

ENGINEERED SEALING SOLUTIONS FOR DEMANDING ENVIRONMENTS



# Engineered seals and components that reduce fugitive emissions and are reliable under pressure.

For more than 50 years, Technetics Group has been the leading designer and maker of valve solutions. Our products meet and exceed industry expectations and are driven by our customers' demands for quality and customized service.

At Technetics Group we know that reducing fugitive emissions is critical. Our sealing solutions reduce leakage and ensure caustic gases and liquids do not seep into your environment. We have earned the reputation of providing engineered seal and component design solutions for the most extreme applications in critical industries, including nuclear, chemical processing and oil and gas.

Technetics Group sealing solutions help customers achieve control valve leakage Class 5 and Class 6 requirements and routinely go through API 607 fire testing, in addition to customer specific testing, ensuring we are surpassing expectations and requirements in the field.

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## Innovative sealing solutions for severe service valves.

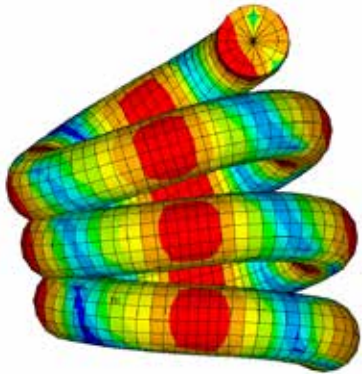
Technetics Group offers innovative solutions for the design and production of ball valves, butterfly valves, relief valves, globe valves and gate valves. These solutions include metal seals, performance polymer components, inflatable seals, graphite seals and edge-welded metal bellows.



# Providing superior testing and analysis support.

Your relationship with Technetics Group does not simply end with the sale of a product. Our engineering and service teams work with you to install and test your sealing solutions to ensure our products meet your highest performance standards. Design issues are solved through finite element analysis as well as through test-bed simulation of your application, hardware and operating parameters.

With our in-house engineering department, calculation tools and numerical modelization, Technetics Group adapts and designs seals that respond to your most specific demands: high-viscosity products, abrasive materials, high temperatures, high speed, and high pressure.



## APPRAISAL AND FAILURE ANALYSIS

With its next-generation characterization resources, our maestral® sealing laboratory can analyze your seals comprehensively and rapidly. Damaged seals can be appraised by determining the degradation modes and identifying the probable causes. Your existing seals can also be analyzed and improved to optimize their operation and lifetime with unique solutions relating to the key parameters of the seal.

