With FIELDVUE™ DLC3010 Devices, a Natural Gas Platform Reduces Downtime and Emissions—Saving $3,000,000 USD!

RESULTS

- Replaced radar level transmitters with FIELDVUE™ digital level controllers in produced water section
- Reduced downtime by four hours a week or eight days a year
- Reduced emissions (gas losses) by up to 100 mmscfd, saving about $400,000 a day
- Improved level measurement and process reliability

The FIELDVUE DLC3010 digital level controller is used with level sensors to measure liquid level, the level of interface between two liquids, or liquid specific gravity (density). In addition to providing a 4 to 20 mA current signal, DLC3010 controllers use the HART® communications protocol to access and share information critical to process operation.

APPLICATION

Level measurement of produced water

CUSTOMER

An offshore, natural gas production platform in the Gulf of Mexico

CHALLENGE

A gas producer in the Gulf of Mexico was using radar technology in process level applications. Unfortunately, the transmitters were causing problems, from false liquid levels and alarms to platform shutdowns, process upsets, and lost production. The platform's maintenance crew reported downtime of up to four hours per week or 8 days per year and gas losses (up to 100 mmscfd) costing up to $400,000 a day!

Many of the problems were on the produced water section, where a thin layer of hydrocarbon on top of the water prevented the radar gauges from operating correctly. Operations and engineering personnel struggled with the issues and determined that the gauges were simply not well-suited to the application.

Maintenance personnel called John H. Carter Company, Emerson's local business partner, for a cost-effective solution—preferably one that did not require a great deal of retrofitting or 'hot work.'

SOLUTION

Fortunately, Emerson engineers had designed a microprocessor-based level transmitter that operates even with a thin layer of hydrocarbon present. The Fisher FIELDVUE DLC3010 digital level controller is used with level sensors to measure liquid level, the level of interface between two liquids, or liquid specific gravity (density).

FISHER

EMERSON™
Process Management

In addition to providing a 4 to 20 mA current signal, FIELDVUE DLC3010 controllers use the HART® communications protocol to access and share information critical to process operation.

John H. Carter Company engineers recommended that DLC3010 transmitters be used with top-mounted 249-type sensors in the produced water application. This replacement product would work well because the thin layer of hydrocarbon would have a minimal effect on the total buoyancy of the produced water. And, even if the hydrocarbon layer built up over time, it would not result in a complete malfunction.

Because of the various cage sizes and temperature ranges available, TFE displacer material could be utilized. This would allow the end-user to remove the radar gauge head only and keep the existing external cage/bridal in place.

The customer ordered four trial units, which were installed on the platform in mid-2010 and have performed well, with no problems.

RESULT

Because of the success of the trial units, the team decided to replace every radar gauge on the platform. Since the 249-type sensors and DLC3010 devices were installed, the platform's vessel level problems have ended.

After subtracting the purchase price and cost of installation, platform maintenance personnel say these four devices saved at least $3,000,000 USD during their first year of operation. The savings includes avoided downtime and reduced emissions.

The end-user subsequently replaced all of the radar level transmitters on two other Gulf of Mexico platforms.

Fisher caged 249 Series sensors come standard with a liquid damping orifice in the lower equalizing connection that helps stability where vessel capacitance is small and permits narrower proportional valve settings. Displacer reaction to small specific gravity changes allows these instruments to be used in applications where a response to low levels of input signal change is required.

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