REDEFINING WHAT IS POSSIBLE:

HOW THE AOGV & DBB-SAVER IS DELIVERING MAINTENANCE ONLINE, WITHOUT A CASHFLOW SHUTDOWN

DBB-SAVER



AOGV



AVOID SHUTDOWN, REDUCE DOWNTIME, IMPROVE PERFORMANCE AND ELIMINATE RISK

AOGV

We keep our customers processes flowing, enabling safe execution of planned or unplanned maintenance and modifications – without downtime.



Lynne Lyon
lynne@izomax.com
Sales Manager, Izomax



DBB-SAVER

Safe working behind leaking valves!



Jeroen Pronk pronk@valvetight.com Director





AOGV & DBB-SAVER

- Positive isolation
- Insertion of spade between flanges
- Flange pair, only pre-requisite
- No valves required
- No permanent alteration to pipework
- Achieving the impossible

- Solution for day-to-day use
- Same tool for any dia or #class
- No limit in dia and #class
- Non-intrusive / no sealants
- Simultaneous isolations possible

SHUTDOWNS

Easy to install / quick mobilisation







Value and Applications of the AOGV

Change out gaskets

√ Valve replacement or repair

Tie-ins of new plant modules

Decommissioning / Spool replacement

Positive isolation- vessel entry

No requirement for "hot work"

No permanent modifications to plant / piping

Execute work outside of a turnaround, increasing asset uptime

Reduction in TAR / Maintenance schedule

Allow process flow and cashflow, to continue



The Technology

The AOGV Mechanical Isolation Tool can insert and remove an isolation spade/skillet on any live flange pair.

Creating a zero-energy zone where inspection, modification and maintenance work can be performed safely and efficiently - while production is maintained.



Track record

We continue to extend our geographical reach and increase the numbers of Projects and Customers

The AOGV tool has been deployed on FPSO's, Semi-Submersibles, Platforms, LNG Terminals & Refineries across upstream, downstream and integrated gas assets.

Description of many of our projects & case histories can be found on Read our story at www.izomax.com

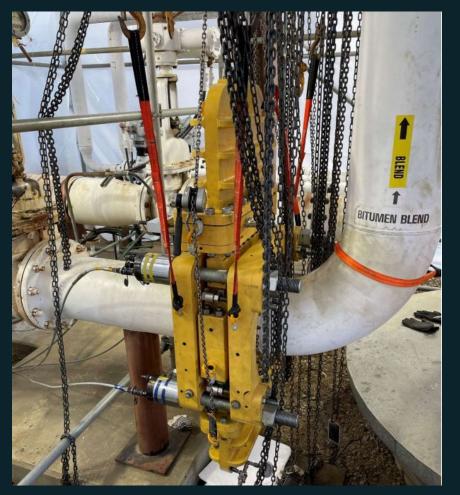
270+ isolations	30+ Customers	60+ Tool size / Class combinations
200 °C Temperature	220+ BAR pressure	0 HSE Incidents



Date	Des 23
Region	Canada
Installation	Crude hub
Dimension	12"
Flange Class	150
Gasket type	SPW
Ops Pressure(Bar)	7,5
Ops Temp (Deg C)	60
Segment	Midstream
Application	Valve replacement – Crude oil

Valve replacement





AOGV technology used to replace 2 valves and associated spools. Operation was limited to 18-hour window for each valve and spool to avoid buffer tanks to drain completely. The job was successfully operated in 14h and export shutdown was avoided.



Date	Oct 23
Region	NCS/NOR
Installation	Offshore production
Dimension	3/4in, 2in, 4in, 6", 10in
Flange Class	300, 600
Gasket type	Graphite
Ops Pressure(Bar)	Div
Ops Temp (Deg C)	Div
Segment	Tie-in
Application	Tie-in

Offshore Tie-in of new oil field





Tie-in of a new gas reservoir discovery in the North Sea. The AOGV is used to avoid shutdown of the producing wells. AOGV will facilitate 22 tie-ins of a new production reservoir to the existing process facility.

Date	Jun 21
Region	Africa
Installation	LNG Plant
Dimension	36"
Flange Class	150
Gasket type	Spiral wound
Ops Pressure(Bar)	1,5
Ops Temp (Deg C)	Cryogenic
Segment	Downstream
Application	Valves

Downstream LNG





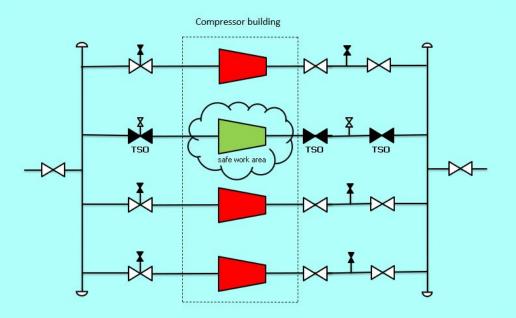
A 36" butterfly valve on the flare line of a major onshore LNG plant had been stuck in closed position for several years, preventing use of the backup flare system. The valve needed replacement without disturbance to the plant operation. A partial facility shutdown was planned as part of the normal facility maintenance routines and use of the backup flare system was critical to avoid a full shutdown. The AOGV prevented a full shutdown with one month's loss of production.



