Hydrogen – The Energy Revolution

With our two locations in Beierfeld and Wesel, we are in the immediate vicinity of the two hydrogen competence centres in Chemnitz and Duisburg and are in close contact with customers from the hydrogen industry. For several years, our instruments have been installed in hydrogen research projects – such as the Hydrogen Testfield of the Hydrogen and Fuel Cell Center (ZBT GmbH). This allowed us to gain experience with various hydrogen processes at an early stage.

Where are our devices used?

- Research & development of components for hydrogen technology
- Generation – electrolysers
- Transport – pressure monitoring
- Storage – hydrogen compressor system
- Distribution – storage tanks
- Utilisation – fuel cells, gas engines, natural gas admixtures

Your Partner for Pressure and Temperature Measurement

Customer-specific solutions for demanding measuring tasks

The ARMANO Messtechnik GmbH represents tradition and innovation in the production and distribution of precision pressure and temperature measuring instruments, which have an excellent reputation worldwide – for more than 100 years.
We are continually developing customer-specific solutions for a variety of applications requiring pressure and temperature measuring technology. Their use is manifold and there are always new applications.

Our products at a glance


Mechanical pressure measurement


Electronic pressure measurement


Chemical seal mounting


Calibration technology


Mechanical temperature measurement


Electrical temperature measurement


Thermowells & Accessories


Source: ZBT

ARMANO Messtechnik GmbH
Location Beierfeld
Am Gewerbepark 9
08344 Grünhain-Beierfeld
Germany
Tel.: +49 3774 58 – 0
Fax: +49 3774 58 – 545
mail@armano-beierfeld.com
www.armano-messtechnik.com

Location Wesel
Manometerstraße 5
46487 Wesel-Ginderich
Germany
Tel.: +49 2803 9130 – 0
Fax: +49 2803 1035
mail@armano-wesel.com
www.armano-messtechnik.com

Subsidiary Companies
ARMANO Instruments, Inc.
14900 Woodham Drive, Suite A-150
Houston, Texas 77073
USA
Tel.: +1 281 982 3333

mail@armano-instruments.com
www.armano-instruments.com

OOO MANOTHERM Pribor
Str. Narvskaja, d2, str. 2
125130 Moscow
Russia
Tel.: +7 495 450 48 30

info@manotherm-pribor.ru
www.manotherm-pribor.ru

Product Range

Hydrogen Applications

MADE IN GERMANY

ARMANO Messtechnik GmbH

Selected Products

For the use in hydrogen applications

In our product range you will find even more measuring instruments for use with hydrogen. Do not hesitate to contact us!

Bourdon Tube Safety Pressure Gauge

RSCh 100 - 3	
Features	stainless steel 316L safety version S3 degree of protection IP65 ATEX
Pressure range	0 – 0.6 bar to 0 – 1000 bar
Accuracy	class 1.0
Data sheet	1600

Diaphragm Safety Pressure Gauge

PSCh 100 - 3	
Features	stainless steel 316L / Inconel 718 safety version S3 degree of protection IP65 ATEX
Pressure range	0 – 10 mbar to 0 – 40 bar
Accuracy	class 1.6
Data sheet	3600

Chemical Seal Mounting with Gold Coating

Diaphragm Seal MDM	
Features	chemical seal stainless steel 316L with gold or gold / rhodium coating
Model overview	7000

Process Transmitter Differential Pressure

PTDi	
Features	gold-plated membrane
Pressure range	−7 / +7 mbar to 0 – 70 bar
Accuracy	≤ 0.075 %
Data sheet	9721

Process Transmitter Pressure

PTPi	
Features	gold-plated membrane
Pressure range	0 – 70 bar to 0 – 1000 bar
Accuracy	≤ 0.075 %
Data sheet	9711

Pressure Transmitter

DTMH	
Features	thin film sensor, placed inside, welded membrane and process connection made of 316L (1.4404 / 1.4435)
Pressure range	0 – 4 bar to 0 – 600 bar
Accuracy	≤ 0.5 %
T-sheet	T09-000-059

Pressure Transmitter

PTMFB	
Features	gold-plated membrane
Pressure range	0 – 160 bar to 0 – 1000 bar
Accuracy	≤ 0.2 %
Data sheet	9810.3

Resistance Thermometer with Process Display

TPtPAXd	
Features	hydrogen-resistant with appropriate thermowell e.g. stainless steel 316L
Temperature range	−200 °C to +600 °C
Accuracy	≤ 0.05 %
Data sheet	8590

Application Example

Hydrogen compression

Hydrogen can be produced and stored with the help of an electrolyser. In order to make the storage more efficient, it is compressed using hydrogen compressor systems.

The materials used for this and also the measurement technology must therefore meet the high requirements of hydrogen under high pressure.

Hydrogen – The Requirements

Both atoms of the hydrogen molecule are very small. Due to this, the hydrogen molecule is able to penetrate solid materials, also called permeation. The hydrogen molecules permeate the lattice structure of the material, increase the internal pressure at atomic level and thus gradually change the material properties, unfortunately for the worse. This is referred to as hydrogen embrittlement of the material.
By selecting a suitable material for all surfaces in contact with the medium, the effects of this problem can be minimised.
Hydrogen applications are often safety-relevant systems that require high standards in terms of leak tightness and explosion protection.

Our Instruments in Detail

Wetted parts
We primarily use materials such as 316L, Inconel or Hastelloy for our devices – materials which are tried and tested in various hydrogen applications.

Safety version
In accordance with DIN EN 837-1, our devices are equipped with a break-proof solid front and a blow-out back to protect the personnel working on the device in case of a burst.

Restrictor screw
In case of leakage, the restrictor screw reduces the exhaust velocity of the hydrogen and prevents flashback.

ATEX version
We have ATEX certificates for many of our devices, especially for group IIC (hydrogen applications).

Free of grease and oil
To meet increased requirements, our devices are cleaned and adjusted separately.

Helium leak detection
Our devices are leak-tested to prevent leaks and unintentional release of hydrogen. Any problem areas are thus already detected in advance.

Gold coating of thin membranes
The gold coating minimises the diffusion processes and prevents embrittlement of the wetted parts on the one hand and the ingress of hydrogen into the filling liquid of chemical seals and pressure transmitters on the other hand.

Suitable for outdoor applications
Our devices comply with the degree of protection IP65 and are suitable for outdoor use.