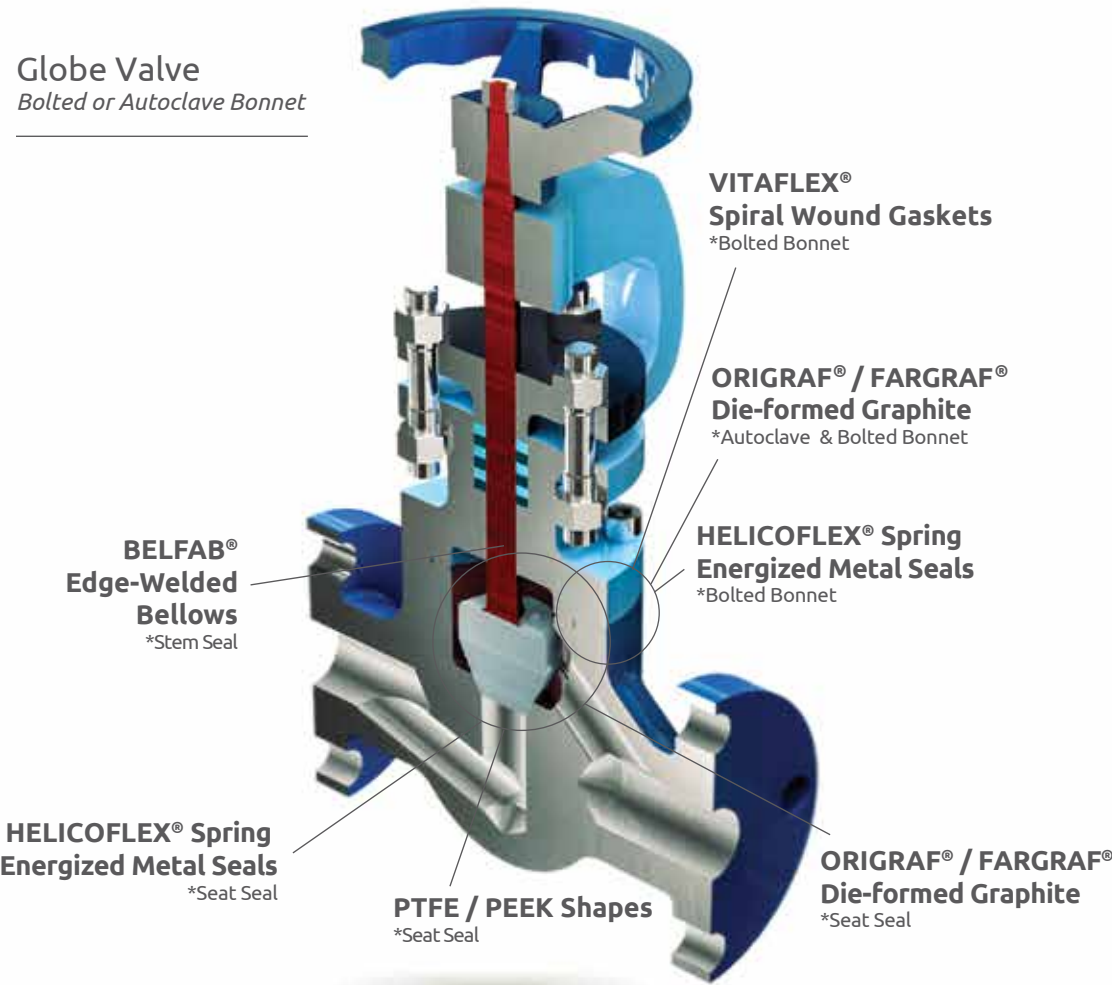
## TEST RESOURCES

Technetics Group owns a number of instrumented test benches to develop and characterize our seals under extreme operating conditions (abrasion, speed, etc.), by reproducing all the principal working conditions. These test benches help assess the leakage rates of the seals as well as their tribological properties.

