memorable

A memory from the ABLE archive

Custom Design On Critical Duties Continues To Measure Up

Whilst new products often provide opportunities for faster, high accuracy measurement solutions, it is always worth considering those technologies with proven application histories.

ExxonMobil Chemical's Fife Ethylene Plant (FEP) is one of Europe's largest and most highly developed production facilities of its type. Construction at Mossmorran, 25 miles north of Edinburgh, began in 1981 and the plant was officially opened by the Queen in 1986. It was the first plant specifically designed to use natural gas liquids from the North Sea as feedstock. Thirty years on, the plant has 170 full time staff and 50 core contractors with an annual capacity of 830,000 tonnes of ethylene.

From the outset, the technologies deployed throughout the plant were the most advanced available and cutting edge solutions were applied in all major engineering disciplines, from the DCS to the process control instrumentation.

Due to the nature of ethylene (like all hydrocarbons, ethylene is an asphyxiant and combustible) and the ethane from which it is produced, selection of critical shut down systems and in particular level monitoring instruments throughout the entire processing complex required careful consideration. Not only was there an emphasis on total reliability of shut down logic, but to compound equipment selection difficulties temperatures across the plant varied between 900°C and -150°C.

The use of corroborative systems is particularly relevant to critical applications where reliability is essential. As a result we have revisited one of the most arduous measurement applications encountered by ABLE for our new series of "Memorables". The design and implementation of these measurement systems provided ABLE with distinct challenges which necessitated real process knowledge to provide successful solutions.

Ron John, Instrument Engineer for EXXON at the time of commissioning in 1985/86, recalls that the only physical measurement technique, aside from Nucleonic, capable of meeting the necessary requirements was a magnetically coupled buoyancy device.

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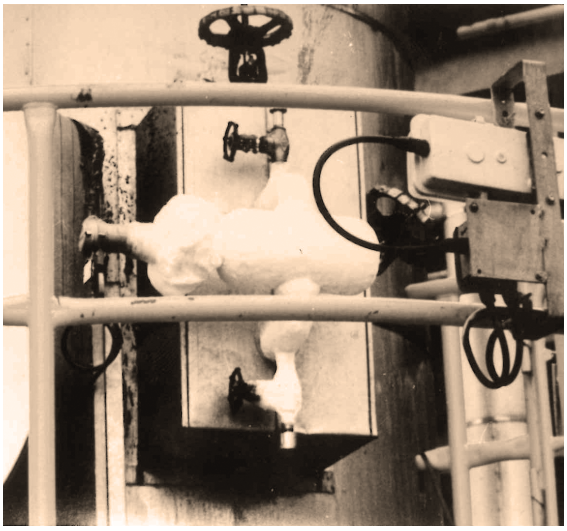

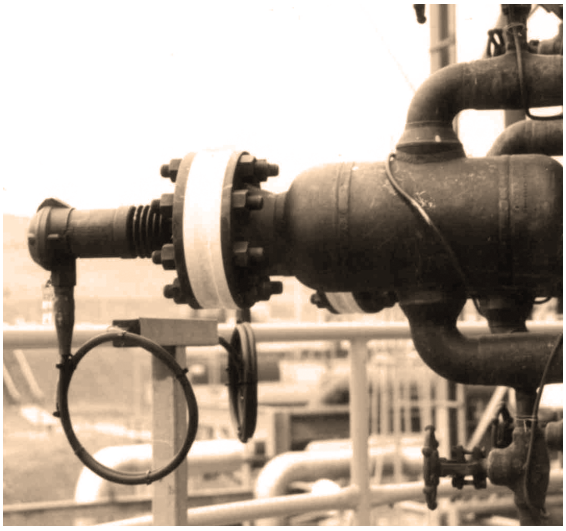

Truly glandless non-seal design with an extreme operating temperature and pressure range.

Not only were the cryogenic conditions highly demanding but also, in the event of failure, safety and the possibility of fugitive emissions had to be taken into account. The Besta magnetic signal transmission design provides a truly glandless non-seal design with an extreme operating temperature and pressure range. Even with today's array of level technologies, if a 100% process seal is required under fail conditions, the only other technique that can operate on a Cryogenic process is nucleonic.

Over one hundred ABLE level systems mounted in custom designed and PMI tested chambers were eventually specified and supplied to fulfil tasks ranging from shutdown alarm interlock systems to process control. Many of the Besta level switches originally fitted are still in service today, having performed with no major component failure and made a significant contribution to the reliable and safe operation of the entire plant for over 30 years. As testament to this, the safety, health and environmental (SHE) performance at the Fife Ethylene Plant is consistently high. In addition to ExxonMobil's own SHE management audit systems, the plant is regularly monitored by inspectors from the Health and Safety Executive and the Scottish Environment Protection Agency.

Today's engineers may consider floats to be old technology but tend to overlook the safety and reliability aspects that continue to make them the staple low level measurement solution for the boiler and HP heater industries and a core product in ABLE's extensive instrument portfolio.

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