

Barksdale®

CONTROL PRODUCTS

CRANE Barksdale, Inc./Barksdale GmbH
A Subsidiary of Crane Co.

H₂

Pressure sensors and switches
for monitoring and controlling
H₂ applications



Control Every Move

Technologies

At Barksdale, we are committed to developing innovative pressure sensor solutions that can withstand the above challenges of handling hydrogen. Depending on the process conditions, we can utilize a monolithic sensor or gold-coated piezoresistive sensor.

Monolithic sensor

The monolithic sensor (seal-free technology) is a one-piece sensor without welding and without any seal. The advantages of this technology are reduced risk of embrittlement, high pressure capability and high burst pressure protection. Furthermore, the material 316 L has excellent corrosion resistance.

- ▶ Leakage-free
- ▶ Oil-free design
- ▶ Hydrogen compatible stainless steel
- ▶ Avoidance of embrittlement
- ▶ High burst pressure protection



Gold-plated Sensor

Gold plating is an effective method of combating hydrogen permeation and material embrittlement at high temperatures and pressures. The unique properties of gold make it an excellent barrier against hydrogen, protecting the diaphragm and increasing the reliability and longevity of pressure sensors used in hydrogen environments.

- ▶ Hydrogen impermeable
- ▶ Corrosion resistant
- ▶ Durable and reliable



Solutions for a wide range of applications

The Barksdale portfolio of hydrogen transmitters and switches ensures seamless integration and optimal performance in various industries and applications.

- ▶ Electrolysis
- ▶ Storage and distribution
- ▶ Filling processes with compressors
- ▶ Refueling systems
- ▶ Fuel cells
- ▶ Cooling





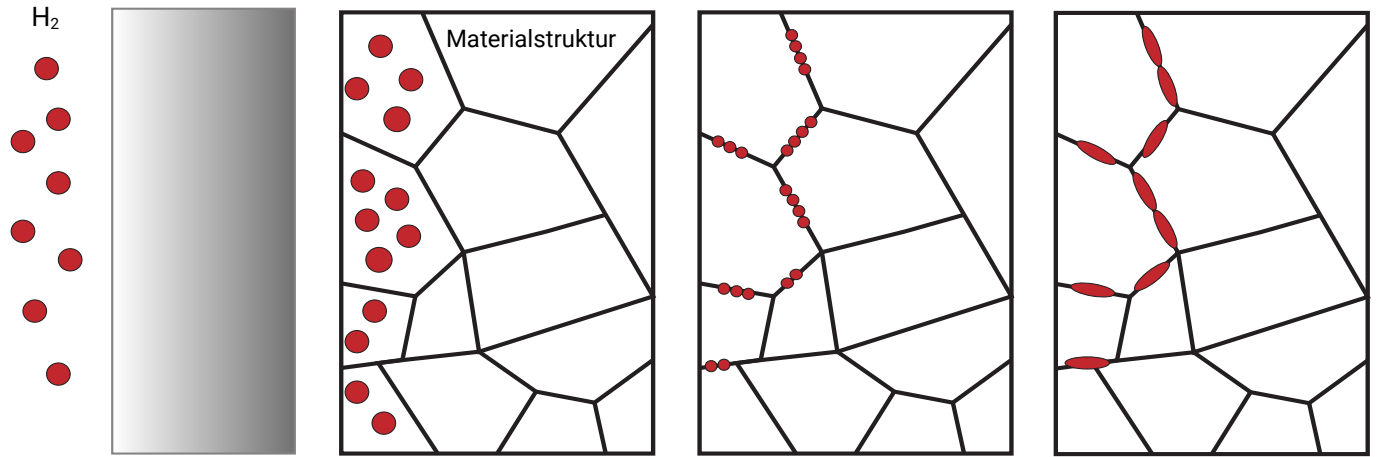
Advancing Hydrogen Technology

As we move towards a clean and sustainable energy landscape, Barksdale is at the vanguard of this hydrogen revolution. Barksdale is committed to driving progress in the development of innovative pressure control and measurement solutions with products designed to overcome the challenges of permeation, embrittlement, material compatibility and safety.

Embrittlement

Embrittlement is the phenomenon that leads to brittleness and loss of ductility of a material. Because hydrogen is such a small atom, it can easily penetrate through micropores and cracks in the surface of a material. There it combines

