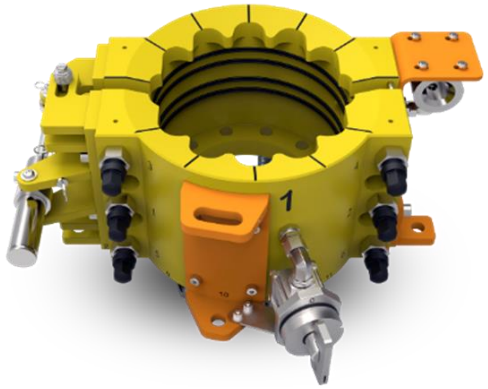
Maintenance Without Shutdown

AOGV
Add On Gate Valve

GROUP

Nearly 40 years experience in Company Group

- Special Pipe Clamps, both Subsea and Topside
- Sealing on Flange Circumference
- Mechanical Plugs
- Calculations – EN (PED) / ASME
- Barrier Philosophy – Verification Steps
- Handling of Mechanical Loads in Piping
- Dynamic Seals – Rods / Bolts
- Bolting Technology



AOGV Animation

https://www.youtube.com/watch?v=fwZnAxF9KW0

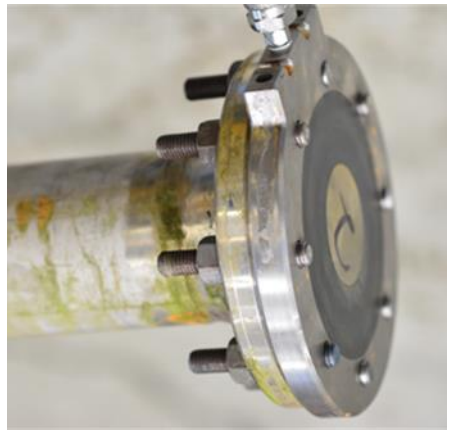
Do you need to Gas Free?

- The AOGV is a Setting Tool for Blinds Without Gas Freeing.
- The AOGV gives you a Positive Isolation

- Blinding Required for:
  - Maintenance
  - Repairs
  - Vessel Entry
  - Extended Shutdowns
  - Welding

HSE Health and Safety Executive

Category	Features	Method	Illustrative example
I Positive isolation	Complete separation of the plant/ equipment to be worked on from other parts of the system.	Physical disconnection (eg spool removal)	fluid — E
	Valved isolation of an appropriate standard is required during the installation of positive isolation.	Double block, bleed and spade	fluid — E
		Single block and bleed and spade	fluid — E
II Proved isolation	Valved isolation. Effectiveness of valve closure(s) can be confirmed via vent/ bleed points before intrusive work commences.	Double block and bleed (DBB)	fluid — E



AOGV - The Perfectly Logical Isolation Tool

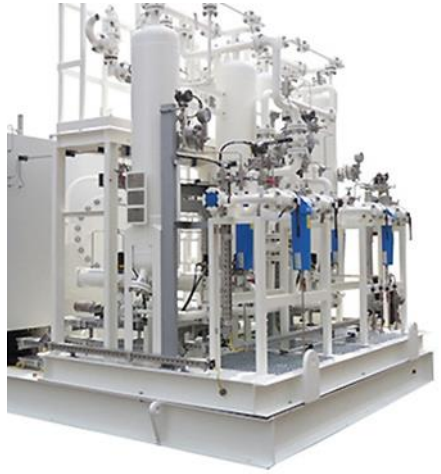
Over 50 Successful Field Operations Performed, including for Major International Operators

- Instrument Air
- Closed Drain & Flare
- Process System Segregation
- Main HC Process
- Heating and Cooling Medium
- Pipeline Isolation
- Tie In and Decommisioning

Instrument Air

AOGV can Isolate System whilst Ensuring Safe Operation

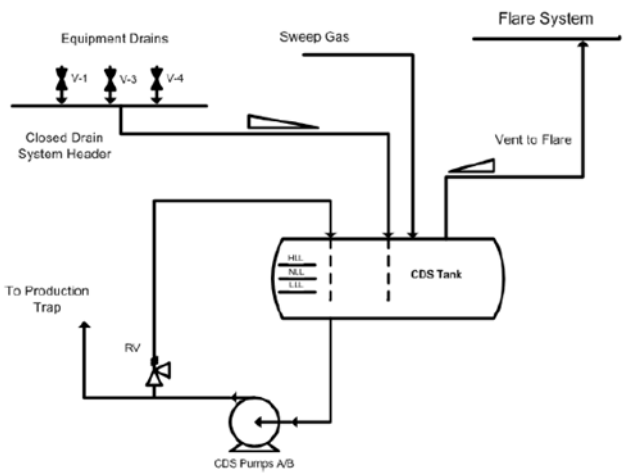
- Typically size 1in to 8in, class 150
- Critical System
- Need Instrument Air Available during Operation and Shutdown
- Fail Safe System Logic – Loss of Instrument Air.

