



Flexible Engineered Solutions

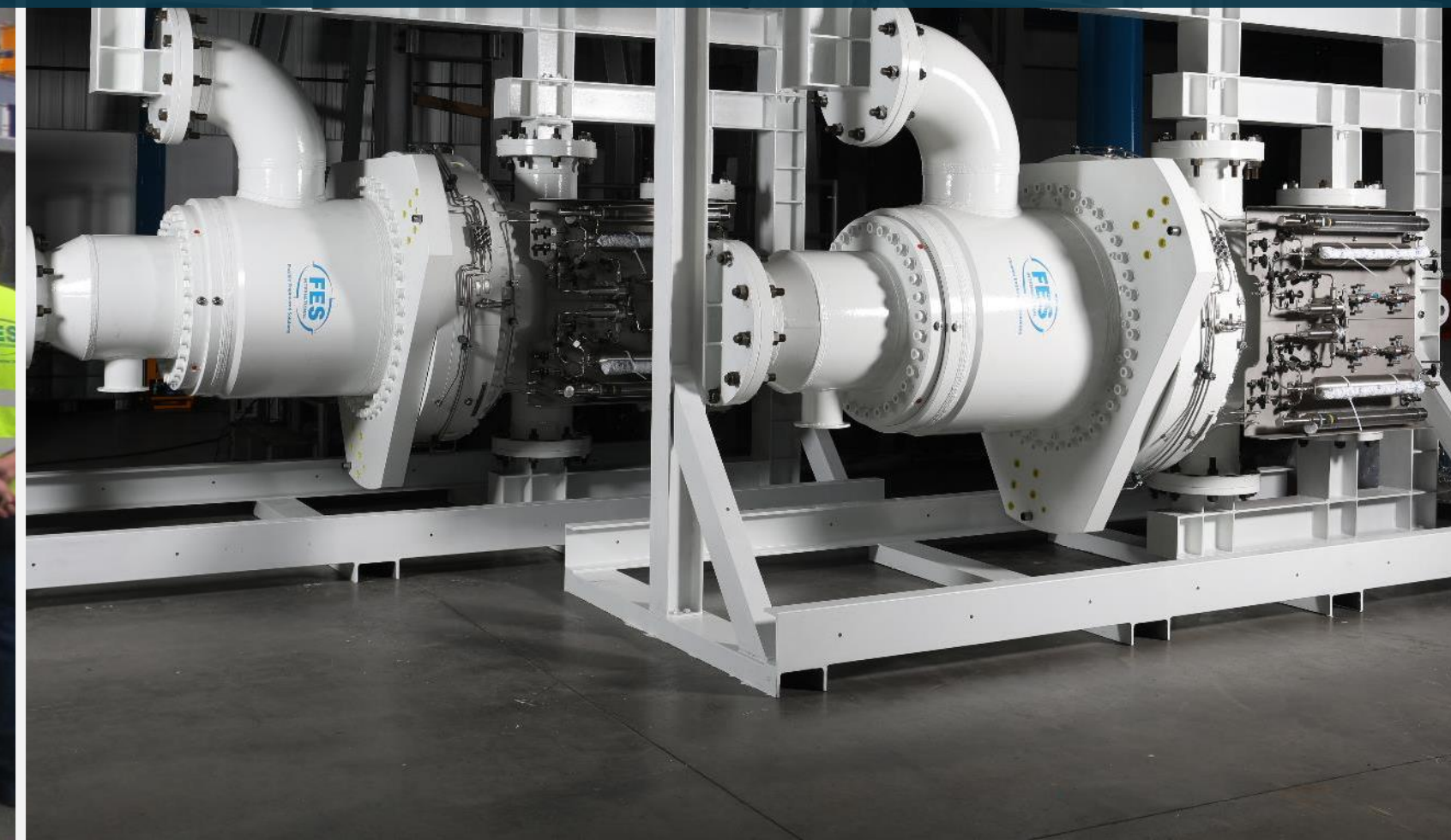


CALM Buoy Swivels

Single, dual and triple path layouts, with a modular design providing unparalleled flexibility in design



The FES CALM Buoy Swivel provides efficient transfer of fluids on CALM buoy structures, with the flexibility to accommodate a range of fluids, end connections, path quantities and to incorporate electrical slip rings and hydraulic swivels.





