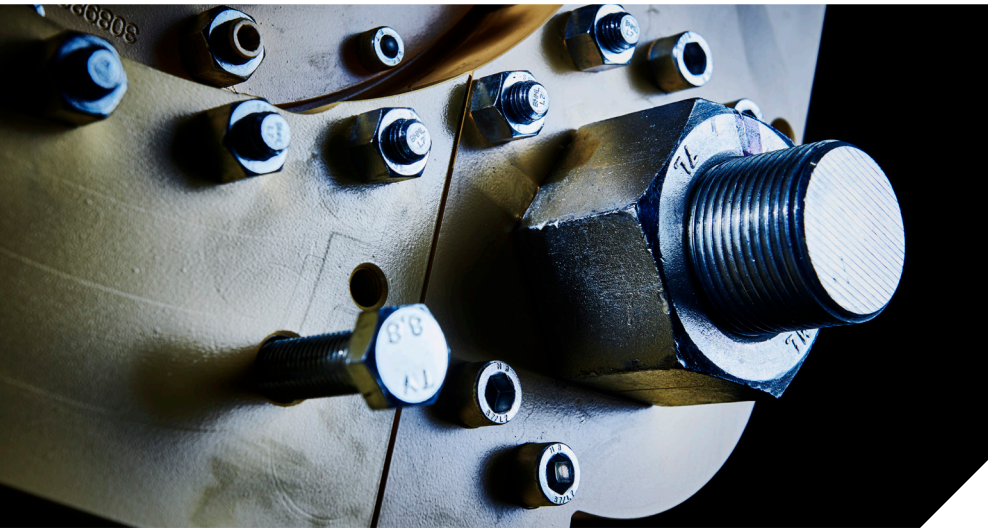


## CASE STUDY

# AOGV SOLVES ONSHORE HSSE RISK FOR SUPERMAJOR //



AN 18" BUTANE PIPELINE, WHICH CONNECTED A MAJOR NATURAL GAS LIQUIDS PLANT WITH ITS MARINE EXPORT TERMINAL, HAD A LEAKING INSTRUMENTATION CARRIER (FLOW METER) THAT NEEDED TO BE ISOLATED FOR REPLACEMENT.

WITH A SHORT, THREE WEEK WINDOW DURING WHICH TO AVOID BOTH THE SHUTDOWN OF THE ENTIRE PIPELINE AND THE NEED TO CONSTRUCT A NEW PIPELINE CLOSE TO THE TERMINAL, IK-GROUP DEPLOYED ITS PROPRIETARY TECHNOLOGY, FACILITATING AN ON-SITE SOLUTION WITHIN TWO WEEKS.

### THE SITUATION

The 18" class 300 butane line operating at 12 bar (175 psi) was of significant length. In addition to keeping the pipeline downtime at a minimum, the design of the pipeline made it impossible to fully drain and refill the pipeline with butane, thus necessitating the replacement of the line. Located in a residential area, the asset owner understandably wanted to avoid the major costs, risks and complex operations associated with this course of action.