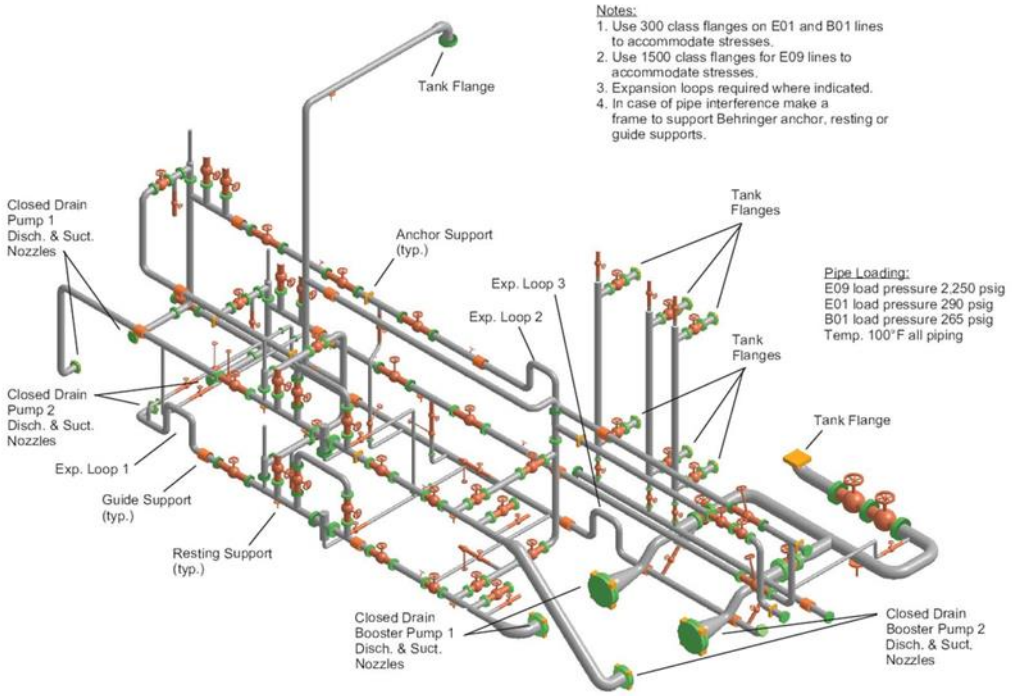


Replacing 2" isolation valve

Closed Drain & Flare

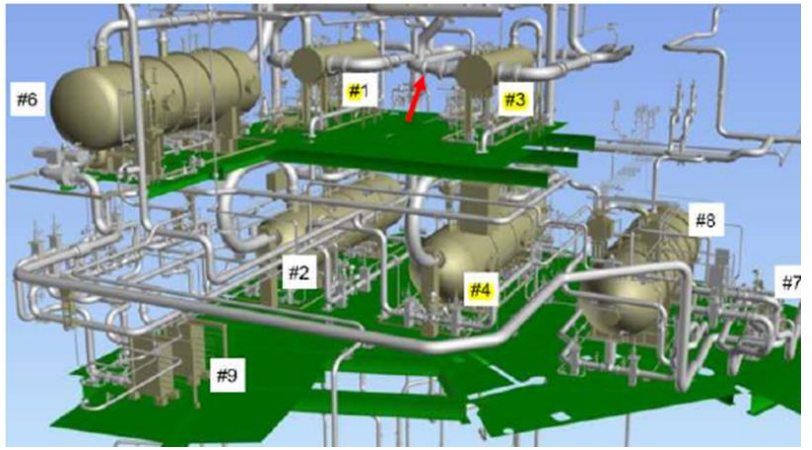
Large Systems – Not Part of Shudowns





Process Segregation

- Typically sizes 1in to 60in
- Vessel Entry Isolation
- Enables Simultaneous Production and Break of Containment
- Parallel Train Separated and Isolated
- Main Process Operates at Full or Partial Capacity
- Better Palance Uptime, Cashflow and Live Maintenance

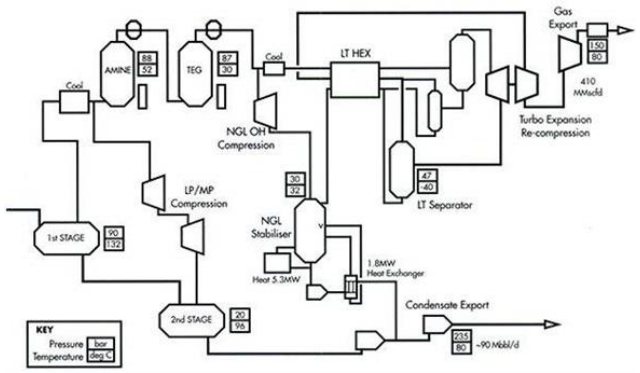


Main Hydrocarbon Process

High Value Operations

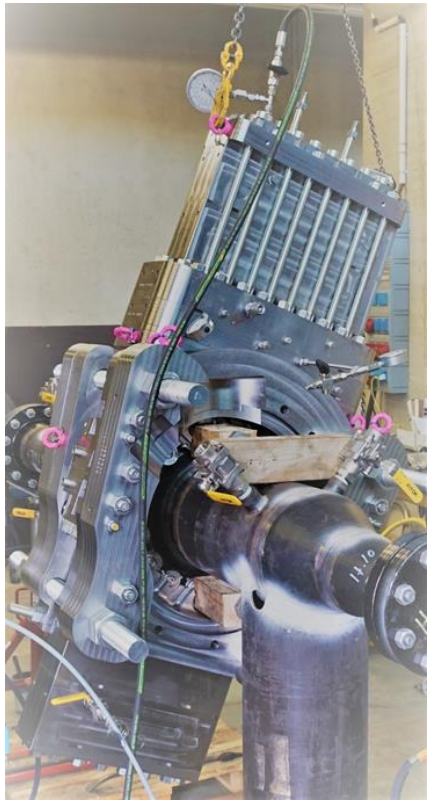
- Typically sizes 2in to 36in
- Typically class 300 to 1500
- Pressure can Temporary be Reduced

(AOGV setting a Full Spec Spade)



Heating and Cooling Medium

- Typically Large Systems
- Temperature -200 dgr C to +200 dgr C
- Can be Isolated and Serviced During Operation
- Redundant Pump Systems
- Typically Not Part of a Shutdown

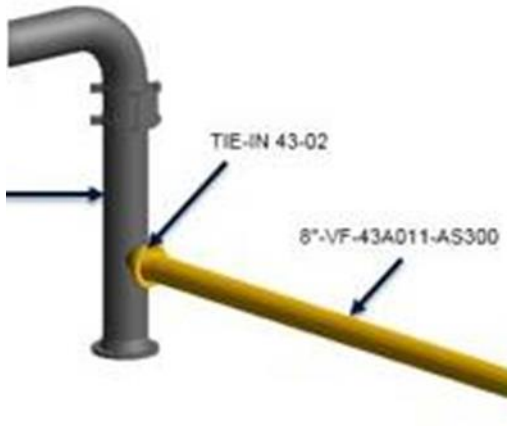


Pipeline

- Large Systems
  - Gas – Typically High Pressure
  - Oil – Typically Medium Pressure
- AOGV can Facilitate Access to Launcher or Receiver
- AOGV can be Utilized on Un-Pigable Lines

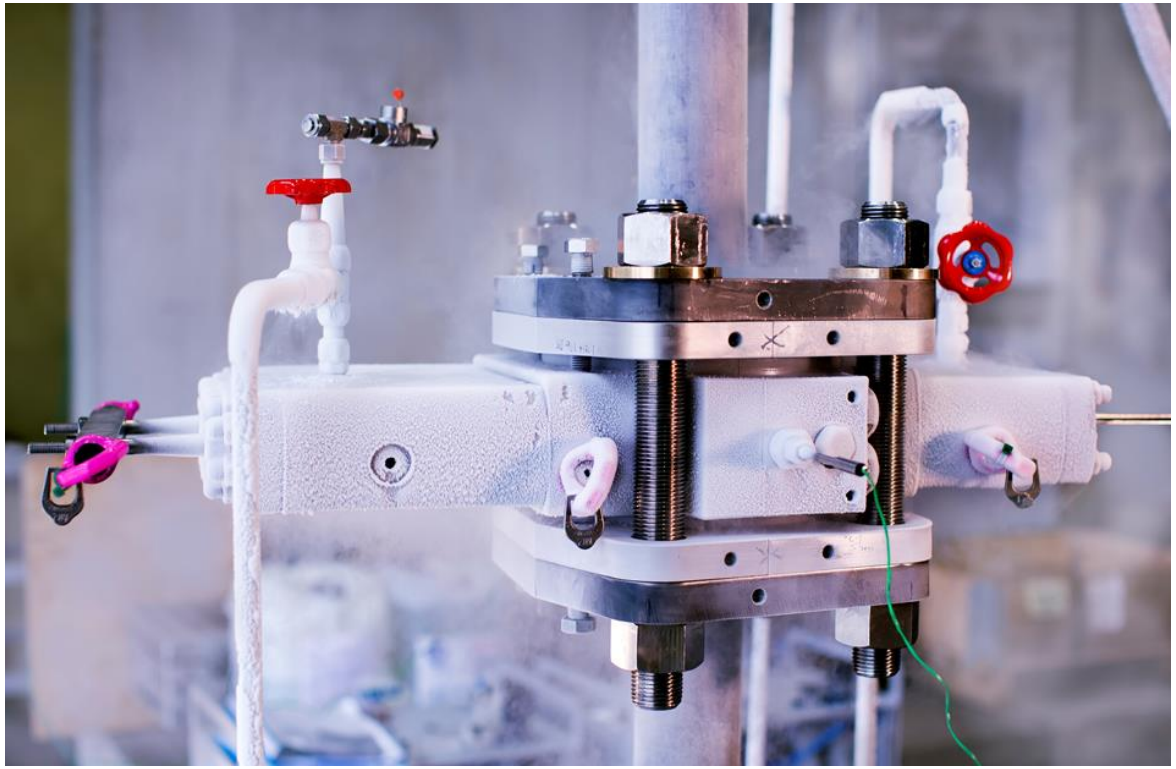
Tie In and Decom

- AOGV can Facilitate Tie In’s or Decom’s
  - In this case – Tie In to Flare.
  - Removing a blind and install pipe.
  - 8in cl 150, Operating pressure 5 bar



