



Omniseal Solutions
SAINT-GOBAIN

ENERGY: CARBON-FREE



Sealing & Material Solutions
For Hydrogen Value Chain



H₂ Hydrogen

0 ZERO emissions

Beyond the boundaries of
POSSIBLE



SAINT-GOBAIN

PRECISION SEALING & MATERIAL SOLUTIONS FOR YOUR CRITICAL HYDROGEN APPLICATIONS

PRODUCTION

Green Hydrogen

ELECTROLYZER CELLS

Omniseal® Gasket Solutions Made From Proprietary Rulon® Fluoropolymer & Meldin® Thermoplastic Material

Our technical experts have developed cost-effective manufacturing capabilities that allow us to supply single-piece, polymer gaskets above 2 METERS - larger than any sheet size available on the market today.

Technology Advantage

- Material creep relaxation characterization in accordance to EN13555
- Proven tightness performance with Helium
- Chemical compatibility with Hydrogen, Oxygen and KOH solutions
- Cost optimization by reducing waste material

Blue Hydrogen

CARBON CAPTURE & STORAGE (CCS)

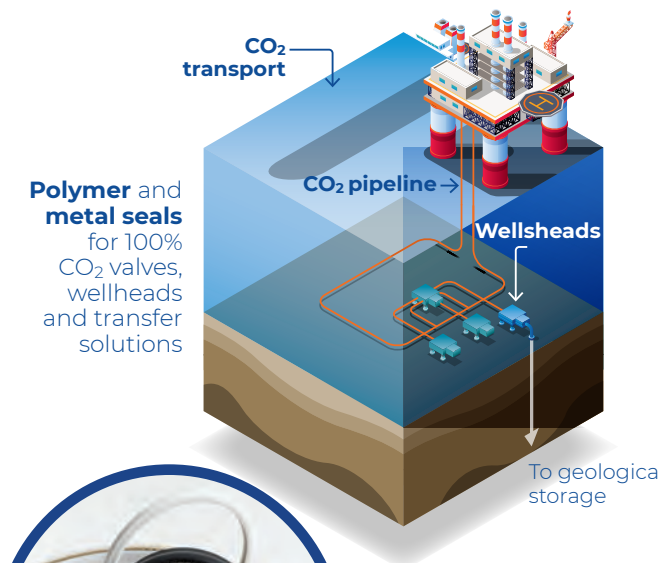
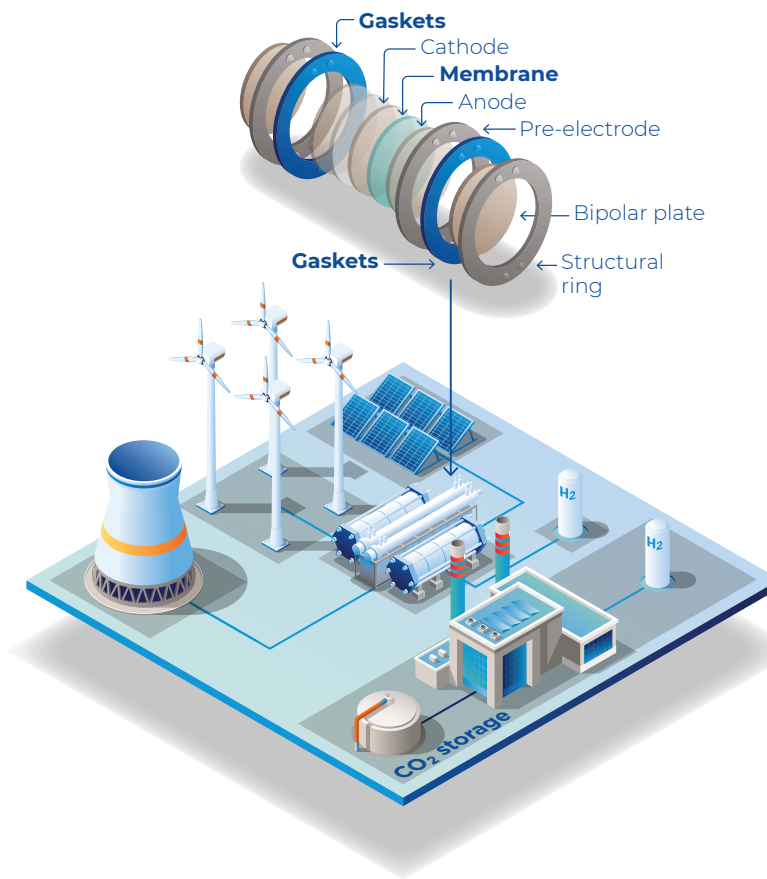
100% CO₂ Certified, Proprietary Fluoroloy® & Meldin® Material

Several of our proprietary materials have successfully passed a 100% CO₂ immersion testing in liquid and super-critical state, compliant with Pass/Fail criteria of Norsok M-710, Ed. 3.