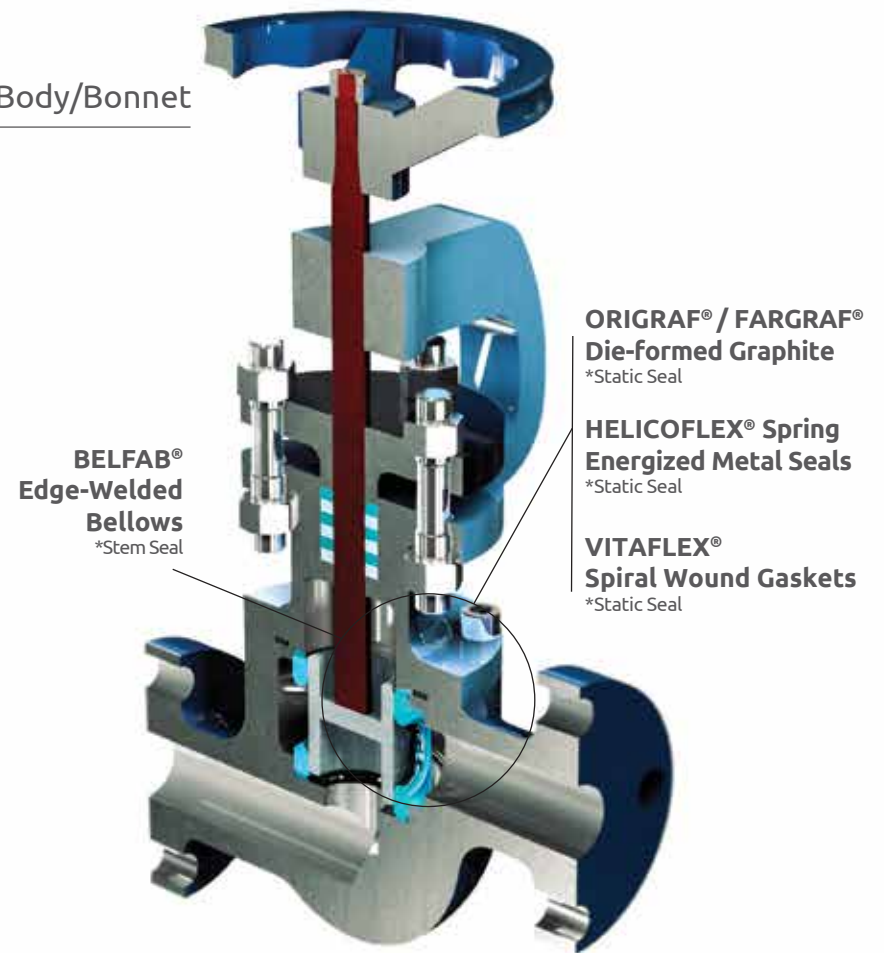


# Advanced sealing technologies serving extreme environments and applications.

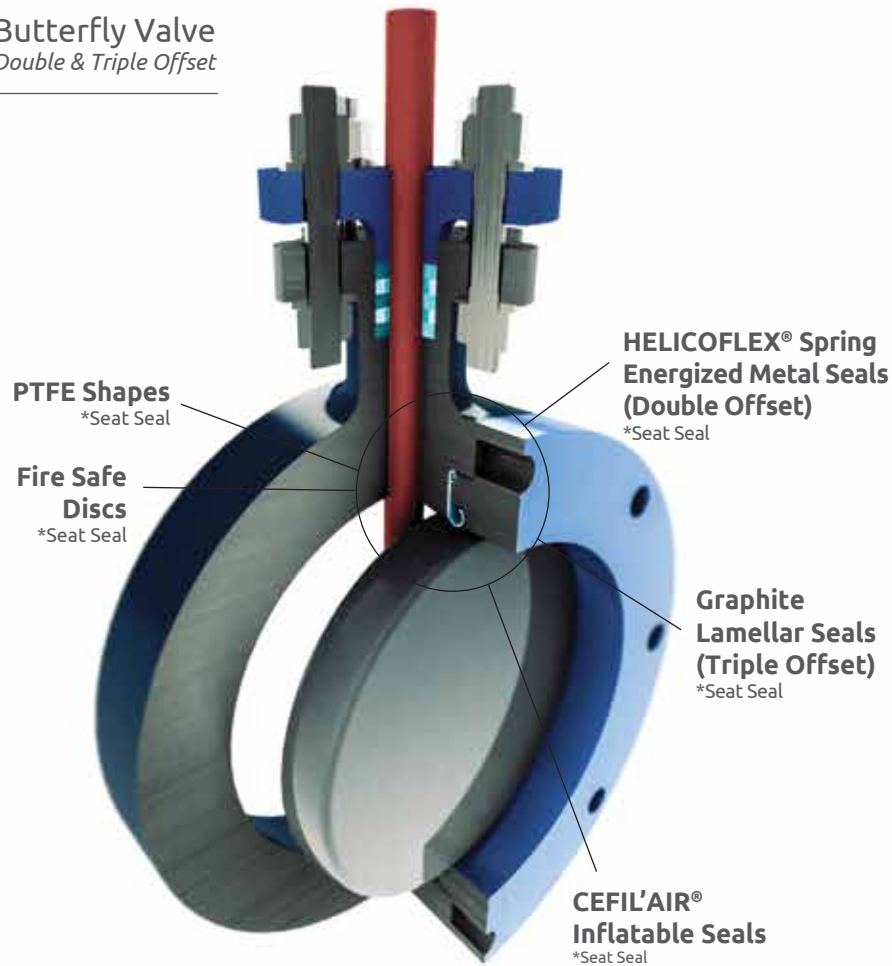
**Globe Valve**  
*Bolted or Autoclave Bonnet*