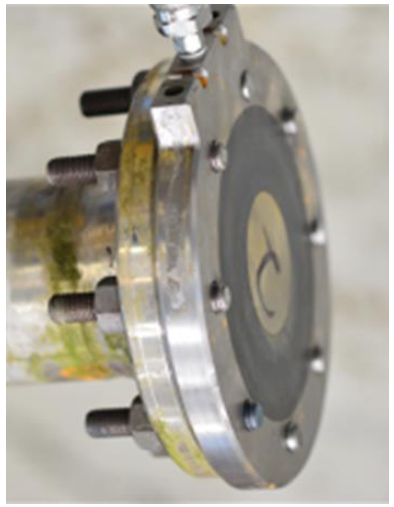
LNG Specifications

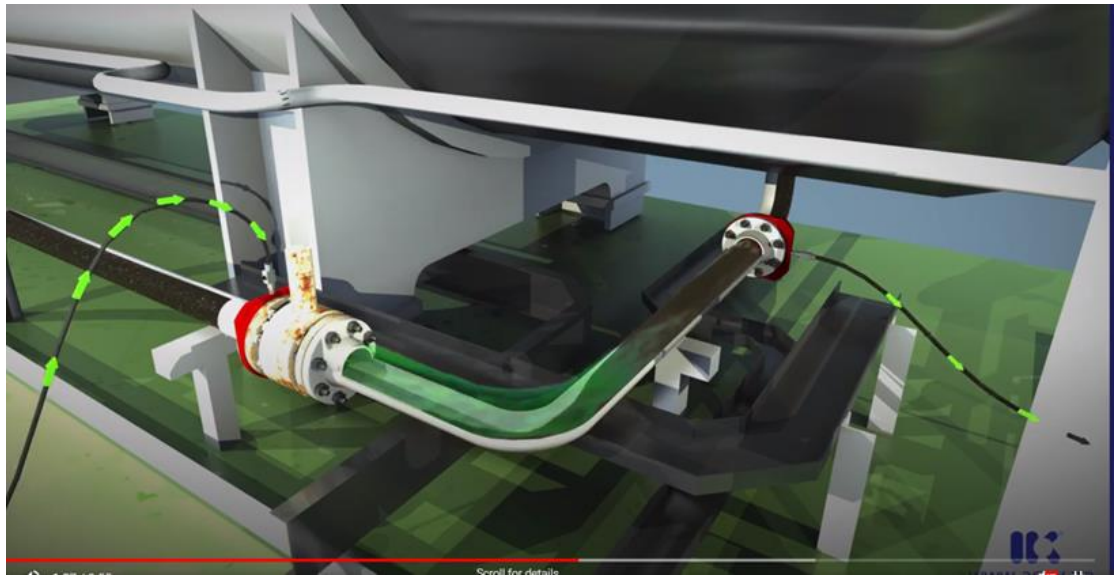
- AOGV Conforms with Cryogenic Specifications
- Performed as Standard AOGV Operations
- Live Isolation to Avoid LNG Restarting.



Drain Vent Port

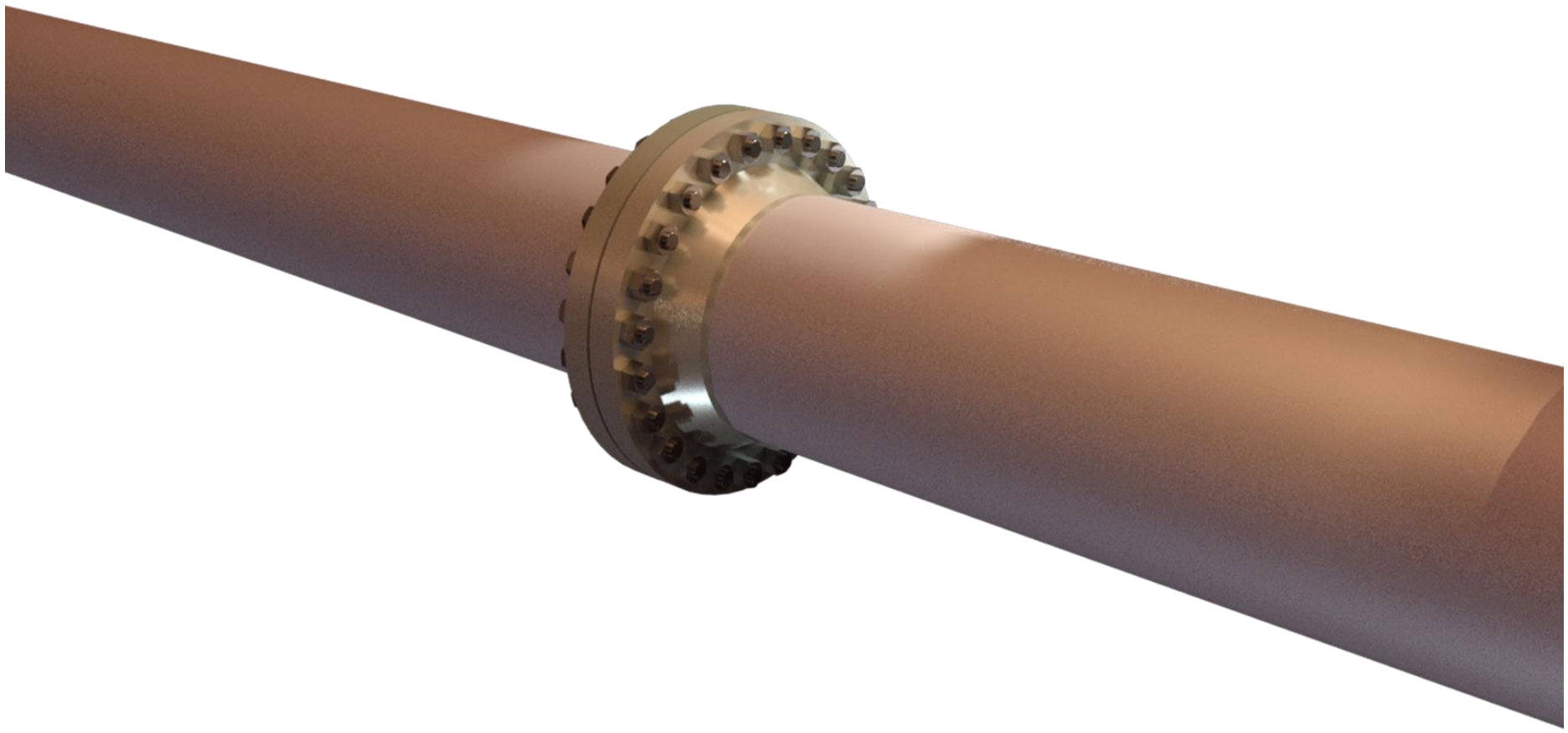
- Connection to Piping Through Port
- Enables Gas Freeing or Chemical Cleaning of Smaller Process Segments
- Enables Lead Test of New Connections
- Full Spec Blind