CALM BUOY SWIVELS

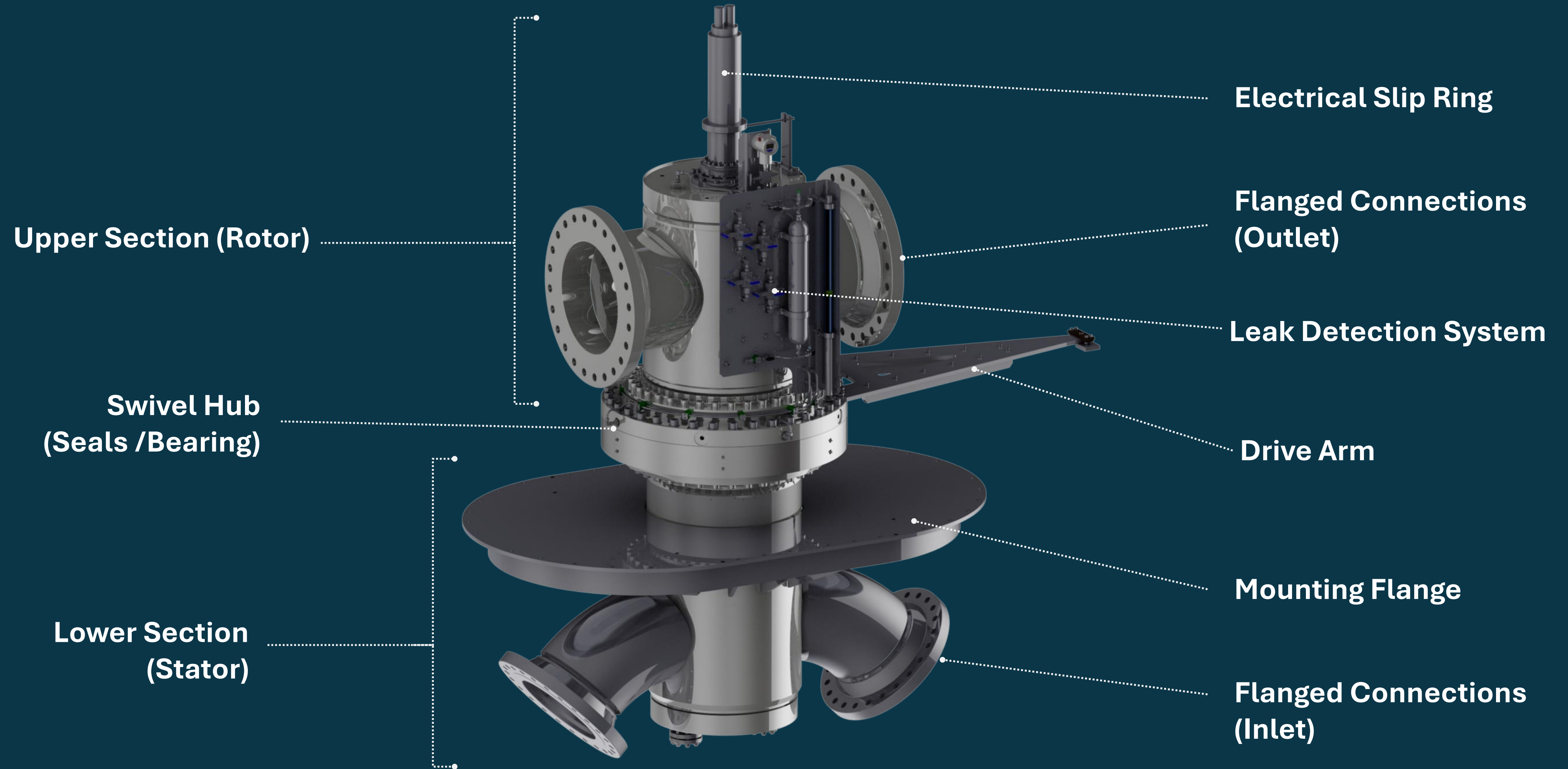
The FES International CALM Buoy Swivel combines practical experience and precision design to ensure efficient performance to suit all client needs.

Incorporating proven technologies, industry best practices and a wealth of design experience, FES provide bespoke product solutions to meet all project requirements.