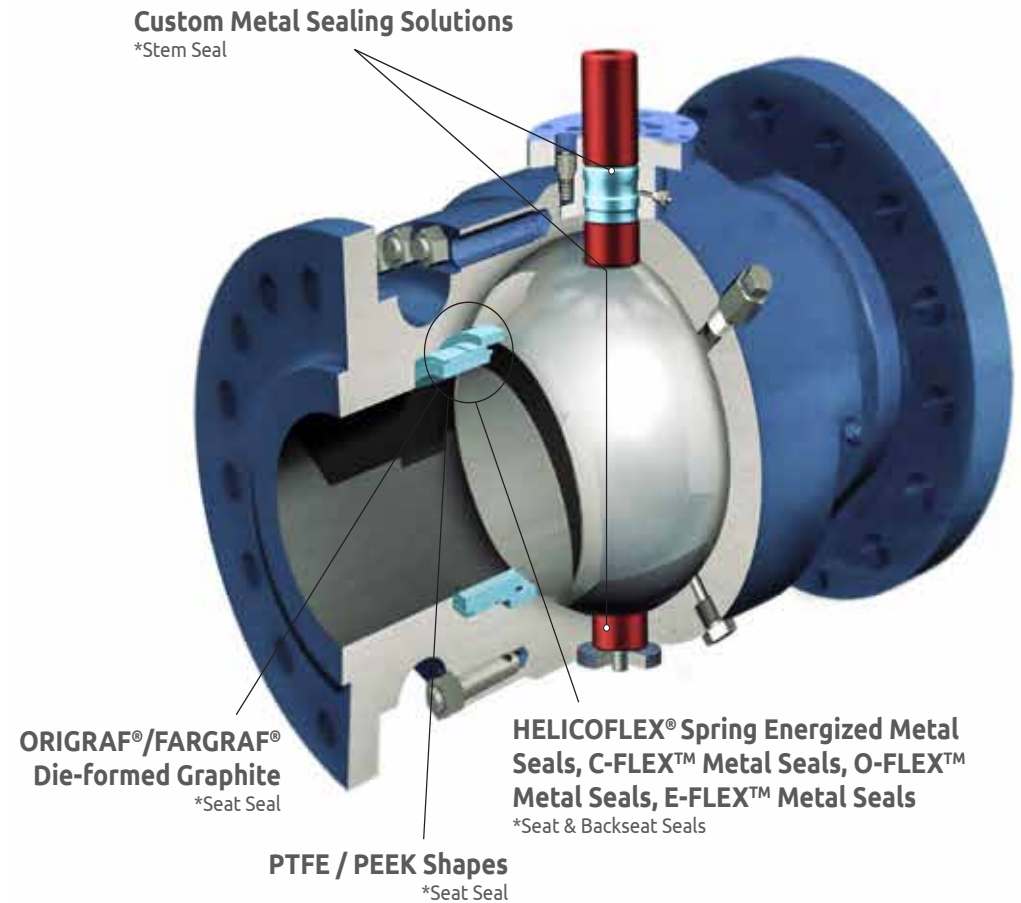
**Body/Bonnet**



**Butterfly Valve**  
*Double & Triple Offset*



**Trunion Mounted Ball Valve**



# Custom sealing solutions for exploration & production.

From the inner workings of a semi-submersible platform floating 2,000 meters above the ocean floor to the center of a blowout preventer ensuring the safety of your operations, Technetics Group is your globally trusted source for sealing, component, subsystem and assembly solutions custom-designed to meet your critical requirements and extreme applications.