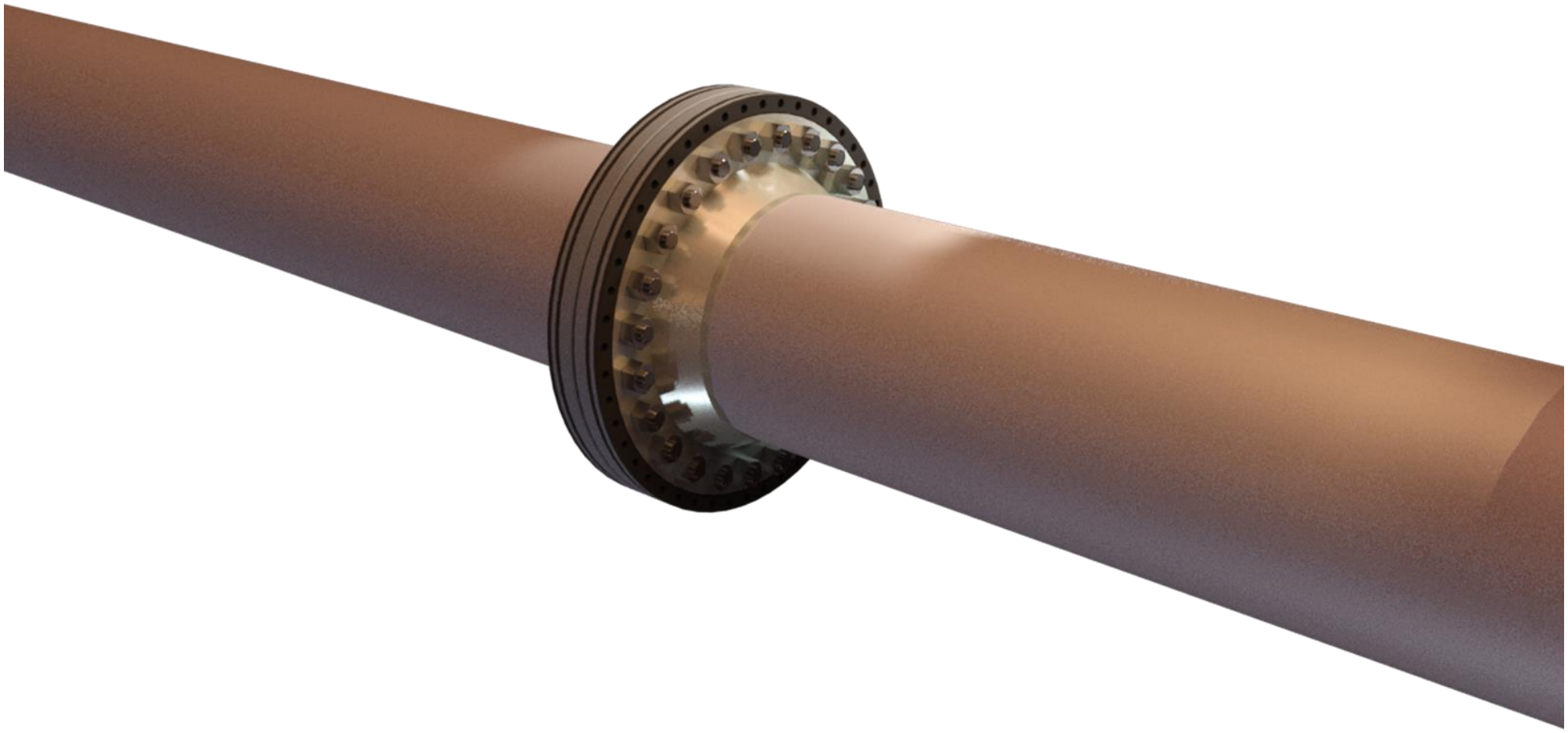


AOGV Main Steps installation

Flanged Live Systems

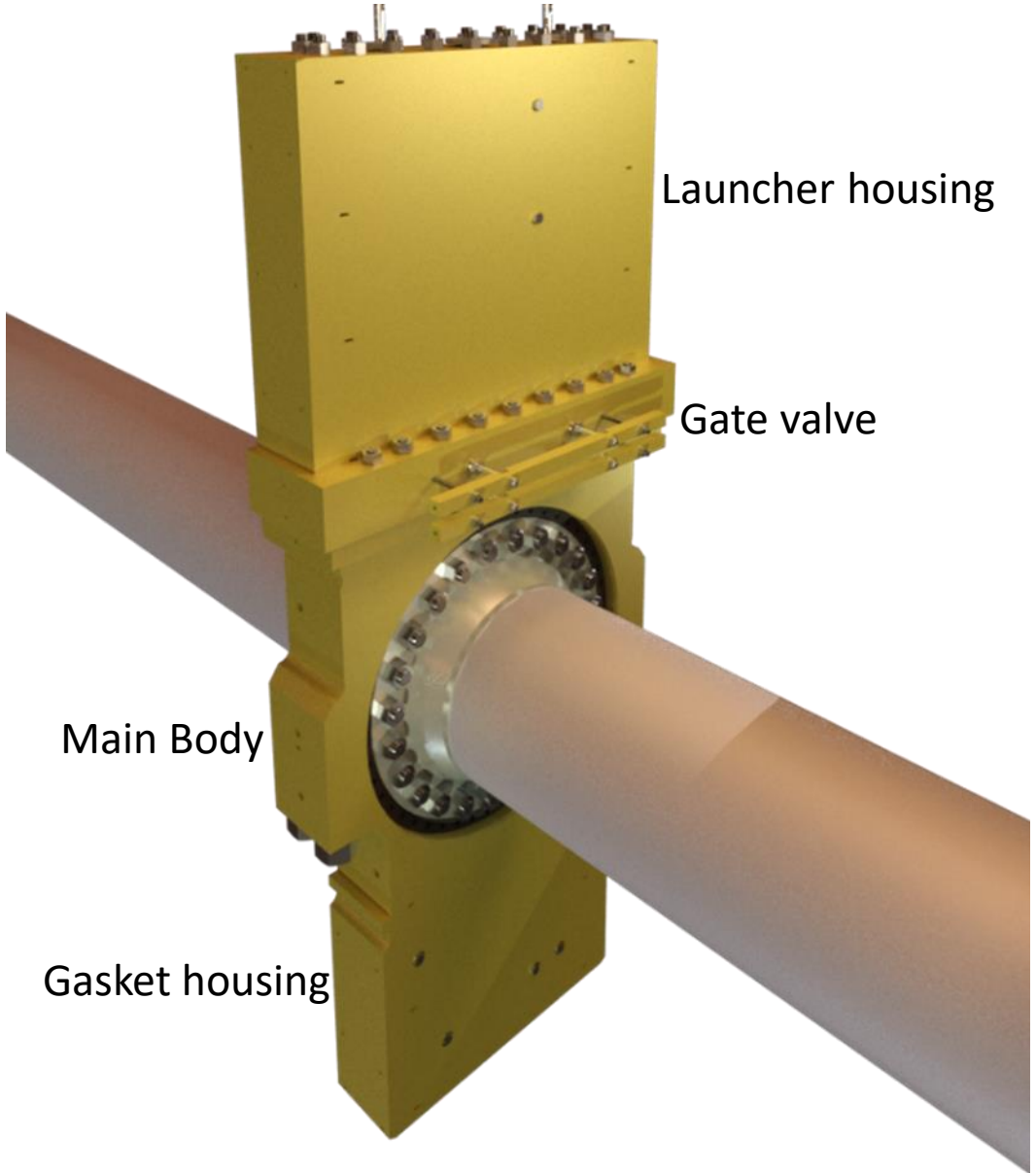


Install Dynamic Seals on Flange



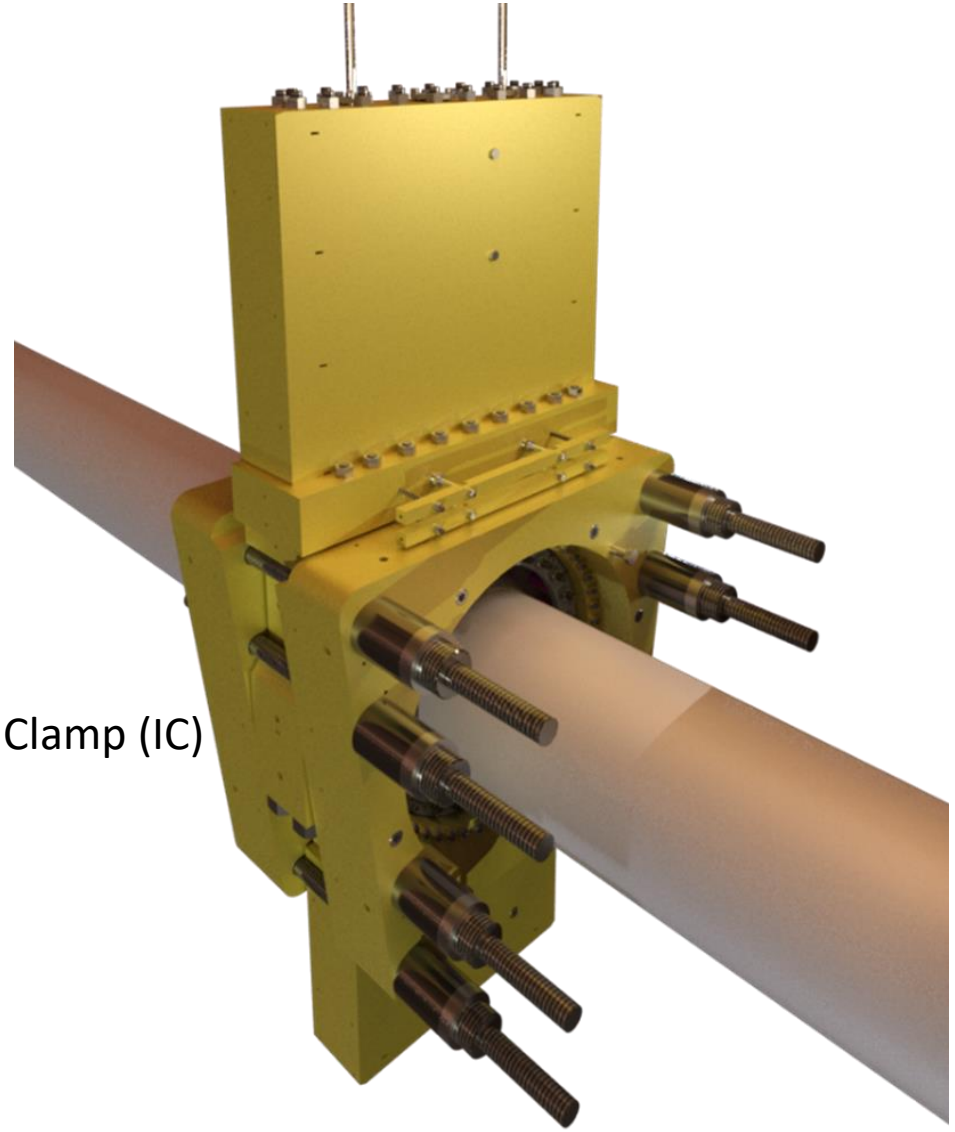
Pressure Envelope

- AOGV designed for Class Pressure
