

# Increased efficiency cheers United Distillers



Increased process efficiency is being achieved with the use of Direct Torque Control (DTC) drives on centrifugal pumps at United Distillers' Cameronbridge distillery in Fife. ABB Industrial Systems' ACS 600 AC drives have improved the accuracy of flow control in a heat exchange process which is increasing the overall efficiency of the distillery's boiler house.

Two 30kW ACS 600s accurately control two 50 m<sup>3</sup>/h centrifugal pumps, one on-line the other on standby, to precisely match the steam requirements of the distillation processes downstream. The drives control the flow of a cold stream of water, which is warmed by a hot process stream in the distillery, before it is converted to steam in a boiler. By matching the flow of cold water to the steam requirements, the ACS 600 pre-

vents the boiler feed tank from running dry or being over filled with hot water that is not needed.

Flow control can be achieved by throttling a valve in the pipeline, but the pressure drop characteristics of the system are such that a small change in valve position would give a large variation in flow, making flow control inaccurate and heat recovery inefficient. As the pump runs for 24 hours a day, 7 days a week, 48 weeks a year, the energy savings made by United Distillers are expected to be considerable, as John Reekie Production Manager at Cameronbridge, explains, "Using the ACS 600 to maintain the level in the boiler feedtank is an energy efficient way to control the flow of water while optimising heat recovery within

*ABB Industrial System's ACS 600 improves efficiency of United Distillers heat exchange process.*

the process and improving the overall efficiency of the boiler house”.

“Also, with the control valve method, the motor would be running at full speed constantly, which, in addition to high electricity costs, gives excess motor wear, heat and vibration and a reduced lifetime,” adds Reekie.

In addition, the ACS 600's Flux Optimisation feature offers energy savings higher than other AC drives. For example, when the pump is less than 30% loaded and running at low speeds, total losses can be reduced by 30% more than conventional PWM drives.

Flux Optimisation uses the ACS 600's DTC technology to produce the additional savings by ensuring the motor receives the exact amount of energy needed to drive the load. The DTC software monitors the motor's electromagnetic state and determines the precise amount of torque needed.

With pumps, where load changes are slow, the ACS 600 only applies torque when the motor conditions change (speed or load change) – the drive only switches when required unlike standard flux vector drives that regularly apply voltage and frequency to produce the required torque even if it is not needed to maintain the conditions.

Flux Optimisation reduces the mechanical stress and current surges to the motor by reducing acceleration times to suit the requirements of the pump's slower torque changes.

“We are seeking the very latest technology for all new modernisation projects and the DTC is



a good example of this,” says Reekie.

United Distillers is the world's most profitable spirits company and the international leader in whisky and gin. The company's Cameronbridge distillery produces the equivalent volume of grain whisky to fill over 600,000 bottles per day which is used in the blending of leading scotch whisky brands such as Johnnie Walker, Bell's, Dewars and White Horse.

A £22 million investment programme has made Cameronbridge Europe's largest and most modern distillery.

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