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Application Note

Application: Valve Seat Leak Rate Testing
Industry: Oil & Gas

A recent application Measurement Resources was engaged to assist in engineering a solution on the 16 oil platforms In the Bass Strait area off the coast of Victoria, Australia. The application involved replacing the manual method of leak testing of valve seating in the offshore oil and gas platforms as operated by BHP-ESSO. These platforms connect to the on-shore facilities at Longford.

One of the important routine maintenance tasks is to monitor the valve seat leakage flow rate on the First Valve On (FVO), and the Last Valve Off (LVO) on the platforms and maintain it within the limits of the relevant standard. Until now this has been done manually using a stopwatch and a beaker/measuring chamber.

This was an arduous task in an offshore environment that also had an environmental aspect concerning the disposal of the oil after the rate was established. The testing allows the client to determine the need to remove these large 200 – 300mm line size valves which are taken onshore for reseating, and also avoids unnecessary maintenance.

The range of flow rates across valve seat to be measured varied with valve size and elapsed time since last valve servicing but in the overall range of 0 to 1 through 0 to 35 litres per minute.

Measurement Resources Pty Ltd South engineers discussed the application with the platform owners and the engineering & maintenance contractors. This eventually resulted in Measurement Resources proposing two specialist high pressure / low flow Rotameters in an arrangement where a Hi and Low flow unit will be connected in series across the valve. The below schematic is printed on a trafolite label and affixed to each panel.

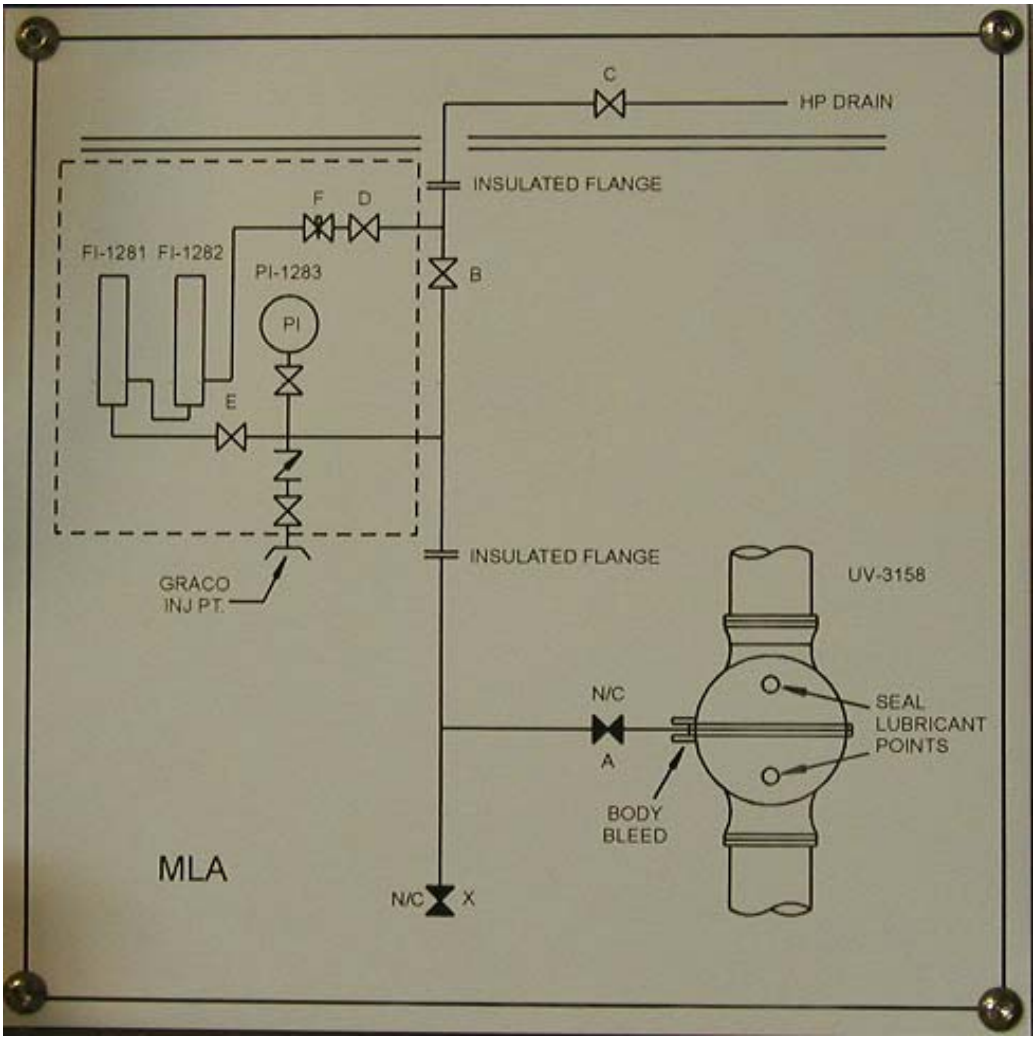

Figure 1: Schematic of Installation

This arrangement eliminated the need for bleeding the oil leakage into a separate container, thereby eliminating the disposal problem and also making the measurement much simpler as the flow rate is displayed on the Rotameter, replacing the existing method. After the initial proposal an offshore trial installation was carried out. After a 3 months trial the application was proved. Since then over 60 panels have been commissioned and are in operation on the platforms.

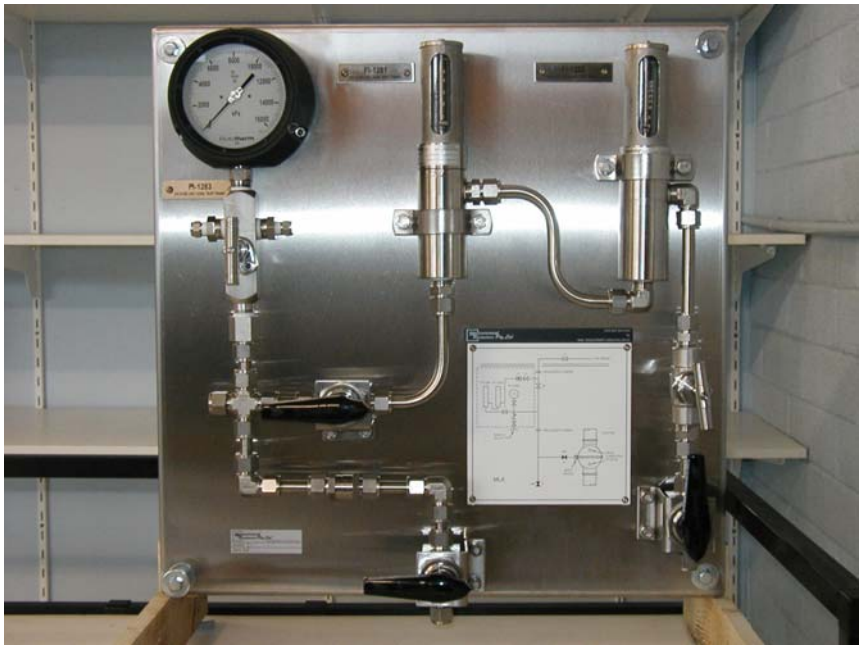

Figure 2: As built panel, prior to shipment

Measurement Resources involvement in this project through the design phase and final supply was;

- Testing of flow dependence of 2 rotameters in series.
- Piping design to accommodate smallest footprint.
- Compliance with NACE.
- Full panel fabrication.
- Pressure Testing of the completed panels to NATA standards (undertaken onsite in MR NATA certified laboratory.

For full details of our products and capabilities please visit:

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