Click on QR Code to view case study!

Technology Advantage

- Superior lifetime compared to elastomers
- Reduced downtime and improves reliability even in subsea environment
- Third-party material certificates available upon request
- Customized Omniseal® spring-energized seals cope with stringent operating conditions of CCS applications



TRANSPORT & STORAGE

HYDROGEN TRANSPORT, TRANSFER & STORAGE

Engineered Omniseal® Polymer & Metal Sealing Solutions

At low temperatures, elastomers become brittle and may fail during rapid depressurization by explosive decompression. Therefore, thermoplastic and metallic materials are highly recommended solutions.

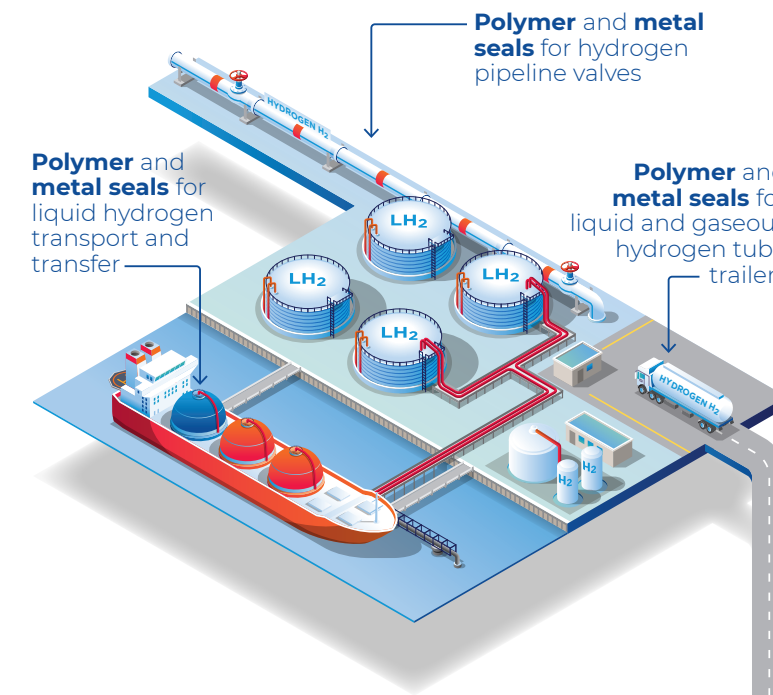
Our Omniseal® polymer and metal seals can be used from -253°C (20°K) up to extreme temperatures > +600°C, while maintaining their integrity and excellent tightness at extremely high pressures.