- Telescopic Aspect
- Dynamic Seal Slides Inside the AOGV
- Seal are Static wrt Flange

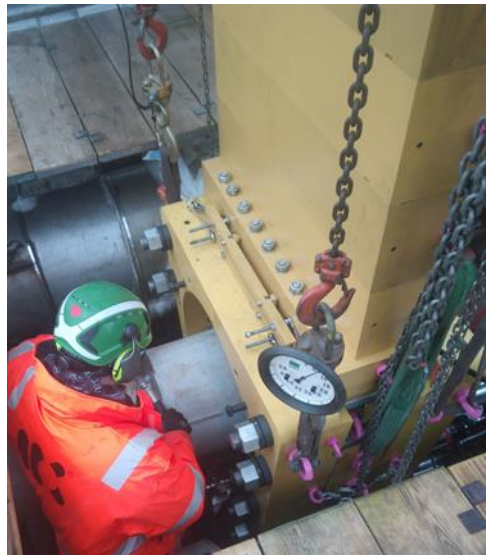


Flange Compression

- Hydraulic Operation
- End Cap
- Big Pistion Area – Flange Face



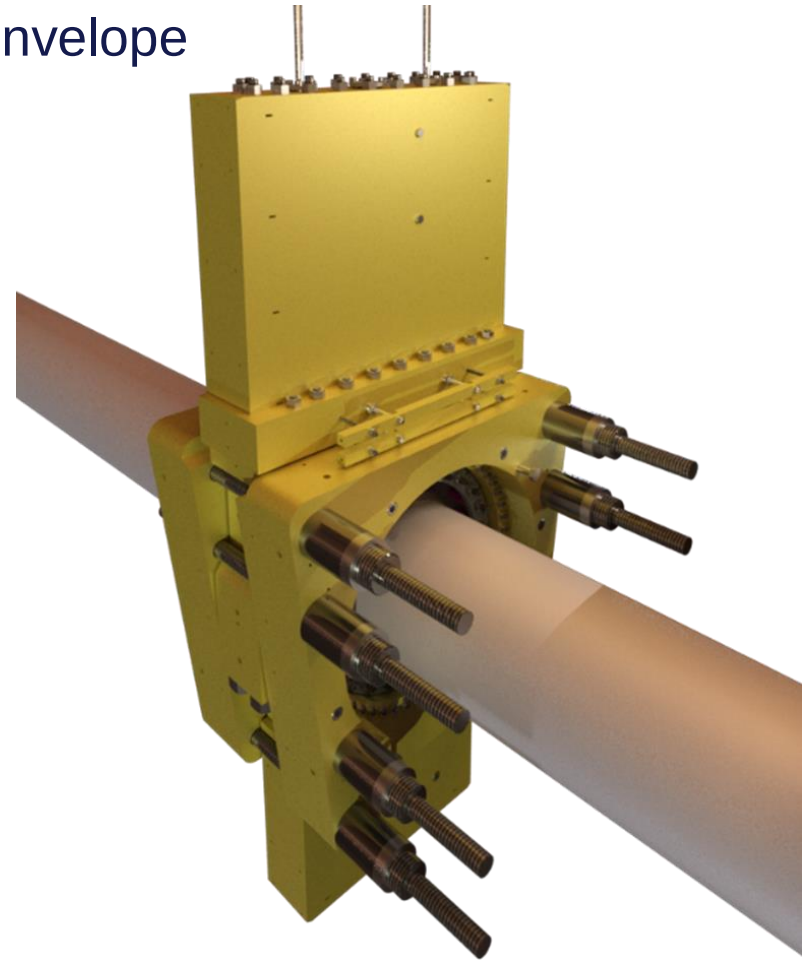
Integrity Clamp (IC)