This bespoke project design allows FES to accommodate a wide range of pipe configurations, with single, dual and triple path swivel assemblies.

Using state of the art sealing and bearing systems, the CALM buoy swivel allows for full rotation while maintaining fluid transfer of a wide range of products including Oil, LPG, water and other fluids, and can also incorporate electrical and hydraulic system lines.

TYPICAL DESIGN

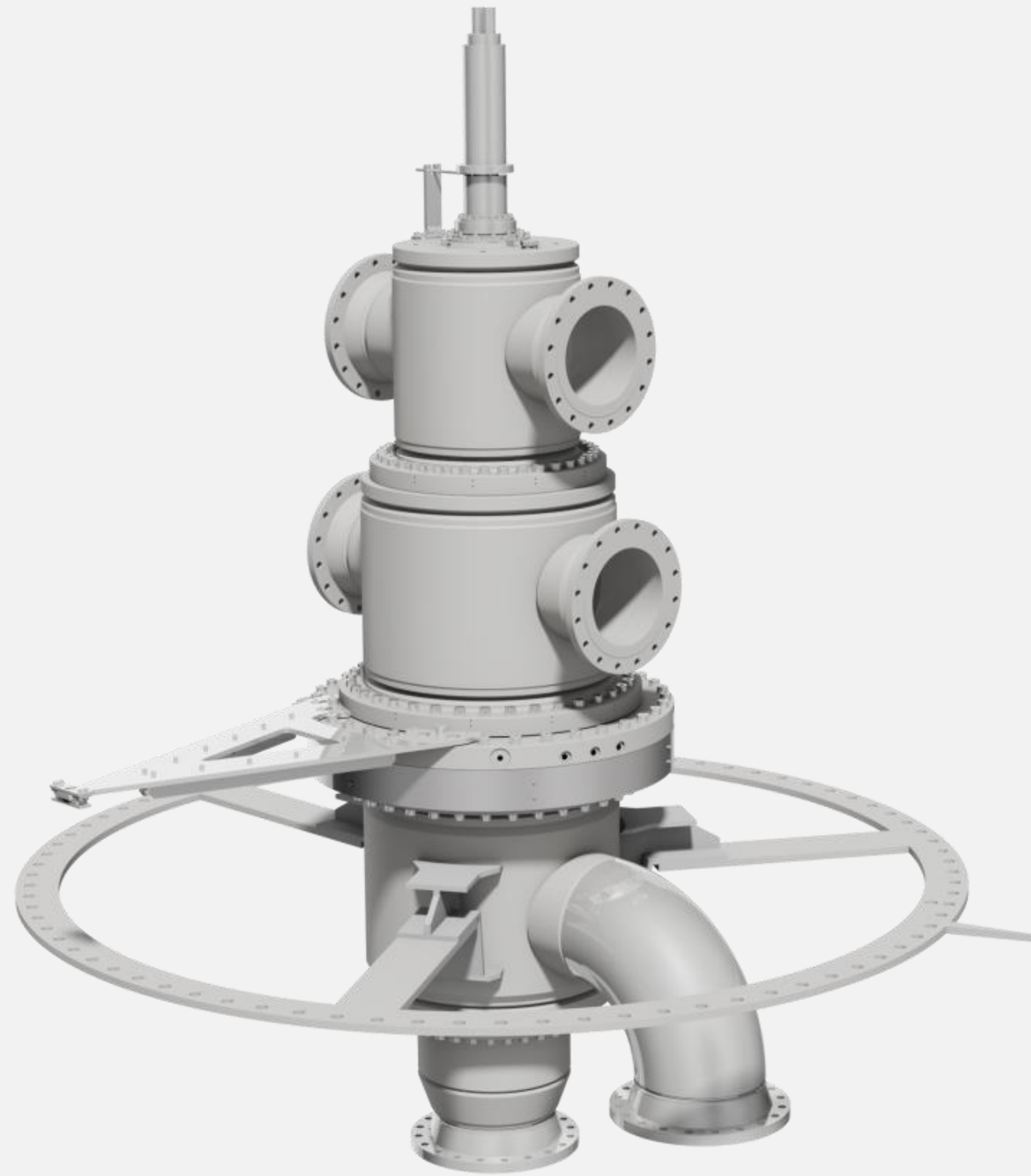


CALM BUOY SWIVELS

Design Flexibility

The modular nature of the FES CALM Buoy Swivel allows for greater flexibility in the design of swivel interfaces.