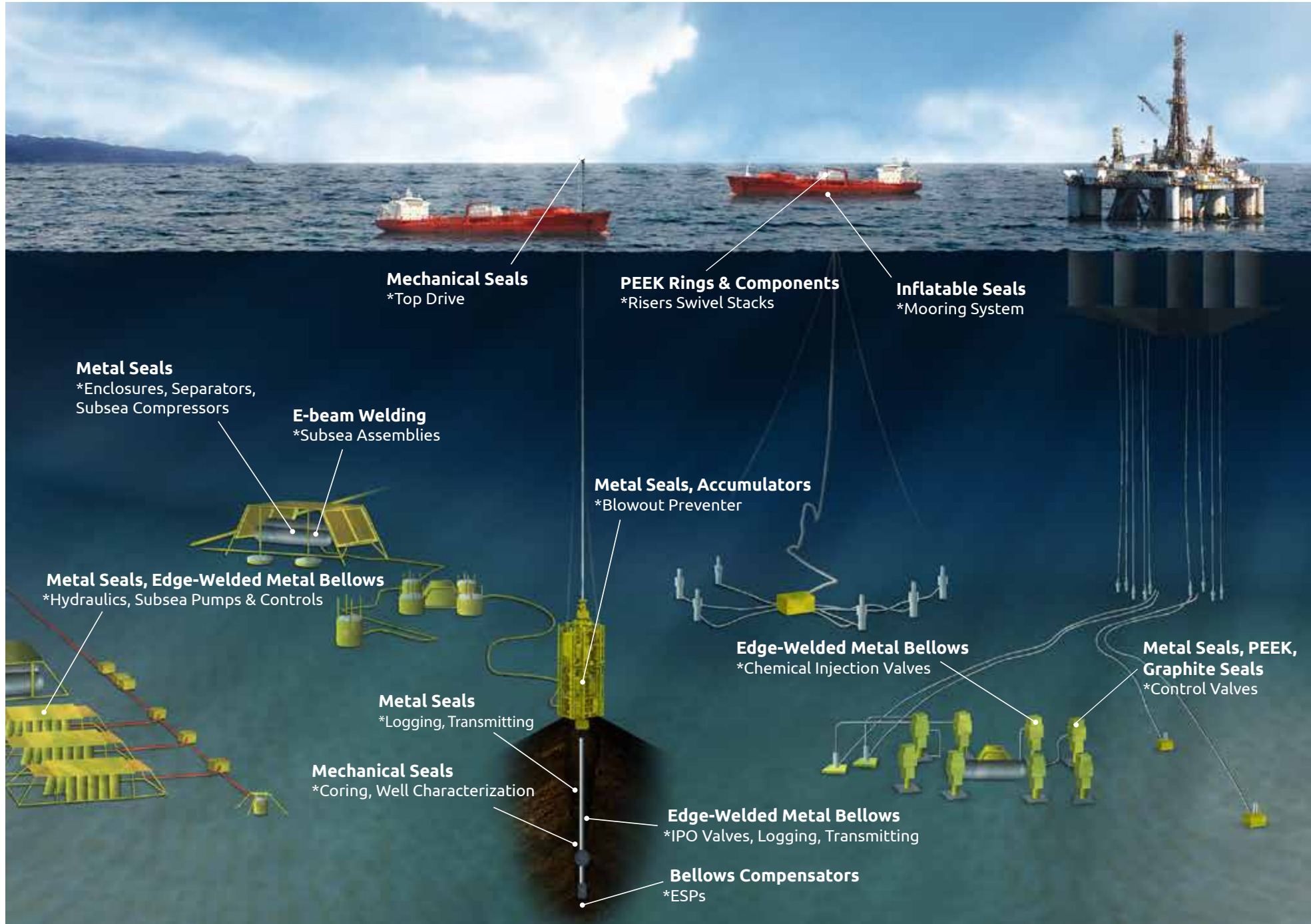
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## WE THRIVE ON CHALLENGE

We're experts at designing solutions for applications in the world's most demanding environments. Our products support industries vital to the well being of people all around the world, including oil and gas, nuclear, power generation, aerospace, semiconductor, pharmaceutical, medical and industrial turbines. In these markets, details are essential to safety and reliability. That's why we remain dedicated to providing the utmost dependability and customized solutions from inception through installation, inspection and service.









# Application/Product Chart

APPLICATION	PRODUCT
<b>Upstream</b>	
MWD Tools	Mechanical Seals, C-FLEX™ Metal Seals, O-FLEX™ Metal Seals
LWD Tools	C-FLEX™ Metal Seals
Subsea Couplings	BELFAB® Edge-Welded Metal Bellows, C-FLEX™ Metal Seals, HELICOFLEX® Spring Energized Seals
Blow Out Preventers (BOP)	Pressure Balanced Accumulators
Subsea Compressors	HELICOFLEX® Spring Energized Seals
Subsea Enclosures/Vessels	HELICOFLEX® Spring Energized Seals
Subsea Christmas Trees	HELICOFLEX® Spring Energized Seals
FPSO Swivel Stack	PEEK
FPSO Turret	CEFIL'AIR® Inflatable Seals
FLNG Risers	PTFE and PEEK Machined Components
Electronic Submersible Pumps	Mechanical Seals, BELFAB® Edge-Welded Metal Bellows, HELICOFLEX® Spring Energized Seals
Drill String Components	Electron Beam Welding
Installation and Training Services	PREST

## Midstream

Firesafe Pipeline Seals	E-FLEX™ Metal Seals
Tank Car Manway Covers	V-FLEX™ Metal Seals



## Downstream

Heat Exchangers	ORIGRAF® Graphite, Metallic Seals
Flow Meters	HELICOFLEX® Spring Energized Seals
Pipeline Pressure Compensation	BELFAB® Edge-Welded Metal Bellows
Installation and Refurbishment of Sealing Technology	PREST



# Technetics Group offers a powerful lineup of sealing solutions custom-engineered to your exact specifications.



### MACHINED METAL SEALS

Our custom machined metal seals come in materials such as Inconel 718, Inconel 909, Aluminum and Copper. The Ultratech seal performs well in extremely corrosive and radioactive environments.