Technology Advantage

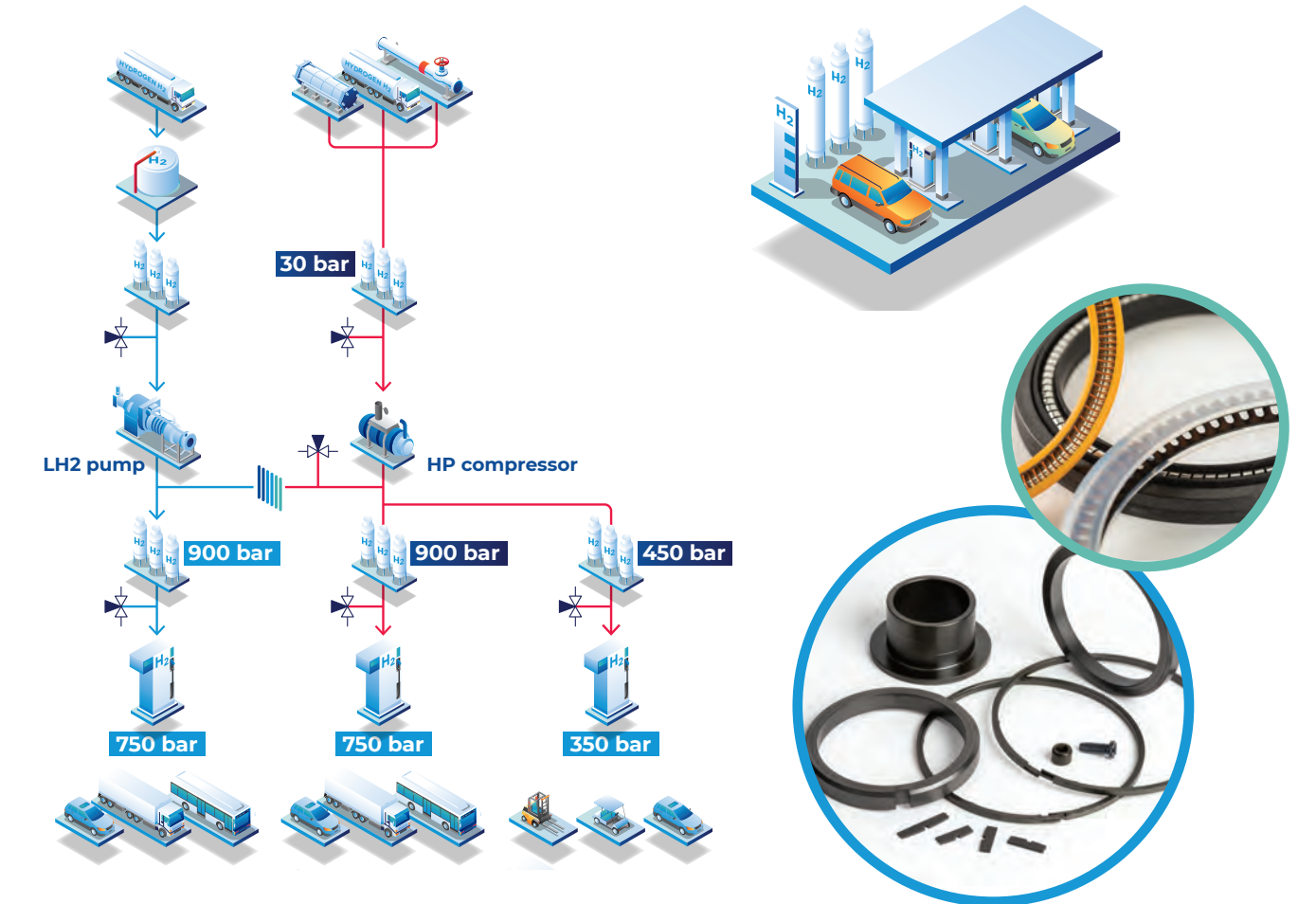
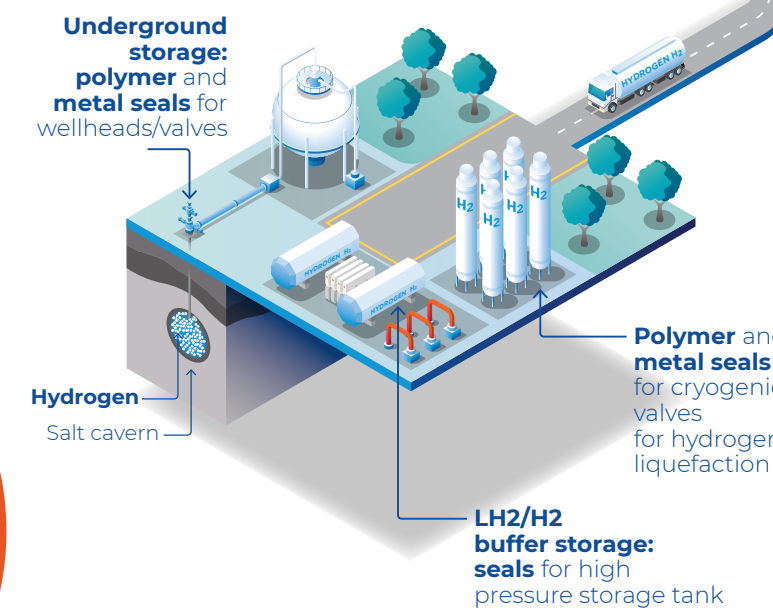
- Decades of proven experience with gas and liquefied gas
- Design compliant with low-fugitive emission standards
- Numerical thermo-mechanical simulation
- Material characterization (permeation, RGD)



TRANSPORT



STORAGE



Engineered Omniseal® Polymer & Metal Seals For Extreme Operating Conditions

Our extensive engineering and testing experience in high pressure and cryogenics enable us to design proven sealing solutions for a wide variety of applications in hydrogen refueling stations.