- Currently, FES provide single, dual and triple path designs, with fluid paths from 16” and above.
- Precision sealing systems allow for the transfer of a range of fluids including Oil, Gas, Water.
- FES CALM Buoy Swivels can incorporate electrics and fibre-optics using Electrical Slip Rings and hydraulic supply using multi-path Hydraulic Swivels



LEAK DETECTION SYSTEM

- FES CALM Buoy Swivels are supplied with a leak detection system mounted on the Swivel assembly or at suitable location on the Calm Buoy.
- The leak detection system uses a series of double block and bleed valves in order to monitor the complete sealing system, allowing constant monitoring of the condition of all seals.
- The system is connected to a fluid monitoring assembly which includes as a minimum, a sample cylinder and fluid level gauge to enable real-time monitoring,
- Furthermore, FES can integrate electronic monitoring of the leak detection system to allow for remote and on-site telemetry monitoring of the swivel sealing system.

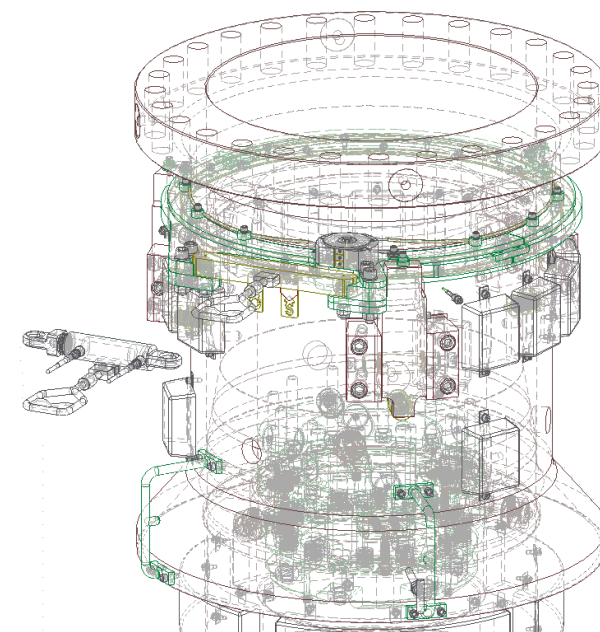
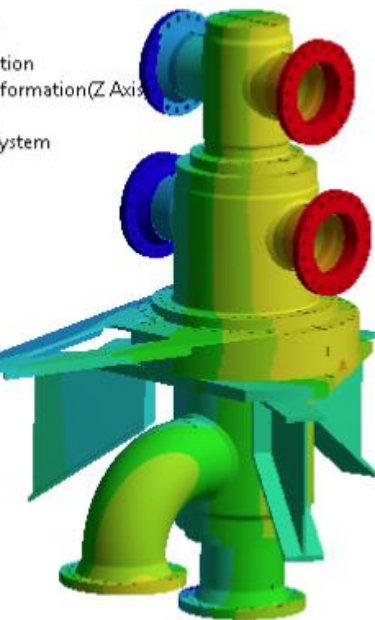
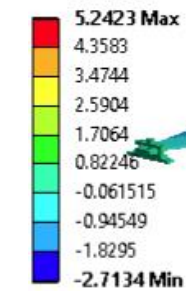