### O-FLEX™ METAL SEALS

Technetics Group O-FLEX™ seals offer optimum strength, spring back and resistance to radiation and corrosion.



### C-FLEX™ METAL SEALS

Our C-FLEX™ metal C-rings are based on the elastic deformation of a metal "C" substrate which, during the compression cycle, gives a contact point on each sealing surface.



### HELICOFLEX® SPRING ENERGIZED SEALS

HELICOFLEX® spring-energized seals are high-performance, flexible metal seals that have exceptional compression and elastic recovery properties.



### ORIGRAF® GRAPHITE



Unlike flexible graphite cut gaskets, the compression of the ORIGRAF® die-formed seal is limited by a mechanical stop: groove or inner and/or outer ring.



### CARBON FACE MECHANICAL SEALS

Our carbon face seals have been specially designed for high temperatures (up to 1000°F) and operate at high speeds (up to 70,000 RPM).



### GPA® MECHANICAL SEALS

The GPA® seal is a simple and reliable mechanical seal suited for applications involving very difficult media, including abrasive, corrosive, clogging and crystallizing fluids.



### VITAFLEX® ENHANCED SPIRAL WOUND GASKETS



VITAFLEX® gaskets are offered in standard or custom designs offering low stress technology or a controlled curve.

## POLYMER SEALS AND CUSTOM-ENGINEERED COMPONENTS

Technetics Group is your trusted resource for polymer seals and components. We offer PEEK and PTFE machined components, CEFIL'AIR® inflatable seals and many other custom-engineered solutions to meet the needs of your critical applications.



### PEEK AND PTFE MACHINED COMPONENTS

We manufacture large semi-finished sealing rings up to 2.4m diameter in PEEK and filled PEEK grades.



### HIGH PERFORMANCE POLYMERS

We offer a range of extruded, transfer and injection molded semi-finished parts in hundreds of high performance polymers.



### PTFE PRODUCTS

Our PTFE tapes, rods, cylinders, and sheets are manufactured from a variety of blends and compounds to create optimal physical properties for custom solutions.

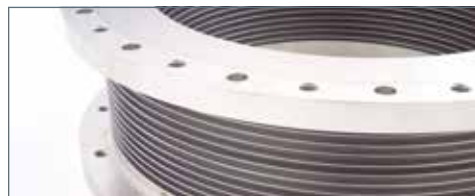


### CEFIL'AIR® INFLATABLE SEALS

CEFIL'AIR® inflatable seals meet the highest demands of temperatures from -100°C to + 250/280°C, as well as pressures from 10<sup>-1</sup> to 10<sup>-3</sup> mm Hg to several bar.

## BELFAB® EDGE-WELDED BELLOWS AND ACCUMULATORS

As a "supplier of choice," Technetics Group's proven record for performance, reliability and quality provides the confidence customers need. Technetics Group offers bellows assemblies and subsystems, edge-welded metal bellows, and accumulators that come in a wide range of materials and configurations and are customer designed to meet the needs of the customer.



### BELFAB® EDGE-WELDED BELLOWS

Our bellows and assemblies come in a large range of materials and have features that include low magnetic permeability, low outgassing rate, and corrosion resistance.



### ACCUMULATORS

Our bellows accumulators provide high reliability and low maintenance costs even under the most extreme environments.

## PREST ON-SITE SERVICES

PREST on-site services from Technetics Group is dedicated to optimizing your scheduled shutdown periods. We review your technical data, issue technical files for each product line, consult with your firm on sealing solutions and train all involved manpower on the basics concerning sealing applications. In addition to scheduled shutdown services, we also provide expertise in engineering, installation and emergency on-site maintenance.



For more information on how  
Technetics Group affects the valves  
industry, visit [technetics.com/valves](http://technetics.com/valves).

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