

TrigasDM



GH2+ Custody Transfer Metering System For Gaseous Hydrogen

Calibratable measuring systems for legally compliant hydrogen delivery

Hydrogen is widely regarded as the energy source of the future, with the potential to play a pivotal role in decarbonizing power generation, heating, industry and mobility. It also has great potential in the fuel industry, heavy goods transport, and steel production.

In very few cases is the required hydrogen produced on site, **meaning it has to be delivered**. As an established manufacturer of volume measurement systems, TrigasDM® GmbH is actively supporting the introduction of standards and the corresponding technical solutions for delivery and billing. In collaboration with TrigasFI® GmbH's experienced calibration laboratory, we have developed solutions for **hydrogen suppliers, service providers and filling station operators**.



German hydrogen suppliers are leading the way as pioneers!

According to the new MessEG (German Measuring Instruments Act), gas suppliers in Germany must use calibrated measurements for hydrogen sales. TrigasDM, a flow measurement specialist, developed an innovative solution in collaboration with a German gas supplier. This solution was **approved by the PTB in October 2019**. This solution meets all technical requirements and protocols and includes handling and organizing recalibrations.

Our hydrogen measurement systems support the ongoing adoption of environmentally friendly energy sources. As well as manufacturing and supplying suitable systems, we also carry out recurring calibrations and verifications in the accredited laboratory and on your premises.



The GH2+ measuring system for delivery vehicles: everything from a single source

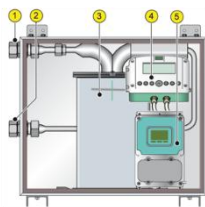
The GH2+ system series is one of the first solutions for precisely measuring and documenting highly compressed **hydrogen transported in trailer vehicles**. This compact volume measurement system is characterized by its temperature-independent mass flow measurement and its **high level of accuracy and reliability**.

The GH2+ can be used with or without a stainless-steel housing. It was specially developed to accurately measure and bill gaseous hydrogen in high-pressure storage tanks on truck trailers or in containers. Thanks to its certification in accordance with the Measurement and Calibration Ordinance, the system guarantees the required level of accuracy and can be traced back to national standards (PTB).

It is also **user-friendly and safe to use**. Depending on the customer's specific requirements, the three different versions of the measuring system can include various additional components. The GH2+ measuring system is supplied ready for installation and includes all the necessary tests and documentation for calibration-compliant use.

Our product line includes standardized versions for different pressure levels, complete with the corresponding sensors and evaluation system.

GH2+200KS / GH2+300KK



Advantages:

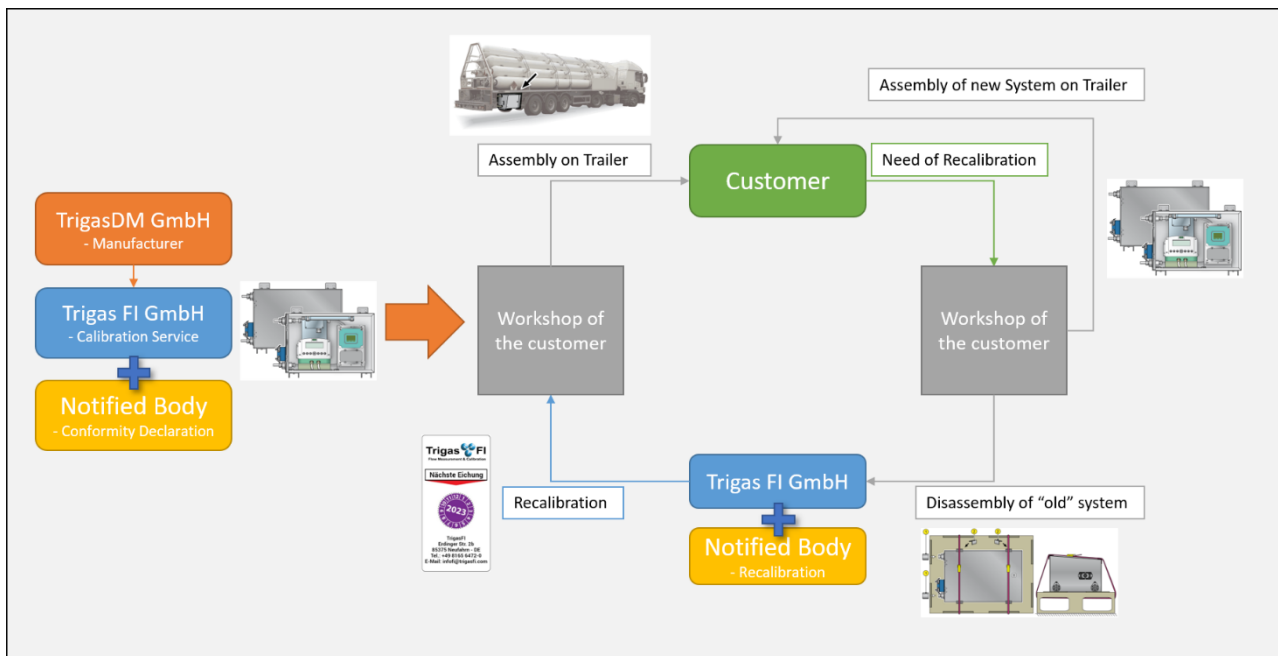
- Fast delivery
- Compact Design
- Application up to 1,048 bar
- Display with backlight
- Short batch times
- Our logistics concept
- Minimized downtime for calibration/repairs
- Application-specific types available
- No effort required for communication with authorities