### WHAT WE DID - THE AOGV

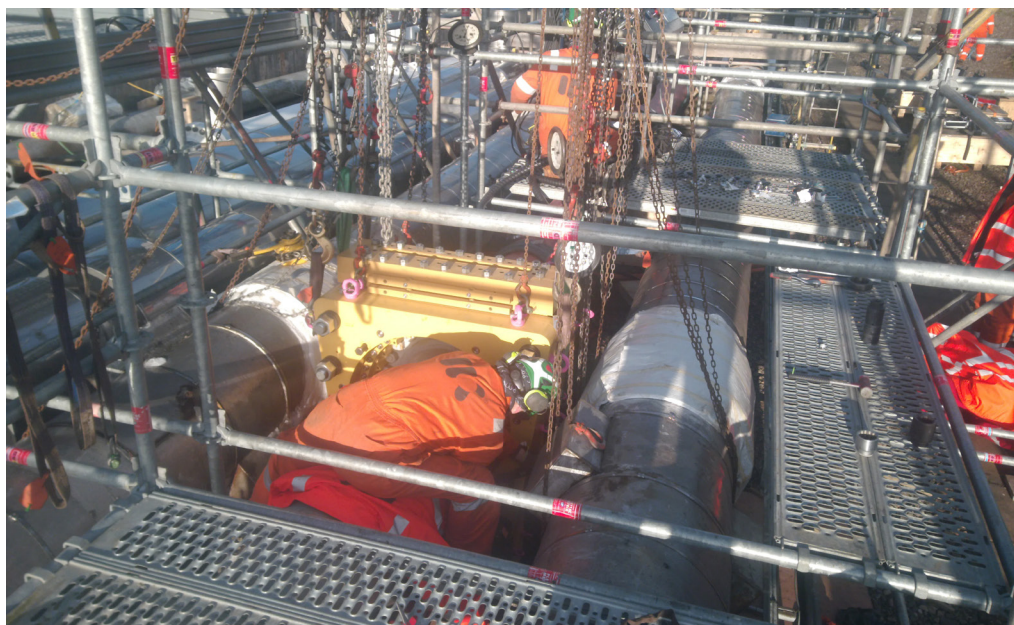
IK Group's patented AOGV is a mechanical isolation tool which can set and retract a blind spade in a pair of flanges on a pressurised process system. The blind spade or a combination of several spades in different locations can facilitate the replacement of valves and pumps, taking a vessel out temporarily for safe entry and bringing it back on-line whilst the main process is kept in operation continuously.

### CHALLENGES

- Limit HSSE risk associated with maintenance.
- No suitable means for isolation near the maintenance point.
- Limit amount of liquid inventory to be drained.
- Asbestos present in gasket.

### RESULTS

- Zero non-production time.
- Successful deployment, delivered within a critical timeframe.
- Avoided construction of new pipeline in residential area.
- No LTIs.



## TESTING, PLANNING & PREPAIRING

An 18" ASME Class 300 AOGV was designed, engineered and manufactured for the application. Working closely with the facility owner, we attended a HAZID and hosted a Factory Acceptance Testing at our Stavanger workshop.

Identifying Asbestos within the gasket in question, we engaged with specialist handlers in advance, whilst developing a bespoke brushing tool to remove any remaining debris.

The performance of the AOGV was verified for high pressure services using finite element analysis and by pressure testing to 1.43 times design pressure as per the EU Pressure Equipment Directive (PED) (2014/68/EU) and EN 13445 - Unfired Pressure Vessels prior to deployment.

## SITE OPERATION




A team of five IK-Group technical specialists carried out this onshore operation, lifting the AOGV into place via a mobile crane, before scaffolding and rigging was used to assemble and deploy. Providing positive isolation, the AOGV inserted an isolation spade between a flange pair and a built-in isolation valve, enabling depressurisation and gas-freeing of a very short section of the pipeline. The isolation allowed for removal and replacement of the leaking flow meter, whilst keeping the  $-4^{\circ}$  liquid butane inventory within the pipeline.

## RESULTS

Efficient completion of this project was critical. With only three weeks' capacity in the terminal's butane tanks, there was little time before the stream of gas from plant to export terminal would have been halted. To avoid this costly outcome, IK-Group completed operations within just two weeks.

Several alternative solutions had been deployed to solve the external leak, without success. The AOGV provided the only viable solution: without its ability to provide positive isolation within the pipeline, the consequences were considerably greater than a facility shutdown.

Fundamentally, the AOGV mitigated the requirement to install an additional pipeline at significant cost and risk – both from an HSE and reputational perspective.

-  • Successful deployment, delivered within a critical timeframe.
-  • Avoided construction of a new pipeline in a residential area.
-  • Safe: No LTIs.