

Enhancing Integrity & Quality of Data While Reducing Risk by Installing MSAS (Master Surface Annulus Safety) & VR Sense

Date: July 2024
Region: Australia



Key Capabilities

- Dual barrier
- Continuous real time monitoring of annular pressure
- Risk reducing effect on the Wellhead Platform (WHP) and to personnel

Challenge

An operator in Australia was facing challenges with Sustained Annulus Pressure (SAP) in one of their newly completed gas producers. The well was located on a Not-Normally-Manned Wellhead platform (WHP). The requirement for continuous monitoring of the casing annulus pressure would ordinarily require the outlet valve to be left in an open position to allow pressure out to the gauge. The outlet(s) were exposed to a risk of falling objects, which could result in a loss of containment. With a Sustained Annulus Pressure of approx. 800 psi, the risk was deemed too high.

Solution

To address these challenges, a unique Annulus Pressure Management solution was offered. This solution utilises the existing VR plug profile in the wellheads and includes:

VR Sense: A fire tested pressure and temperature sensor installed on one of the VR profiles. The VR Sense, comprising of the VR Sense plug, VR Sense flange, and VR Sense connection box, eliminates the need for gate valves and instrument flanges. The VR Sense plug functions as a primary barrier and measures pressure and temperature continuously in the annulus cavity without any human intervention.

Master Surface Annulus Safety Valve (MSAS®): Installed on the other VR profile, this hydraulically actuated, fail-safe close barrier valve provides independent double barrier integrity at wellhead side outlet. The MSAS mitigates the risk of uncontrolled release of annular content due to leaks or accidents, including those caused by falling objects. In the event of an impact or collision, the fire-tested barrier valve will close and secure the pressurised annular volume within the wellhead.

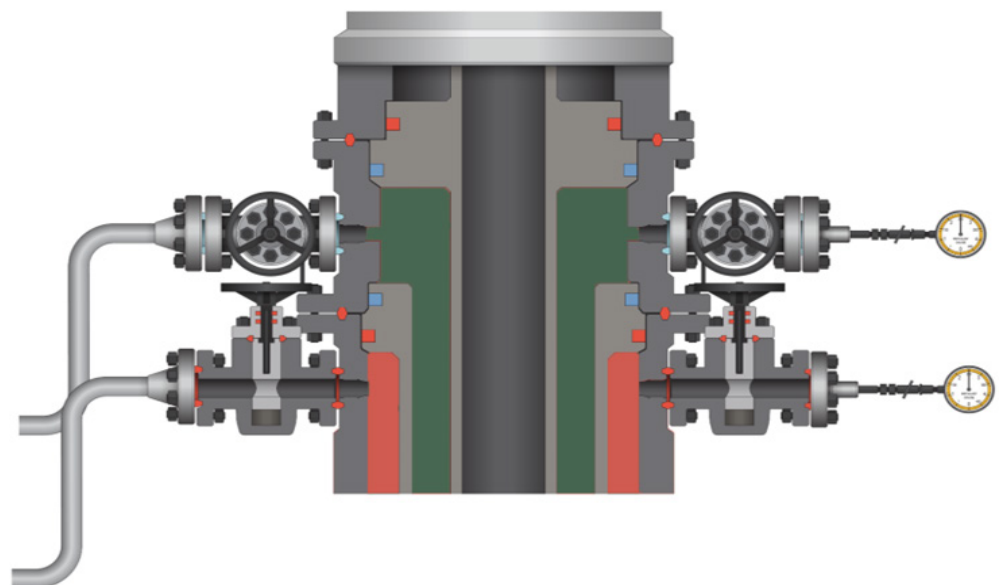


Figure 1 – Before. Only one barrier against the 800psi SAP across the B-annulus outlet(s). Also, for continuous monitoring, the client would need to leave the gate valve (GV) in an open position.

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Value Created

The implementation of the VR Sense system and MSAS valve at the gas field resulted in significant operational and safety benefits:

- 1. Enhanced Safety:** The MSAS valve provides a robust, fail-safe barrier against uncontrolled releases of annular content, significantly reducing the risk of environmental incidents and enhancing overall safety. The MSAS allows for local manipulation or can be connected to a HPU for remote opening of the valve.
- 2. Continuous Monitoring:** The VR Sense system allows for precise and continuous monitoring of pressure and temperature within the annulus cavity without the need to leave the annulus outlet valve(s) open. This reduces the risk associated with falling objects and potential containment losses.
- 3. Operational Efficiency:** By eliminating the need for traditional gate valves and instrument flanges, the VR Sense system streamlines the monitoring process and reduces maintenance requirements.

Overall, the integration of Interwell's technology at the gas field has not only mitigated significant operational risks but also optimised monitoring processes, contributing to the field's long-term safety and productivity.

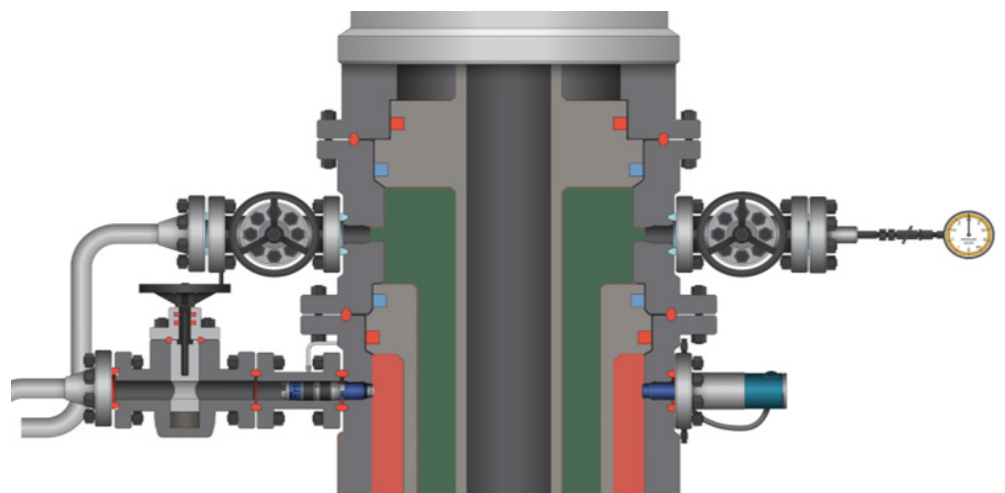


Figure 2 – MSAS installed on left outlet and VR sense installed on right outlet. Both MSAS and VR Sense provide an additional barrier against the SAP. The VR sense allows for continuous without the need to leave Gate valve (s) in an open position.