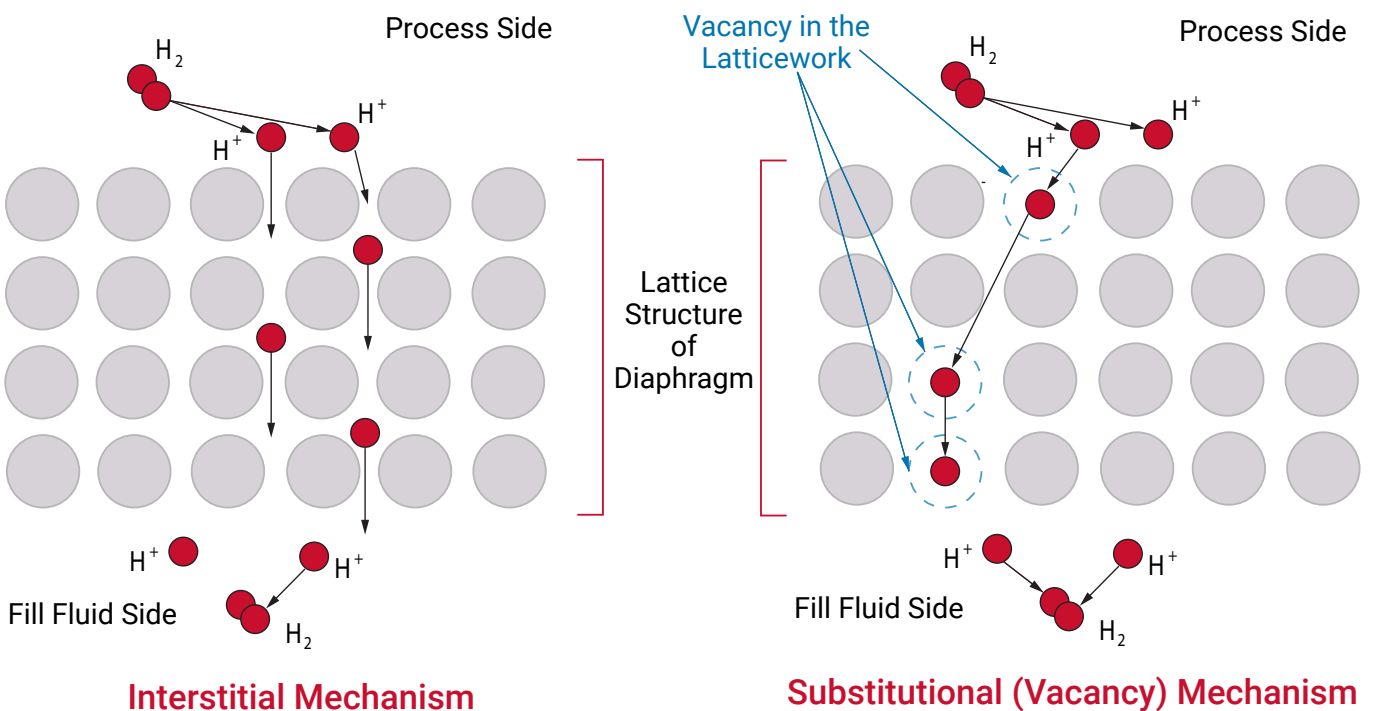
with other hydrogen atoms and then forms a bond with other H_2 molecules, creating a mass of hydrogen that exerts pressure on the cracks in the material and leads to cracking.



Permeation

During hydrogen permeation, hydrogen atoms diffuse through materials, leading to leaks and potential safety risks. Hydrogen ions can permeate the membrane of

a pressure sensor and transform into hydrogen bubbles on the other side of the membrane, affecting the accuracy of the sensor.



Solutions for hydrogen compressors and refueling stations

Series BHyT – BiT

Explosion-proof & Intrinsically safe hydrogen pressure transmitters

- ▶ Material 316 L for excellent corrosion resistance
- ▶ High pressures up to 1,400 bar
- ▶ Operating temperatures: -40 °C to + 100 °C
- ▶ High accuracy of $\pm 0.1\%$... ± 0.25 FSO (Full Scale Output)
- ▶ Monolithic sensors (seal-free technology) alternatively gold-plated sensors
- ▶ UL, ATEX, IECEx



BX/BT

Explosion-proof & Intrinsically safe hydrogen pressure switches

- ▶ High accuracy
- ▶ High proof pressure
- ▶ UL, ATEX, CSA
- ▶ Suitable for SIL2/3 (IEC 61508) acceptance



Solutions for hydrogen fuel cells: Stationary and mobile

Series BhyT – BoT Hydrogen pressure transducers

- ▶ Material 316 L
- ▶ High pressures up to 700 bar
- ▶ Operating temperatures: -40 °C to + 100 °C
- ▶ High accuracy of $\pm 0.25\%$ FSO (Full Scale Output)
- ▶ Monolithic sensors (seal-free technology)



Series 7000 Hydrogen compact switches

- ▶ Pressures up to 210 bar
- ▶ Operating temperatures: -40°C to + 82 °C
- ▶ Compact design



Design with Us

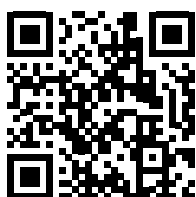
Leverage our Engineering Expertise to Make Exactly What You Need

Modify Standard Products for Your Project

Barksdale offers more than 50 product families and millions of configured options to measure, monitor and control processes essential to the industrial, power and transportation markets. We can make basic modifications to these standard products and options to ensure they are exactly matched to the project requirements.

Market-focused. Technology-driven. Customer-intimate.

These elements at the heart of the company philosophy have made Barksdale a synonym for advanced measurement and control solutions since 1949. We continuously adapt our innovations to market requirements and offer customized solutions thanks to our global presence. With facilities in North America, Europe and Asia, we are a leading provider that combines close customer relationships with the highest level of technological expertise. Barksdale is part of the globally operating Crane Co. Group with a history of almost 170 years. By utilizing synergy effects, growth and customer orientation are always the focus of all business units. Control every move.



Visit Barksdale.de to view our complete product portfolio.
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