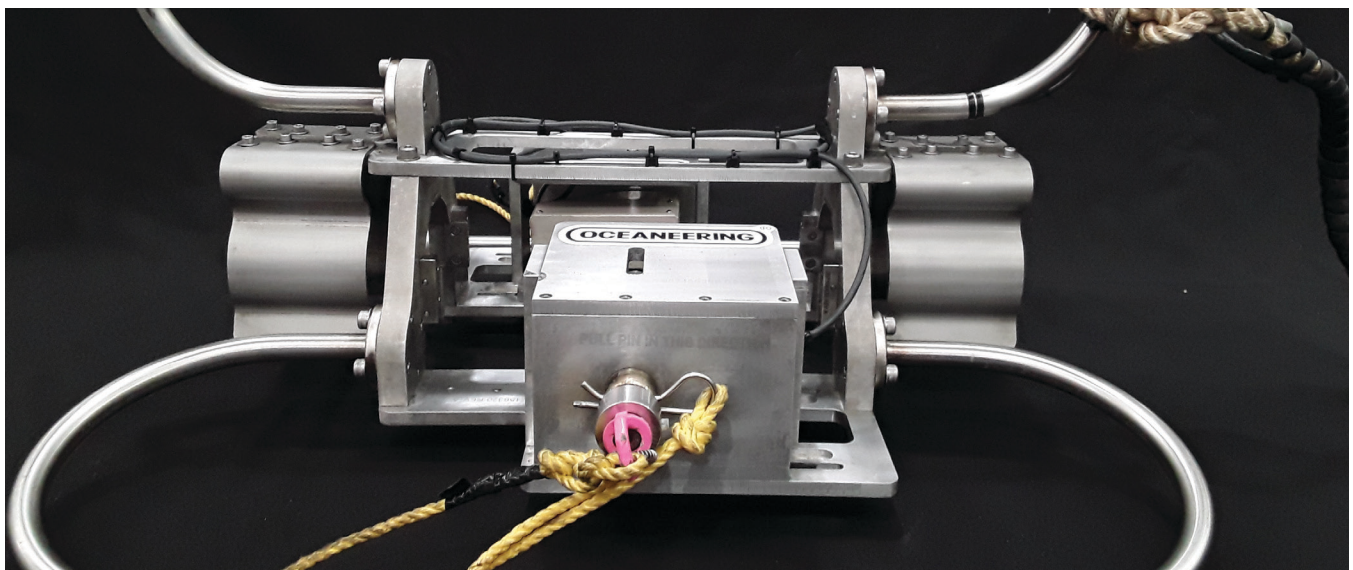


Oceaneering Develops Industry-First ROV-Installable Subsea Ultrasonic Flowmeter

Innovation enables non-invasive subsea flow measurement for model validation or calibration



Project Overview

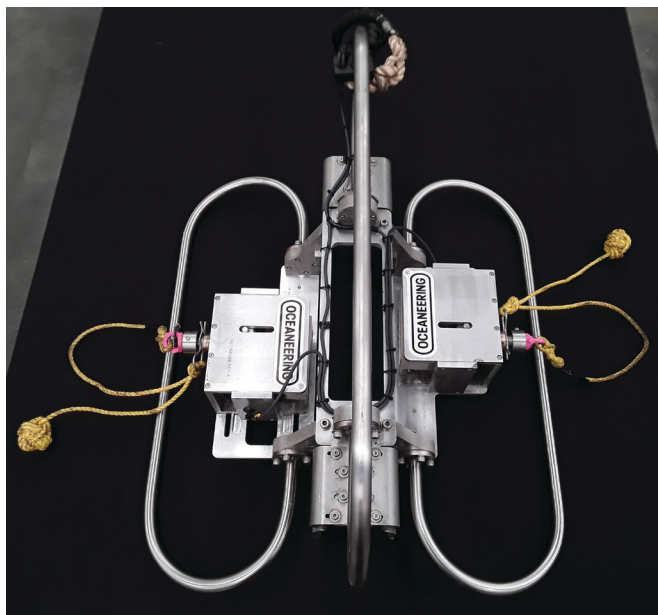
Based on a unique customer requirement, Oceaneering developed an ROV-installable subsea ultrasonic flowmeter used to determine gas injection flow rate to an individual well offshore Australia. This tool was designed to optimize injection of a sealant into the wellbore by measuring flow rate in a 3-inch gas lift jumper coated in three-layer polypropylene (3LPP).

Issues

The customer had attempted to rectify a leak using a sealant. Because they were unable to measure the gas injection to the well properly, the customer was unsuccessful in their efforts to repair the leak. The gas flow rate appeared to be “too high.” Oceaneering’s innovative solution provided the customer with an alternative to the only other solution – a costly rig-based workover.

The Oceaneering Solution

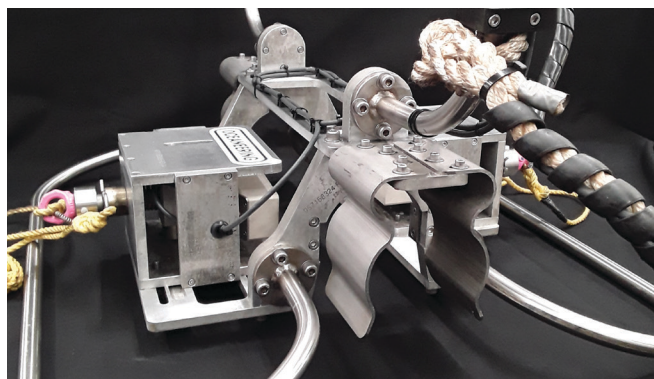
We needed to successfully marinize a ROV-installable ultrasonic flowmeter. For this to be possible, the flowmeter had to be fitted with a safe and reliable attachment mechanism. The mechanism was designed as a “push on” clamp so that in the event of a vessel runoff, the clamp would pull off without



damaging either the pipeline or the clamp. An Oceaneering team based at the Jandakot, Australia, site worked with a team of local experts to create the solution.

Execution Plan

Early engagement with the customer in January 2020 provided the development team with time to work with the distributor and original equipment manufacturer (OEM). After assessing the technical risk of the project and developing a solid project concept, Oceaneering was awarded a contract to develop the new marinized flowmeter. The time from awarding of the purchase order to mobilization was eight weeks.



Results

The flowmeter allowed the customer to inject the proper amount of sealant. It identified that the choke indicator was incorrect. When the flowmeter was installed and the choke “closed” it found that the choke needed to be closed two positions for flow to go to zero. The customer was then able to inject the correct rate of sealant based on gas flowrate.

This was the first time an ultrasonic flowmeter was installed and used by an ROV subsea to measure gas or liquid. Customers are now able to non-invasively verify choke positions, calibrate permanently installed flowmeters, and validate flow assurance models by measuring gas or liquid flow on existing infrastructure.

With this ROV-deployable solution, Oceaneering can potentially help customers prevent a costly rig workover.