We can customize solutions based on numerical simulation and a wide range of proprietary Fluoroloy® and Meldin® formulations fully characterized in H₂/LH₂ up to extreme pressures.

Main Applications:

- H₂/LH₂ pumps and compressors
- H₂/LH₂ valves, nozzles, couplings, breakaway couplings
- H₂/LH₂ buffer storage

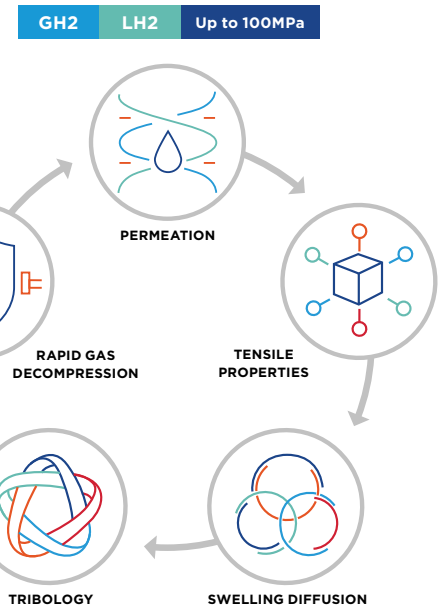
Technology Advantage

- Expertise in high pressure and cryogenic applications
- Numerical thermo-mechanical simulation
- Material characterization (H₂/LH₂ tribology, permeation, RGD)
- Large choice of polymer materials (PTFE, PEEK, PAI, PI) and H₂ compliant metals

Our Proven Sealing & Material Solutions Protect Your Hydrogen Applications' Performance & Efficiency

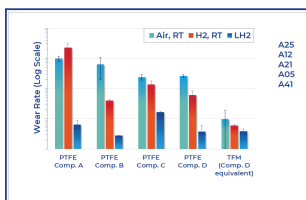
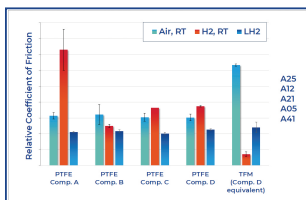
Hydrogen continues to be a key contributor to the energy transition towards a greener future and Net-Zero objectives; however, the journey can be complex. Omniseal Solutions™ is a reliable partner, understanding the multi-facets of the **HYDROGEN VALUE CHAIN** from Production, Transport & Storage, to Refueling Stations.

- Our precision in design engineering ensures that solutions are reliable and durable – even with technically demanding specifications and under extreme environments.
- With memberships in international hydrogen technical committees making changes in new regulations and standards, we remain knowledgeable of the challenges facing component manufacturers and respond quickly.
- We own a comprehensive dataset of selected proprietary Rulon® fluoropolymer and Meldin® thermoplastic materials from several testing campaigns at external laboratories worldwide (see below our various testing methods, capabilities and results).

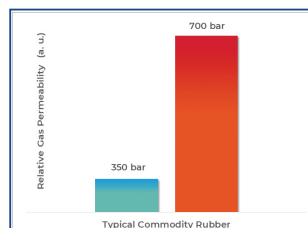
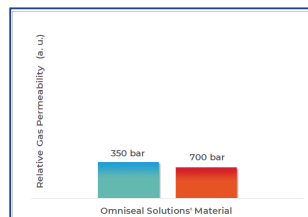


By conducting rigorous material characterization testing followed by numerical simulation and application testing, we can custom design sealing solutions that match your technical and economical objectives.

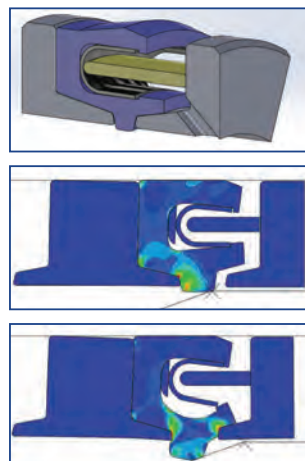
Tribology



Permeation



Simulation



Application Testing



HIGH PRESSURE



CRYOGENIC

By contributing at an early stage of your development process, our energy experts can engineer solutions that give you a **TECHNOLOGY ADVANTAGE**.



