

TESTING OF SEALING PRODUCTS AND COMPONENTS

Characterise and qualify your sealing products and components, particularly in H2 environment



Your expectations

Sealing products used in mechanical systems, pressure vessels or fluid systems, such as flat gaskets for flanged seals, packing and mechanical seals for stems, dynamic seals for rotating shafts or translating rods, must meet the requirements for use under severe operating conditions such as hydrogen environment.

You are a manufacturer seeking to:

Qualify a component according to a standard or specific or extreme conditions (extreme temperature and pressure, rapid/explosive decompression (RGD), ageing in an aggressive medium, biolubricant, radiation exposure, very high friction velocity)

Set the operating range of a product

Develop a protocol for laboratory testing or production inspections

You are a user and, to meet safety or environmental requirements, you need to assess the sealing performance under conditions similar to service conditions (e.g. pressure, temperature)

Our solutions

We can assist you with your characterisation tests using different gases (H₂, CH₄, Co₂, He...) using a wide range of equipment (pressure: from vacuum to 1,000 bar gases – 2,000 bar for oil; temperature: from very low temperature (cryogenic) to 1,000°C; leak measurements)

Our experts know the main customer specifications, standards, multisector regulations

We define and develop the required test engineering, particularly for the ageing and service life of sealing products

We can offer our test engineering expertise, particularly in relation to ageing and the service life of sealing products.”

ZOOM ON HYDROGEN

[HyMEET](#), our technological platform dedicated to H₂, provides mechanical engineering with resources and skills needed to master low-carbon hydrogen production, distribution, storage and utilization technologies. HyMEET combines an ambitious R&D program with a €25 million investment in resources dedicated to characterization and validation tests (up to 1000 bar and in a range of temperatures from deep cryogenics to high temperatures) as well as consulting and training.

Its activities are dedicated to:

Characterizing the behavior of materials in contact with hydrogen

Development of specific test methods

Characterization of specific mechanical equipment and systems in severe hydrogen environments.

Our equipment enables:

Mechanical characterization of materials using fatigue machines in a high-pressure hydrogen environment

Control of sealing systems and plant containment, with test benches developed to study gas diffusion phenomena, resistance to rapid decompression and sealing performance under severe conditions

The study of the ageing of test specimens in high-pressure autoclaves

Tests under cryogenic conditions for the use of hydrogen in liquid form, with several cryostats fed by a helium-hydrogen liquefier

Multiphysics tests with pressure, temperature and cycling.

Manufacture of thermoplastic composite parts (tanks, tubes) by in-situ deposition and consolidation (in real time, with no further steps required) using our HySPIDE TP robotized cell.

Our specific services dedicated to the design of Hydrogen tanks in thermoplastic composites :

Characterisation of the sealing function and its durability in H2 environment

Testing of sealing materials, products and components under H2 conditions (e.g. rapid decompression, fugitive emissions)

H2 permeation tests

Leak testing at low temperatures

Your benefits

Access to cutting-edge H2 gas decompression technology that meets environmental challenges

An independent laboratory recognized by the nuclear energy, O&G, petrochemicals, aerospace's major customers and players

An overall approach with comprehensive analysis equipment (sealing, mechanical and physical-chemical)

Our responsiveness combined our wide range of resources, means you can reduce your time-to-market and guarantee the reliability of your developments

Relevant advice based on over 60 years' expertise in many industrial sectors

Skills development for your staff through dedicated Cetim Academy® training courses, in particular HY15

["Hydrogen Sealing, Polymers and Behaviour of Metallic Materials"](#) and ["ET01 "Sealing Control"](#)



Question and Answer Service

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