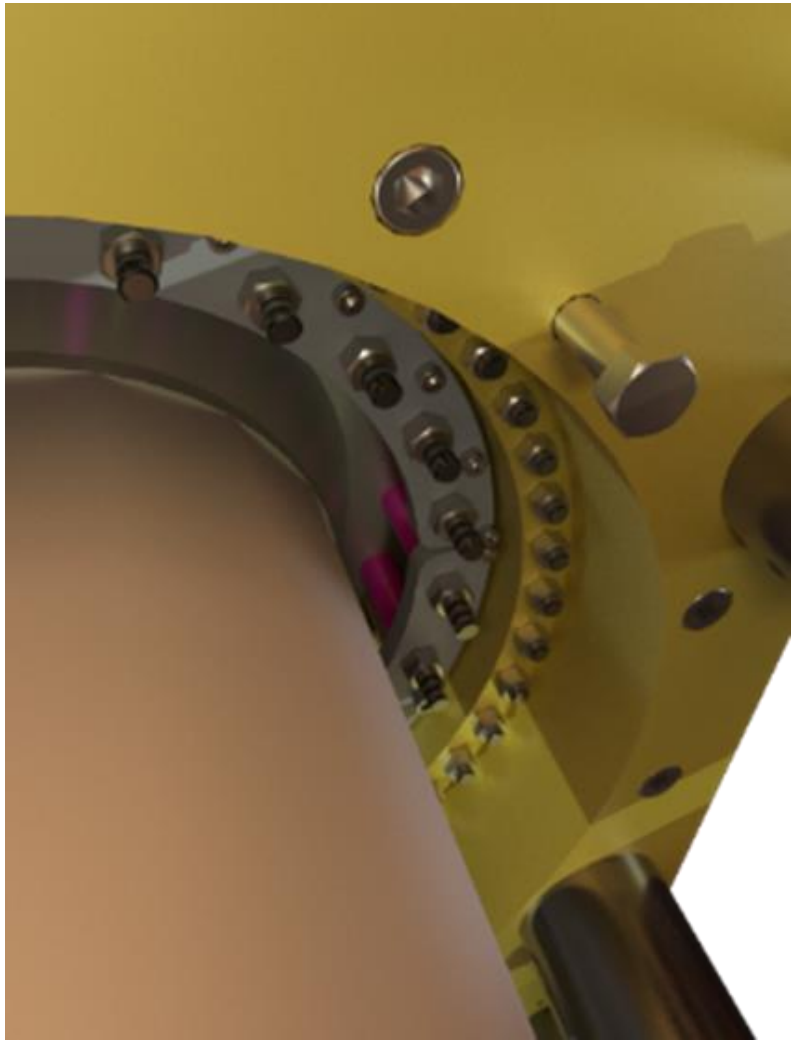


Weight suspended

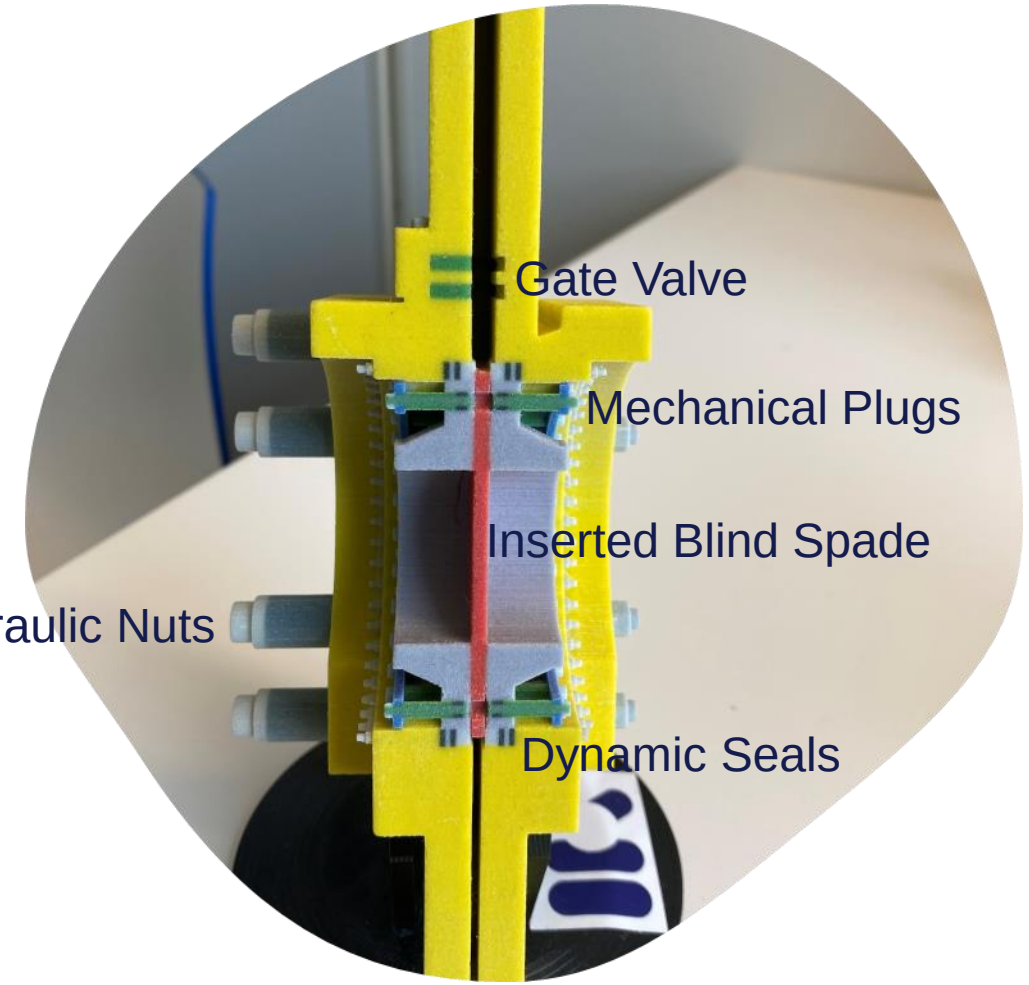
Ready to Operate

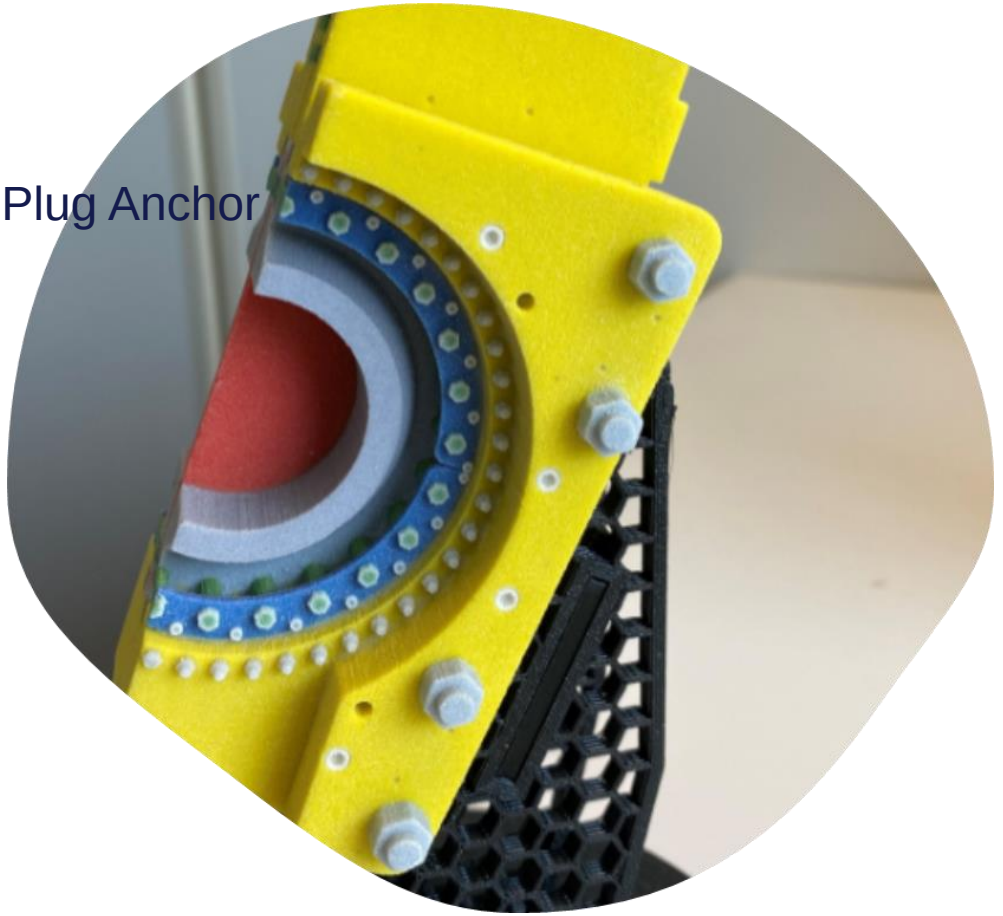
- Plug Flange Holes
- Verify Barrier Pressure Envelope
- Split Flanges
- Remove Gasket
- Insert Spade





