

Forties Pipeline Upgrade

NEW PUMPING STATIONS SAFETY COMMISSIONED THANKS TO CLAMP-ON ULTRASONIC FLOW METERING

Increasing the capacity of the Forties Pipeline System from some 500,000 Barrels Per Day (BPD) to 1,000,000 BPD has enabled BP to transport additional volumes of oil from a number of central North Sea fields, via the newly commissioned Unity Riser Platform. However, in order to achieve this, two new pumping stations have had to be installed into the existing pipeline without interrupting the flow. Non contact flow metering devices from ABE Instruments & Controls Ltd played an important and unique role in the execution of this complex operation.



Installation of one of the new pumping stations in progress on the B.P. Forties Pipeline, without interrupting the flow of crude!

The installation of new pumping stations is a potentially hazardous procedure, and the technique of 'Hot Tap Stopples and Bypass' was used to enable the operation to be executed safely without shutting the pipeline down. Whilst the welding in this procedure is taking place, it is very important to accurately monitor the flow rate of the crude oil in the pipe by having 'on site' flow measuring equipment. This enables the welding operation to be carried out under controlled conditions against parameters previously experienced during trials. Flow metering instrumentation used for these tests had to fulfil several important criteria in order to ensure that everything was carried out with maximum safety. In addition to being accurate and repeatable, it needed to be non-intrusive, portable, quick and easy to install and straightforward to calibrate.

ABLE were able to provide the ideal instrument for this application, the Model 990 Uniflow, portable, clamp-on, transit time flowmeter, fitted with an audible alarm and supplied in an IP65 enclosure. Clamp-on technology means no downtime during installation and no additional pipework, pipe cutting

or special flanges. All flowmeter set-up operations are programmable by user-friendly menu driven software, using the hand-held pro-gramming console. The user simply specifies pipe size, measurement parameters and units, and the 990 Uniflow computes the rest.

The bypass procedure uses a 24" inch diameter steel pipeline. Once the bypass was installed, the Uniflow 990 was pressed back into service, monitoring the flowrate through the pipe. This was vital as Uniflows' technology allowed BP to view low flow rates in the bypass that increased as the cutters encroached through the wall of the main pipeline. With the flow of crude diverted into the bypass, the addition of the on-line booster stations was efficiently completed.



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