EXPERT PROBLEM SOLVING

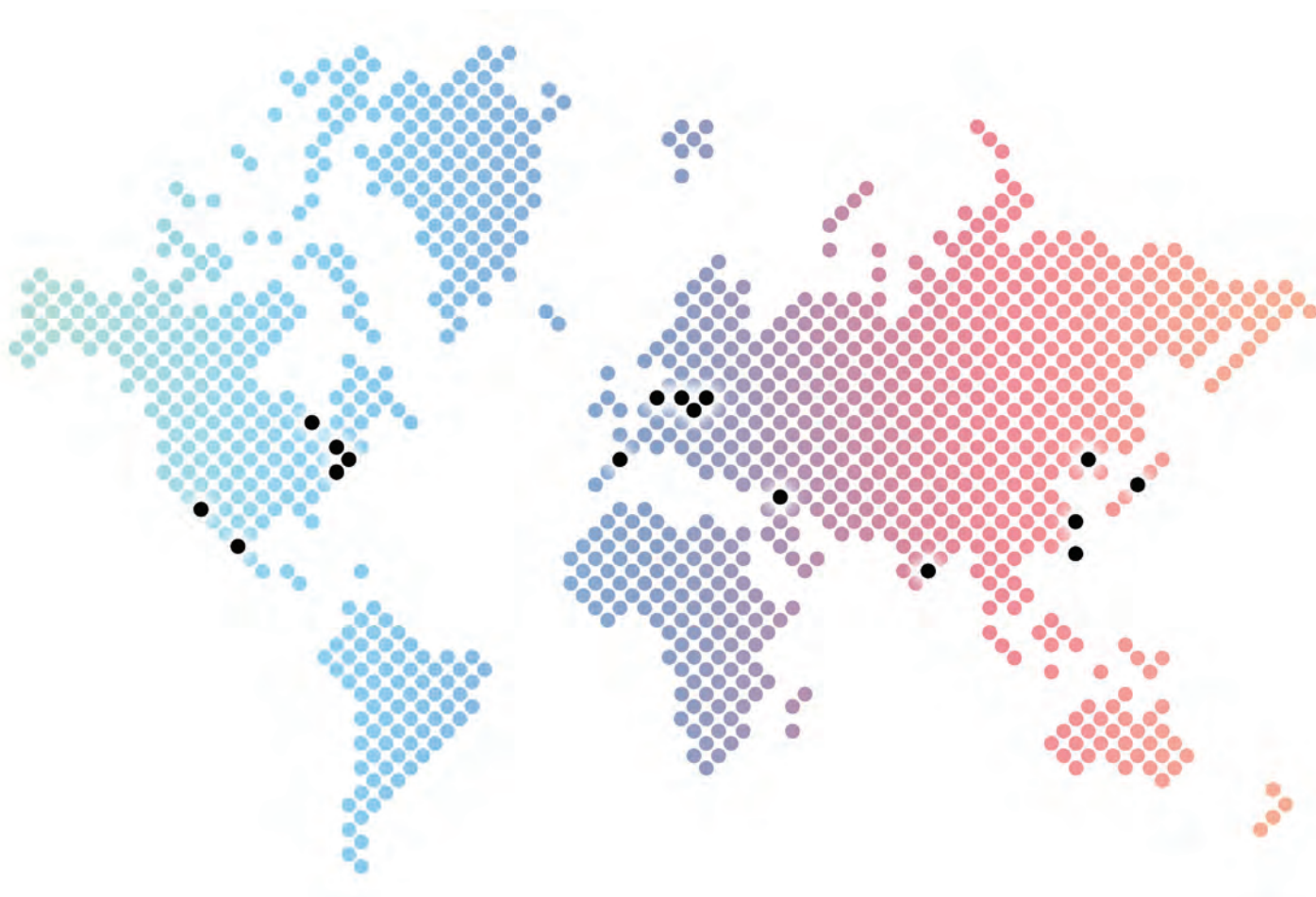


MATERIAL EXPERTISE



COLLABORATIVE SPIRIT

ONE GLOBAL TEAM... A DEDICATED CUSTOMER FOCUS



GLOBAL & LOCAL PRESENCE

With 17 manufacturing facilities in 10 different countries, Omniseal Solutions™ is a diverse group that is committed to being customer centric.

Contact our energy / hydrogen team of experts for more information. We have local resources to support you!

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