Hydrogen Service

ZERO
emissions

Pekos
VALVES

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Pekos

VALVES

Solution for Hydrogen Service

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Pekos Valves: Over 35 Years of Excellence in Ball Valve Manufacturing

Since 1988, Pekos Valves has been designing and producing high-quality ball valves under the Pekos® brand, establishing itself as a leading European manufacturer in the industry. With over 35 years of expertise, Pekos has become a trusted name in ball valve manufacturing and automation, serving a diverse range of sectors worldwide.

To date, Pekos has manufactured and delivered more than 1,000,000 valves to industries such as Oil & Gas, Petrochemical, Chemical, Energy, Pulp & Paper, Pharmaceutical, and the Food Industry. Our commitment to quality, innovation, and reliability has made Pekos a solid reference in the field, meeting the unique requirements of demanding applications across the globe.

Approvals, Certificates and Quality control

All Pekos valves are designed, produced and certified by the most widely accepted international standards. Our total quality control system is designed to assure that every step from material procurement through machining, assembly, testing and packaging meet our main goal - Always exceeding the expectations of our customers.

Pekos is supplying to more than 90 countries around the globe since 1988. This wide acceptance is testimony to the company's ability to understand and efficiently respond to the requirements of current global market. The regular growth of the Pekos Valves from the financial point of view, is the result of a stable increase in sales, qualified staff, range of product and qualified investments in hardware, software and R+D+i. Always following the industrial market development.

Manufacturing

Our fully automated warehouses enable us to ensure rapid delivery times for our products. Since 1988, Pekos has been supplying products worldwide, consistently understanding and efficiently responding to the evolving needs of the global market

Company Philosophy

Our mission is to deliver both standard and custom-designed ball valves with short lead times, competitive pricing, and, most importantly, exceptional durability. This commitment is supported by a dedicated sales and after-sales service team, offering personalized support from a truly international group of professionals

Technology

Pekos factories feature cutting-edge technology and state-of-the-art machinery, allowing our Technical, R&D, and Quality departments to continually enhance and maintain the highest quality standards. We conduct in-house testing, including hydrostatic tests using multiple testing benches, as well as cryogenic and fire tests, to ensure the reliability and performance of our valves.

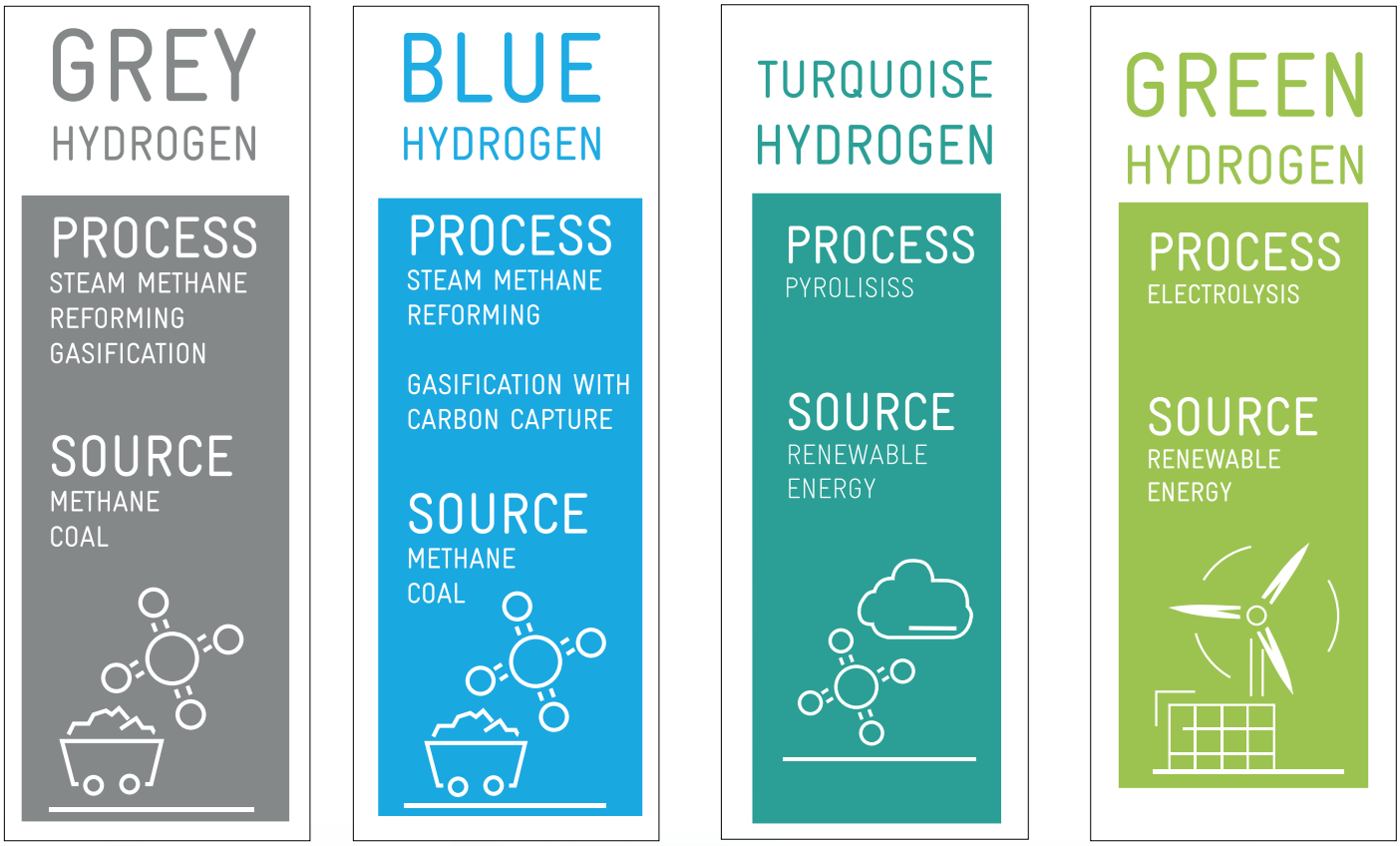
Online Stock

In our customer portal, distributors can easily check real-time stock availability. With over 50.000 valves in various materials and configurations, and a stock value exceeding €30 million, we ensure prompt service and accessibility.