DESIGN & ANALYSIS

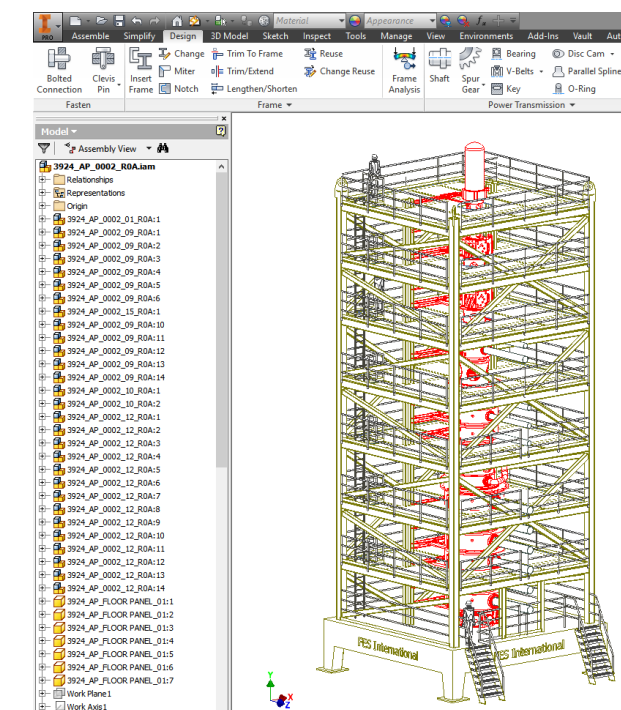
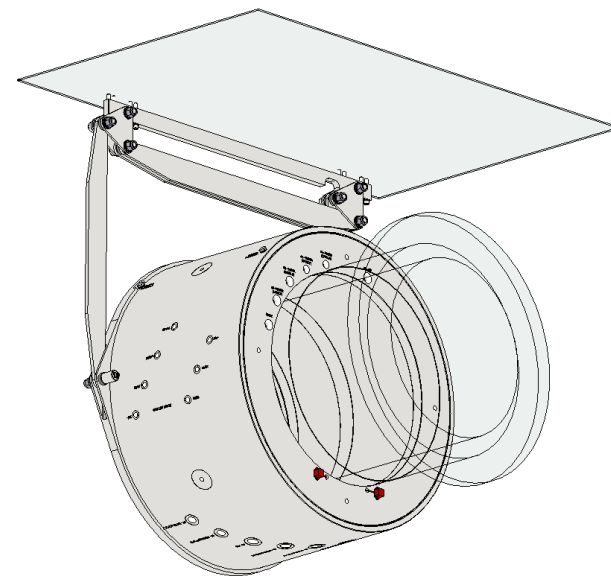
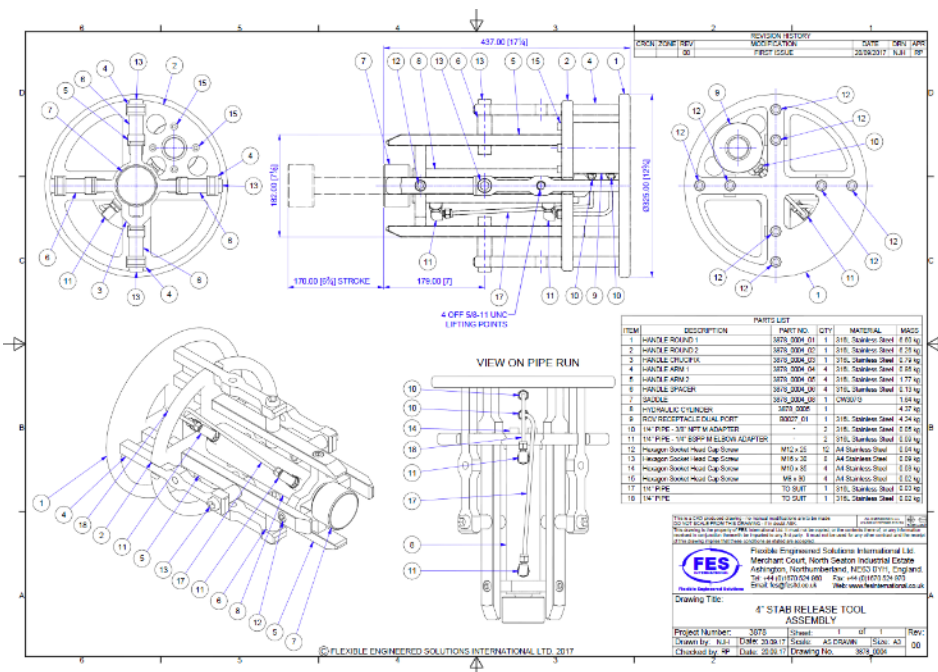
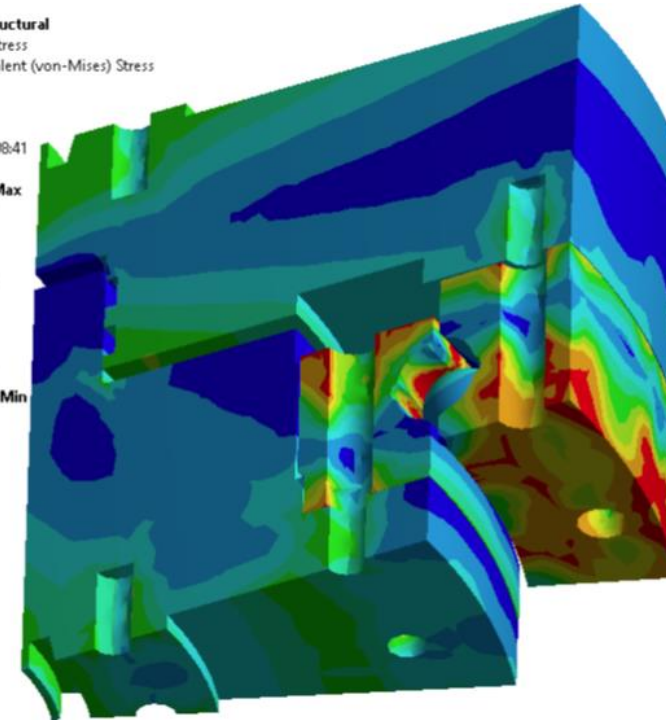
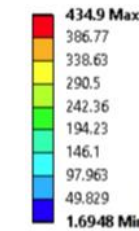
FES International utilise highly qualified technical personnel and the latest software to design and analyse our products



