Meters provide a total transfer solution

Customs and Excise places stringent requirements on custody transfer metering, so there is no room for error. Brodie meters, available from **Flotech Solutions**, are being used at a Total tanker loading terminal in order to achieve the levels of reliability, repeatability and accuracy needed

Custody transfer duties at Total's road tanker loading terminal at Killingholme, Lincolnshire demand meters that can offer high levels of reliability, repeatability and accuracy. The twelve loading bays at the site handle a total throughput of two billion litres of product per year, and required meters that could provide the necessary performance levels.

"We are a 24/7 operation," said Terry Williams, the terminal manager. "We also need to make sure that we meet the stringent requirements of Customs and Excise for custody transfer metering. This means that reliability, repeatability and accuracy of metering are extremely important."

Standardising on meters

Total has now standardised on the Brodie BiRotor *Plus* meters for custody transfer duties at the site. The loading bays have all been fitted with the meters, supplied by Flotech Solutions, the sole UK distributor. According to Williams: "These meters have proved to be an excellent choice for us."

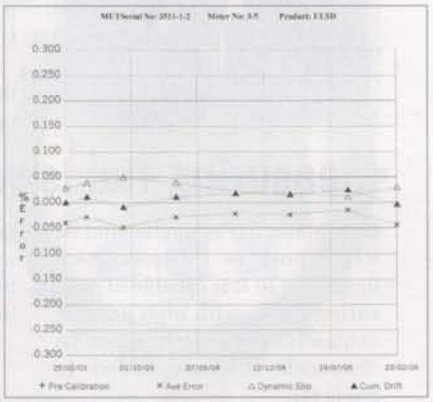
The BiRotor *Plus* meters have enabled operational benefits to be achieved at the Killingholme terminal

Brodie, through Flotech Solutions, has been working with Total to address an application issue on DAWS (de-atomised white spirit). DAWS is a dry fluid which tends to dissolve lubricants, leading to bearing wear. This required the use of specialised ceramic bearings, which remove the need for lubrication by the product. The meter used in this application has shown no sign of deterioration in the K factor (pulses per unit volume), therefore no signs of wear after eight months of daily use. This, almost friction-free meter, can be used on other dry products such as LPG.

Extended 'proving' intervals

Many of the installed BiRotor *Plus* meters have shown no sign of K factor change since installation.The 'proving' reports over the last three years have demonstrated straight-line characteristics. The reliability of the meters has meant that it has been possible to extend proving intervals, saving both cost and downtime.

Operating over a 30:1 turndown, the meters at Total offer a repeatability of +/-0.01% and an accuracy of +/-0.075% – which exceeds the accuracy required for custody transfer. Other operational benefits have also been achieved. For example, improved meter repeatability has meant fewer changes to meter factors to satisfy the requirements of Customs and Excise, thereby reducing costs. A reduction in product losses has enabled further cost savings to be made.



Following a short training session by Flotech, site personnel at the Total plant have managed to maintain the meters when required. Williams said: "On the rare occasion we have experienced a breakdown, the repair has been simple to carry out, something that is highly important when operating 24/7."

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Improving all-round quality in bagel-making

Problem: Traditionally, nutating disk type displacement flowmeters are used to measure the flow of oil used in the production of bread products. However, this method did not provide the level of accuracy required by one baking company in order to maintain product quality during bagel manufacture. Therefore, Croston Engineering, a company supplying a proportional weighing system to the UK baker, required flowmeters which could accurately measure the oil, ensuring the consistent quality of the bagels.

Solution: Krohne's Optimass 1000 Coriolis mass flowmeters have been chosen as part of the weighing system.

Very small quantities of palm and rape seed oil are added to the flour mixture during production. If too much or too little is added it will adversely affect the texture of the product. The flowmeters accurately measure the amount of both oils, maintaining the proportional ratio between flour and all liquid ingredients.

The palm and rape seed oil is contained in bulk storage vessels and pumped at between 2 and 3 bar via stainless steel pipes through the Optimass and into a mixing vessel. A reading is taken from the flowmeters and fed to a PLC which controls the valves that regulate the flow of oil.

The Optimass flowmeters are said to improve the measurement accuracy of the oil to ±0.1% of actual measured flow rate. The instrument was also chosen because of its twin straight-tube design, which is non-invasive and has minimum pressure loss.

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