates a higher driving range in an automobile. Unfortunately, they are very sensitive to impurities and can get destroyed if the hydrogen fuel does not have an extremely high purity.

The hydrogen that is being filled in an automobile goes through many steps. Beginning with the production, followed by transport to the station and several compression processes, there are numerous steps where the fuel can get contaminated. It is, therefore, crucial to monitor the quality as close as possible to the final stage to reduce the risk of damage compensation due to impurities in the gas.

Hence, ION-GAS, in collaboration with EMCEL (Engineering company for Fuel Cell, Hydrogen Technology and Electric Mobility) and STEP (Sensor and Electro technique) has developed an IMS based Hydrogen Quality Monitoring device, H<sub>2</sub>IMS, for online quality monitoring at Hydrogen fuel stations.



### Specific Applications

- Protection of Fuel cell power plants
- Quality control at Hydrogen refuelling stations
- Early warning system for faults in electrolysis plants, compressor systems (for e.g. at LOHC – Liquid Organic Hydrogen Carriers)
- Quality control for Hydrogen as a raw material e.g. in the steel industry, chemical industry, pharmaceutical industry etc.

### Technical Data

- Fully automated, fast GC-IMS for 24/7 operation
- 220 V (110 V optional)
- Dimensions 200 x 500 x 400 mm and 8 kg weight
- Works with filtered ambient air.  
No further consumables
- Integrated PC with 7" touch-display
- Operation at -5 °C to + 50 °C and 0 – 85 % relative humidity
- Remote access possible
- Different interfaces and protocols for data exchange and alarms possible (e.g. LAN/WLAN/UMTS/LTE/...)

### Analytical Parameters

- Measurement time: 20-90 seconds (depending on application)
- Detection limits in the ppt-ppb range (substance dependent)
- Measurement range: 2 to 3 orders of magnitude
- Total Sulphur as H<sub>2</sub>S with external (3<sup>rd</sup> party) convertor possible

Compounds	LOD
NH <sub>3</sub>	1.4 ppb
H <sub>2</sub> S	0.2 ppb
Formaldehyde	59 ppb
Acetaldehyde	1.6 ppb
Formic Acid	42 ppb
Ethyl mercaptan	1.7 ppb
...	...

***H<sub>2</sub>IMS, one of our contributions to a cleaner future.***

For further information, contact us! [info@ion-gas.de](mailto:info@ion-gas.de)