

**Name of the organization**

European Commission DG-JRC, Institute for Energy and Transport

Name of the infrastructure / laboratory

SenTeF – Hydrogen Sensor Testing Facility

Address and country of the infrastructure / laboratory

Westerduinweg 3, 1755 LE Petten, The Netherlands

Person responsible of the access / Contact person

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Main field of activity of the infrastructure / laboratory

▮ Cross-cutting issues

Short description of the infrastructure / laboratory

The Sensor Testing Facility (SenTeF) of the JRC-IET is a state-of-the-art testing facility dedicated to the characterisation of hydrogen safety sensor performance and reliability. Sensor performance can be assessed under a wide range of environmental conditions. Temperature can be controlled between $-40\text{ }^{\circ}\text{C}$ and $+130\text{ }^{\circ}\text{C}$ and held constant within $\pm 2\text{ }^{\circ}\text{C}$. The pressure range of the facility is about 100 Pa up to 250 kPa. Relative humidities of 10% at $-10\text{ }^{\circ}\text{C}$ and 100% at $60\text{ }^{\circ}\text{C}$ are possible. A total of four gases may be mixed to produce the desired gas composition. Contaminant species e.g. carbon monoxide or alcohols, can also be introduced to investigate cross sensitivity and poisoning of sensors. A calibrated gas chromatograph and residual gas analyser independently confirm the gas composition which can be compared directly with the sensor output. The facility can be used for evaluating and comparing commercial products or testing sensor platforms under development. Microstructural analytical techniques (SEM, EDS) are also available for investigating changes in the sensing element microstructure following exposure to hydrogen.

Main research area(s) of the infrastructure / laboratory

Hydrogen Safety Sensor Performance Testing

Instruments and tools available for the above mentioned research

Sensor environmental chamber, gas chromatograph, residual gas analyzer, Scanning electron microscope, Energy Dispersive Spectrometer