TrigasDM Logistics Concept

The PTB stipulates a two-year calibration period for hydrogen refueling systems. This incurs significant costs for gas suppliers, as the measuring units are installed directly in the trucks. With hundreds of trucks on the road, any downtime caused by calibration would result in **significant logistical challenges and financial losses**.

TrigasDM has developed an efficient solution to this problem: **the measuring units are designed to be removable**. When calibration is due, the truck simply drives to one of our trained and certified workshops, where the measuring unit is replaced with a freshly calibrated one as part of regular maintenance.

The old unit is then collected and calibrated in our accredited laboratory in the presence of a calibration officer. We take care of all the organization and communication with the relevant authorities.



Hydrogen suppliers benefit from significantly reduced calibration costs and a legally compliant supply chain. They also experience minimal additional downtime for their trucks.

Our **full-service logistics concept for recalibration and re-verification** includes managing the measuring equipment for the system, notifying you of the next inspection date, planning the calibration date, carrying out complete metrological testing of the system in cooperation with the calibration office, and creating and archiving all documentation.

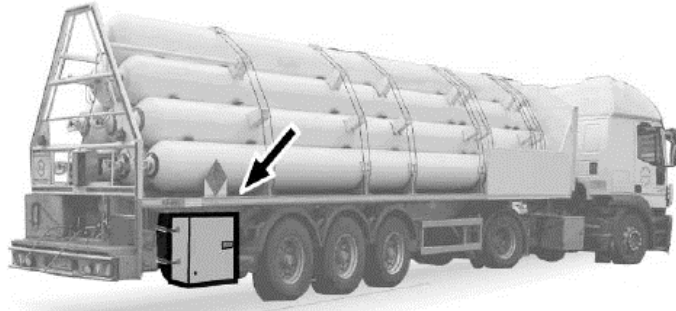
Our customers can store a supply of ready-to-use calibrated measuring systems with us to provide their workshops with short-notice supply when an upcoming calibration is expected.

If you have any questions about calibratable hydrogen measurements or are looking for calibration options, please get in touch. The Trigas engineers are happy to help.

Technical requirements for trailer integration

There are certain technical requirements that must be taken into account when integrating the system into the trailer. Please contact us for more information.

- It is important to install the system with as little vibration as possible to ensure the longevity and reliability of the measuring devices.
- As part of the approval process, the system must be replaced as a whole and must not be dismantled.
- The control unit should be positioned ergonomically to allow for comfortable operation.
- A power supply, including power failure management, is required to ensure smooth operation.



Calibration and verification of H2 filling stations through TrigasFI

RMS Hydrogen Reference Measurement System



TrigasDM® GmbH developed the RMS hydrogen reference measurement system as a compact solution for the metrological testing of hydrogen filling stations, and it has been approved as a reference for mobile hydrogen calibration.

In addition to being highly accurate, it enables calibration and verification to be carried out significantly faster than with previous methods. It reduces filling station downtime from 2–3 days to just 3–6 hours.

When calibrating filling stations with TrigasFI®, no hydrogen is released into the atmosphere. We also bring the calibration officers with us. Contact us to find out more about cost- and time-efficient filling station calibration.

TrigasDM® GmbH is a manufacturer of high-precision flowmeters and a specialist in hydrogen measurement. Its sister company, TrigasFI, is an accredited calibration laboratory providing high-quality calibration services for flowmeters for liquids and gases, even in challenging conditions.

Made in Germany ● ● ●

Our products are developed and manufactured exclusively in Neufahrn, which is located near Munich Airport.