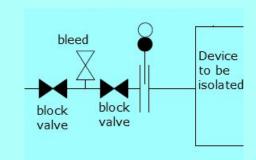
Process isolation for maintenance

Process isolation of *any* type of asset using valves with hazardous media like:

- Gasses, e.g. flammable and/or toxic, like natural gas, H2S, hydrogen, etc.
- Liquids becoming gaseous under atmospheric conditions, e.g. LNG, LPG, etc.
- Regular liquids like crude, naphta, etc. incl. multiphase
- Topsides and Subsea













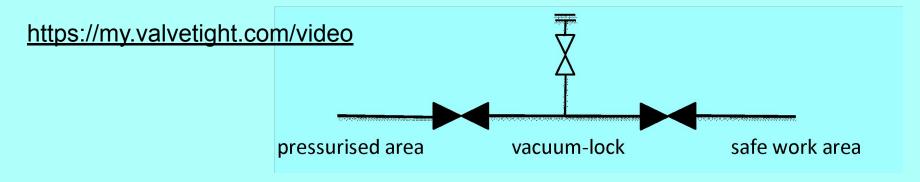


Solution

A vacuum lock is created in the bleed area, reversing dP over the second block

- ✓ Gas leak through the second block has become <u>physically impossible!</u>
- ✓ 100% tightness guaranteed as long as vacuum in bleed section is maintained.
- ✓ The vacuum is automatically created, maintained, controlled and continuously monitored (no human intervention)

A new step in reaching the highest level of safety, using best available technology. Truly *ALARP*!





Classical DB&B with DBB-SAVER

Safe work downstream possible, absolutely zero passing guaranteed by DBB-SAVER





Single Valve Isolation with DBB-SAVER

Safe work downstream possible, absolutely zero passing guaranteed by DBB-SAVER





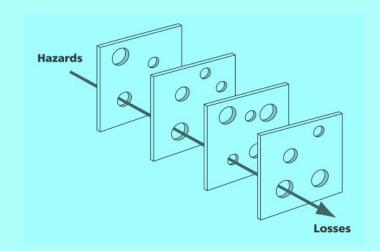
Added value

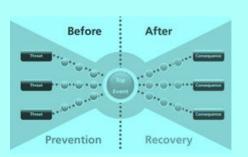
With the DBB-SAVER, there are several major advantages:

- 1. Safety is maximized, by added "layers of protection" on prevention side of bow-tie
 - o mitigating the leakage of the first block valve seat
 - o being able to prove the bleed connection continuously, online and fail-safe
 - Online measurement of leak rate, pre-alarm for leak rate increase
 - o relaying alarms to the central control room and/or the safe work area
 - Minimizing the risk of "human failure" by fully automated proving design

The remaining risk is ALARP, and lower than ever before

- 2. The remaining plant, platform or pipeline stays in production
- 3. Hence: minimal gas loss and gas emissions (for gas applications, especially pipelines)
- 4. Execution of the maintenance work according to planning, without any delays
- 5. Less necessity for expensive valve repairs or maintenance metal to metal can become tight

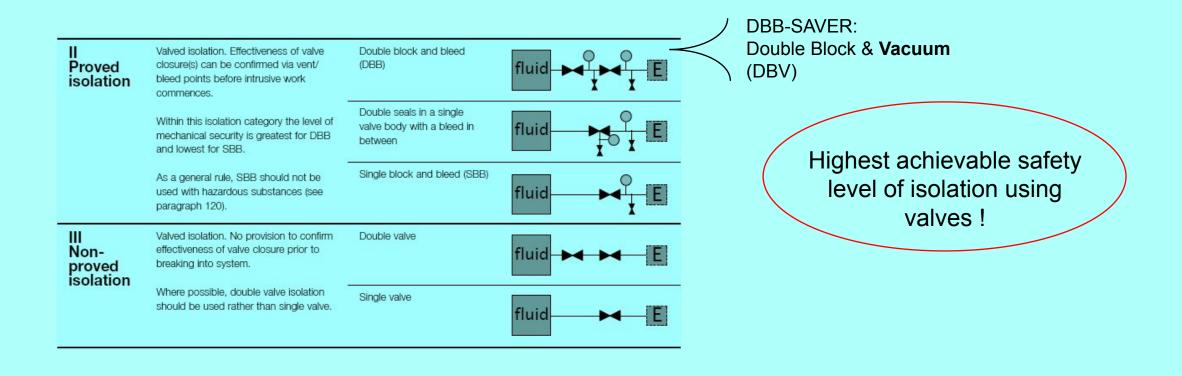






New level of safety!

With the DBB-SAVER a new level of safe isolation using valves is reached



Applications



































SGASSCO





























Reference project list (2017 - current)









- > 1000 DBB-SAVER deployments
- > 40 Customers
- > 30 Countries / 4 Continents
- > 99% HP gas / flammable / toxic
- > 70% Offshore Oil & Gas
- 0 HSF incidents / LTL



Conclusion

The advantages of application of the DBB-SAVER: the unique combination of all of the below.

Max. safety <u>ánd</u> max. plant production <u>ánd</u> lowest TCO

1. Safety enhancement:

- Zero leak rate
- Continuous proving
- Reduction of the remaining risk to "ALARP" conditions
- The safest method to isolate an installation for maintenance using valves

2. Maximizing plant availability:

- The remaining installation stays in operation
- No further depressurization of up- and downstream installation parts

3. Cost reduction:

- Execution of maintenance according to plan, without delays
- Automatic proving: no personnel involved
- Prevention of expensive valve repairs
 One DBB-SAVER unit can be used on any Diameter and Pressure Class
 Lowest Total Cost of Ownership









Thank you for your attention!

Europe:

Valvetight BV Zandhaarweg 5 7595 KM Weerselo The Netherlands

Middle East: Valvetight EMT Ltd. KIZAD, Taweelah Abu Dhabi, UAE

T: +31 85 3012888

M: +31 631 686830 (NL)

M: +971 58 9812238 (UAE)

@:pronk@valvetight.com

I : www.valvetight.com



THANK YOU

Any Questions Welcome

izomax.com

Follow us on LinkedIn

