

# ENERGY: CARBON-FREE

Sealing & Material Solutions For Hydrogen Value Chain





ZERO emissions

Hydrogen

# PRECISION SEALING & MATERIAL SOLUTIONS FOR YOUR CRITICAL HYDROGEN APPLICATIONS

## PRODUCTION

## Green Hydrogen ELECTROLYZER CELLS

#### Omniseal<sup>®</sup> Gasket Solutions Made From Proprietary Rulon<sup>®</sup> Fluoropolymer & Meldin<sup>®</sup> 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 charactization in accordance to EN13555
- $\cdot$  Proven tightness performance with Helium
- Chemical compatibility with Hydrogen, Oxygen and KOH solutions
- $\cdot \operatorname{Cost}$  optimization by reducing waste material

## Blue Hydrogen

CARBON CAPTURE & STORAGE (CCS)

## 100% CO<sub>2</sub> Certified, Proprietary Fluoroloy<sup>®</sup> & Meldin<sup>®</sup> Material

Several of our proprietary materials have successfully passed a 100% CO<sub>2</sub> 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

- $\cdot$  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



#### 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<sup>®</sup> 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

## **REFUELING STATIONS**





### 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
- $\cdot$  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<sup>™</sup> is a reliable partner, understandinging 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<sup>®</sup> fluoropolymer and Meldin<sup>®</sup> 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.



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







## ONE GLOBAL TEAM... A DEDICATED CUSTOMER FOCUS



## **GLOBAL & LOCAL PRESENCE**

With 17 manufacturing facilities in 10 different countries, Omniseal Solutions<sup>™</sup> 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!

- North America, Mexico and Canada: Jeff Pavelka, Jeff.L.Pavelka@saint-gobain.com, mob: +1 919 279 5057
- Europe: Christophe Valdenaire, Christophe.Valdenaire@saint-gobain.com , mob : +33 680 618 861
- Japan: Nobuo Tsuchiya, Nobuo.Tsuchiya@saint-gobain.com , mob: +81 80 9575 6562
- South Korea: JoonHo Lee, Joonho.Lee@saint-gobain.com, mob: +82 10 2644 6252
- India: Hitesh Chawhan, Hitesh.Chawhan@saint-gobain.com , mob: +919 731 600711
- China: Andy Li, Andy.Li@saint-gobain.com , mob: +86 186 1683 9683

#### www.omniseal-solutions.com

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