B: Static Structural
Directional Deformation
Type: Directional Deformation(Z Axis)
Unit: mm
Global Coordinate System
Time: 1
16/03/2018 08:59

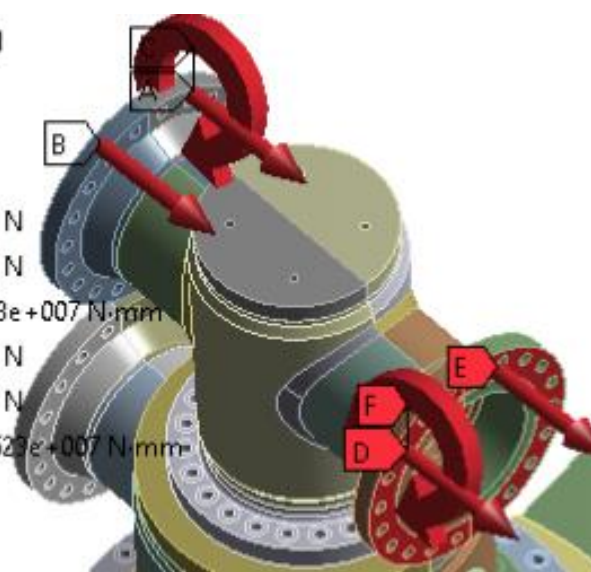


B: Static Structural
Equivalent Stress
Type: Equivalent (von-Mises) Stress
Units: MPa
Time: 1
Custom
20/10/2016 08:41