Hydrogen in the Industry of Ball Valves

The growing significance of hydrogen as a clean and sustainable energy source is becoming increasingly evident across various industries. Hydrogen plays a crucial role in the ball valve industry, particularly as hydrogen use expands in various applications, including energy, chemical production, and transportation. The interaction between hydrogen and ball valves involves several key considerations:

Sources and Types of Hydrogen



Natural gas

Grey hydrogen is the most common form of hydrogen production, made from fossil fuels via steam methane reforming (SMR), which releases carbon dioxide (CO_2) into the atmosphere. While it is less harmful than black or brown hydrogen, it produces more emissions than green hydrogen.

Natural gas

Blue hydrogen is produced from natural gas, with most CO_2 emissions captured and stored or reused. However, methane leakage upstream of production can affect its environmental impact. Therefore, the term "blue hydrogen" may be too broad, and it is more accurate to refer to it based on its specific carbon footprint.

Methane

Turquoise hydrogen is produced through methane pyrolysis, a newer and experimental method that splits methane into hydrogen and solid carbon instead of CO_2 emissions. The solid carbon can be used in various industries, such as car tires, plastics, and batteries. If renewable energy is used in the process, it can be nearly carbon neutral

Renewables

Green hydrogen is primarily produced through water electrolysis using electricity from renewable sources, resulting in zero CO_2 emissions. When used in fuel cells, its only by-product is pure water. While most green hydrogen is made via electrolysis, it can also be produced from renewable sources like biogas, biomethane, or bio-waste, which also result in very low or zero emissions.

Challenges associated to ball valves:

▪ Material Compatibility & Hydrogen embrittlement:

Hardening: to diminish diffusion.
Alkaline baths of hematite in carbon steel materials.
Hardening with Titanium nitride or carbide.

Covering:
Coatings rich in Zinc or Cadmium and coatings rich in Vanadium/Molybdenum carbides.

Stainless materials:
Stainless steel materials have a less permeable matrix, avoiding Hydrogen to get into it.
Stainless materials rich in Zinc and high in Aluminium content.

Traps:
to avoid diffusion.
Retained austenitic traps or thermic treatments.

▪ Regulations:

ISO 19880 - 1	Gaseous hydrogen
ASME B31.12	Hydrogen Piping & Pipelines
STP/PT-003	Hydrogen Standardization Interim Report for Tanks, Piping, and Pipelines
ISO/TR 15916	Basic considerations for the safety of hydrogen systems.
API 941	Steels for Hydrogen Service at Elevated Temperatures and Pressures in Petroleum Refineries and Petrochemical Plants.

▪ Safety Considerations:

When working in high-pressure conditions, safety is crucial due to the high explosion potential, and emissions goal must be reduced to Zero.

Pekos Valves is committed to offer a full range of valves for all uses, supporting the industries to overcome the new challenges of this changing world by giving the best solutions for each specific case the industry may need.

Leakage prevention:

Hydrogen, due to its small molecular size and low density, presents a high likelihood of leakage. This unique property created challenges in containment, requiring specialized equipment to maintain safety and reliability. Although dedicated hydrogen regulations are still under development, the globally recognized ISO 15848 standard—considered the primary regulation for controlling fugitive emissions in valves—is widely adopted for hydrogen applications.

Ball valves designed for low fugitive emissions in hydrogen applications must meet a high demanding requirements for material integrity and sealing performance, as specified by ISO 15848, to ensure minimal environmental impact and operational safety.

Our valves, as **standard,** are already certified by **ISO15848-1 Tightness BH endurance CO3**, and now our engineered ZE stem, along with other standard features like maintenance-free design and double sealing packing, make it exceptionally suited for demanding applications, such as hydrogen. By reducing on-site safety risks and enhancing performance, Pekos valves provide a durable solution that contributes to total cost of ownership, efficiency, and reliability.

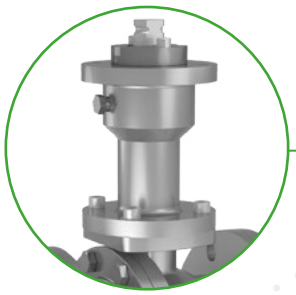
APPROVED TYPE APPROVAL SCHEME ISO 15848 LOW FUGITIVE EMISSION

APPROVED TYPE APPROVAL SCHEME TA-LUFT VDI 2440

Designed for standard and severe services

Pekos offers advanced technical solutions for both standard applications and the most demanding sever and hazardous services.
As an industry leader in valve technology, we are dedicated to setting the standard for superior safety and performance. With the introduction of our newly engineered packing design, we further reinforce our commitment to delivering best-in-class safety and reliability.

Our ZE stem design is certified **ISO15848-1 tightness AH endurance CO3**, meaning that it has been rigorously tested over thousands of operations. By using Helium as test medium, this design achieves the highest-class A, typically associated to with bellow seal valves, ensuring exceptional integrity and the most critical applications.



- ✓ New Z2 Stem design.
- ✓ Enhanced soft packing desig.n
- ✓ Maintenance free.
- ✓ ATEX & Fire Safe.
- ✓ Lantern system.
- ✓ Long-lasting performance tightness.
- ✓ Patent under process.

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