AOGV Side Cut





Design Verification

- Standard – PED EN 13445
- Calculations – Tools and Interface
- FEM/FEA – Finite Element Analysis
- Notified Body – DNV
- AOGV is CE marked

DNV·GL

Certificate No:
PEDG000007M

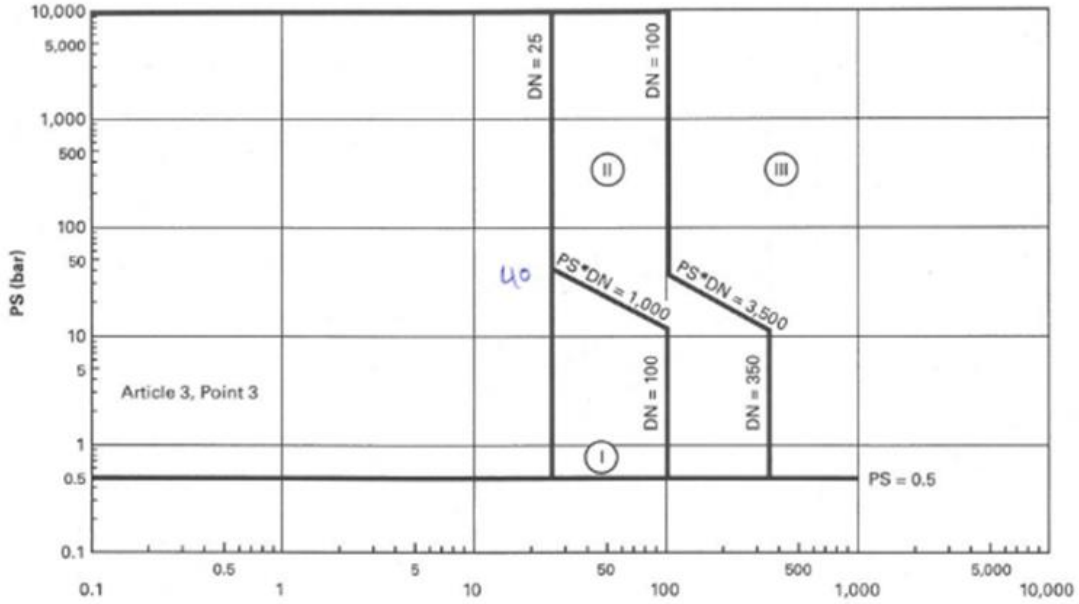
EU CERTIFICATE OF CONFORMITY

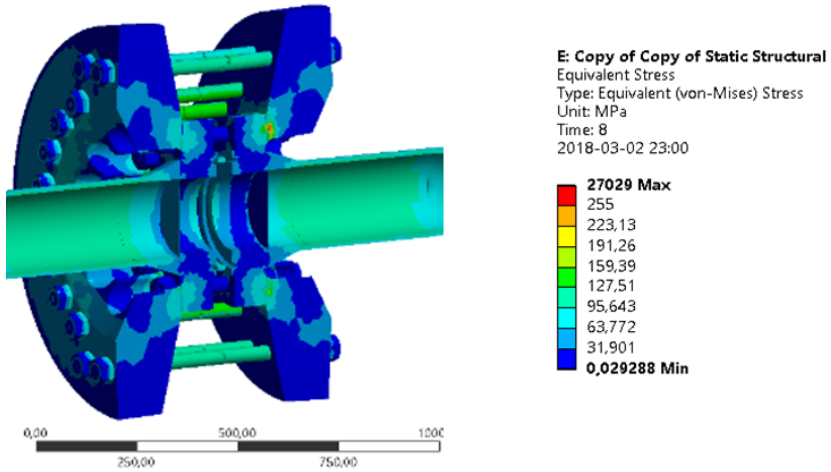
This is to certify:

That the product(s) **Pressure Accessory**

with name and/or type designation(s)
8" 1500# AOGV (Add On Gate Valve); S/N: 3030713-01

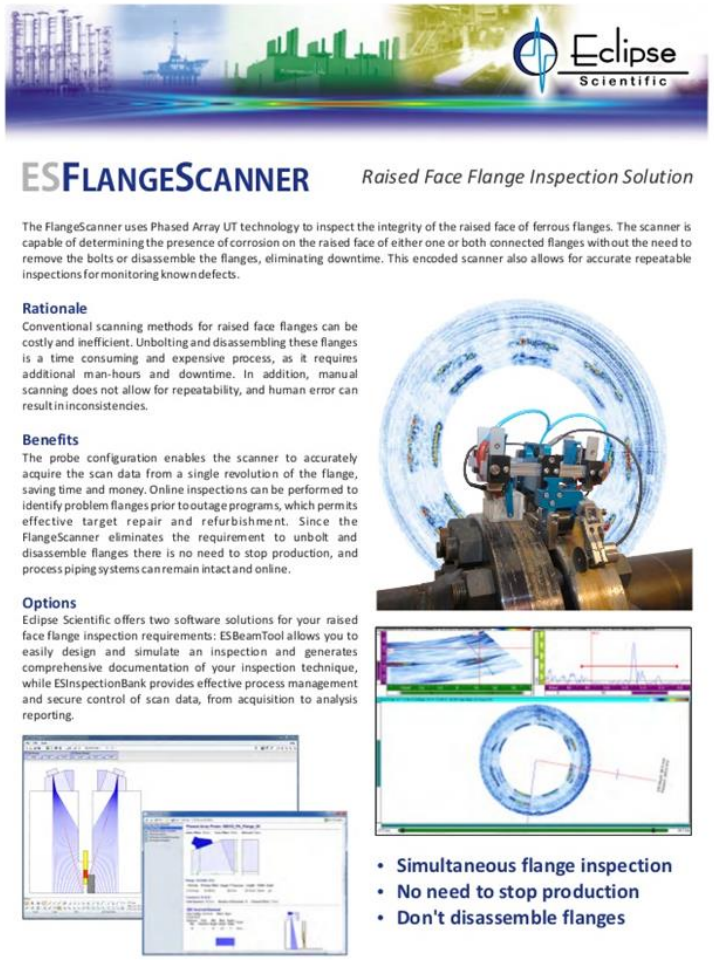
Manufactured by
IK-Norway AS
Stavanger, Norway