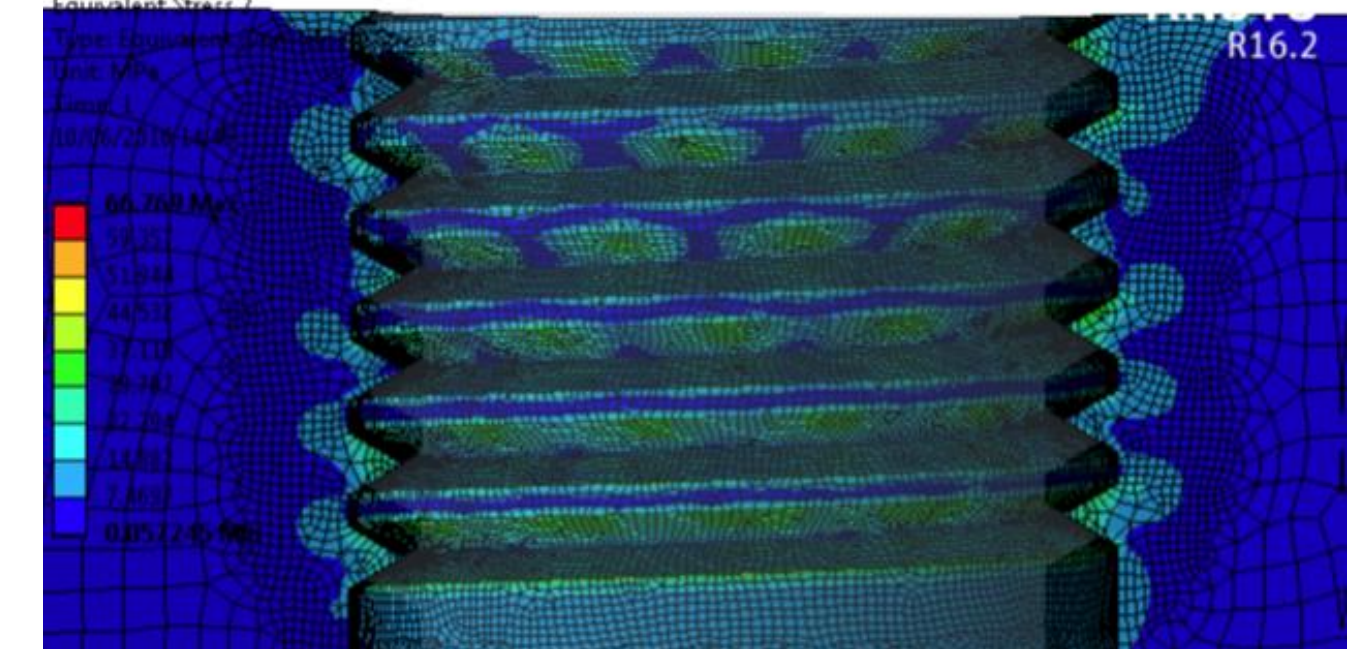


B: Static Structural
Moment 3
Time: 2. s
16/03/2018 11:23

- A** Force 14: 16361 N
- B** Force 15: 16361 N
- C** Moment: 3.1623e+007 N-mm
- D** Force 18: 16361 N
- E** Force 19: 16361 N
- F** Moment 3: 3.1623e+007 N-mm



A: Static Structural
Equivalent Stress 2



A combination of calculations in accordance with industry standards, sophisticated computer software & the latest FEA programmes are utilised to achieve the necessary design parameters and a first class engineered solution to each client project specification.

MANUFACTURE, ASSEMBLY & TESTING

MANUFACTURE

All components are designed and manufactured by FES International and approved sub suppliers, ensuring that we retain control of product quality and material traceability.



ASSEMBLY & TESTING

In-house assembly and testing facilities ensure all test procedures and inspection & testing plans are strictly adhered to.



CALM BUOY SWIVELS

Factory Acceptance Testing

- Using bespoke in-house test rigs, FES are capable of completing Factory Acceptance Testing to a range of international standards and client specifications, completing load, pressure and rotation testing in various configurations.
- FES have a proven track record of testing with a range of test mediums, including water, oil and nitrogen gas.
- FES CALM Buoy Swivels have been verified and approved during design, manufacture and Test by both client and third party representatives (e.g. DNV, ABS etc.).



QUALITY, HEALTH & SAFETY

FES places quality and safety at the heart of everything we do



Certificate
No:33532021



Certificate
No:114742021



Certificate
No:204072021

QUALITY MANAGEMENT

Our quality management system has been assessed and accredited to ISO 9001:2015

Further illustrating our commitment to QHSE, our quality management system has also been assessed and certified to the stringent industry specification API Q1.

HEALTH & SAFETY

Our health and safety management system has been assessed and accredited to OHSAS 45001:2018

ENVIRONMENTAL

FES has been assessed and accredited to ISO 14001 certification for environmental management.

KEY FEATURES

FES CALM Buoy Swivel

- Experienced design team allows bespoke designs to meet any and all project requirements.
- Single, double and triple product designs available.
- Modular design to allow easy refurbishment and replacement, better sealing performance and to reduce risk and lead times.
- In-House test facilities for complete Factory Acceptance, Pressure and Rotational testing.
- Electrical, Fibre Optic Slip Ring and Hydraulic Swivel combined designs available.
- 25 year design life – based on continuous service.
- Leak Detection system incorporated into sealing design.
- 3rd party accreditation. (DNV current, ABS, BV, Lloyds etc.).
- Carbon Steel materials as standard sealing surfaces inlayed with Inconel 625, other materials available to suit the product (e.g. Stainless Steel or Duplex).



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