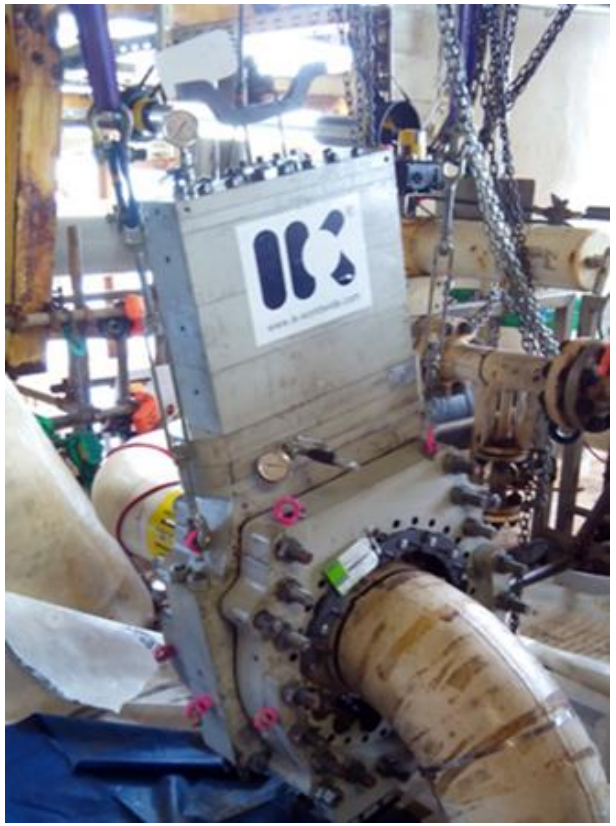
Flange Conditions

- Flange Circumference
  - Nothing to Blast
- Flange Bolt Holes
  - Nothing to Grind
- Flange Raised Face
  - Phased Array



Testimonial from BP

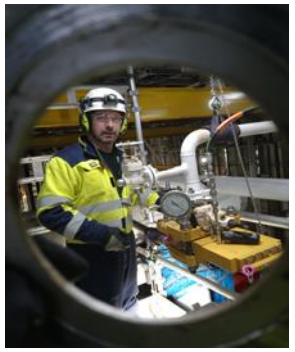
- 12in cl 300 AOGV
- Purpose: Isolate Slug Catcher
  - Not Possible to Gas Free During 21 Days Shut Down.
- Presented by BP at Offshore Europe 2019



Business Drivers

- Move Scope out of TAR (Turnaround)
  - Increased Production Through Simplified Isolation
- Isolate Individual Process Trains, Valves, Heat Exchangers etc.
- Increased Up-Time by Reducing Drainage, Venting, Purging and Flushing
- Strategy Change for Shutdown and Maintenance Work
- Longer Shutdown Intervals

Customers



ExxonMobil

Shell

bp

Eni

AkerBP

vår energi

equinor

GROUP

AOGV Fleet pr May-21

Size	cl 150	cl 300	cl 600-1500
1	x		
2	x	x	compact flange
3	x		x (1500)
4	x		
6			
8	x		x (1500)
10	x	x	
12		x	
16	x	butterfly	
18	x	x	
20	x		
24		x	

Summary

- The AOGV Solves Your Problem – Without Shutdown: **SAFE AND EFFICIENT!**

- With the AOGV you Have **GREATER FLEXIBILITY** for Your Maintenance Strategy, by:
  - Avoiding Unplanned Production Shutdowns
  - By Reducing the Number of Planned Shutdowns
  - You can Isolate for Vessel Entry
  - You can Increase Valuable Production **UPTIME**

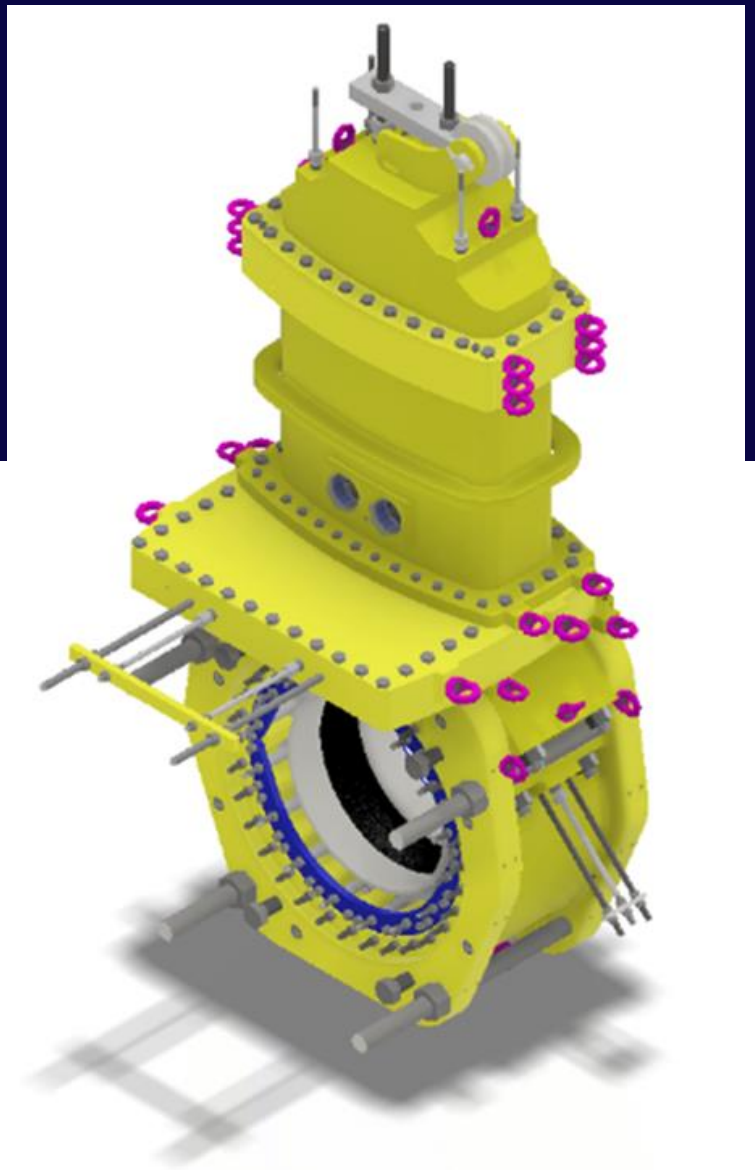
Brilliant engineering is the DNA of the IK Group.
We make your operations run safely
and profitable. On and offshore. Topside and subsea.

With the clever use of proven technology, we have
solved some of our industry's most complex challenges.

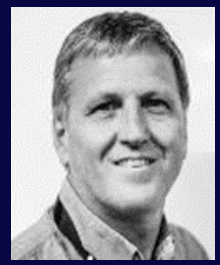
We have the history to prove it.

IK GROUP

Questions ?



Kjetil Aamodt
Principal Engineer and Inventor
M: +47 94 80 67 55
T: +47 51 44 32 19
E: Kjetil.aamodt@ik-worldwide.com



Kenneth Låtveit
BDM & Sales Manager
M: +47 92 81 75 55
T: +47 51 44 32 19
E: Kenneth.laatveit@ik-worldwide.com

Ik-worldwide.com