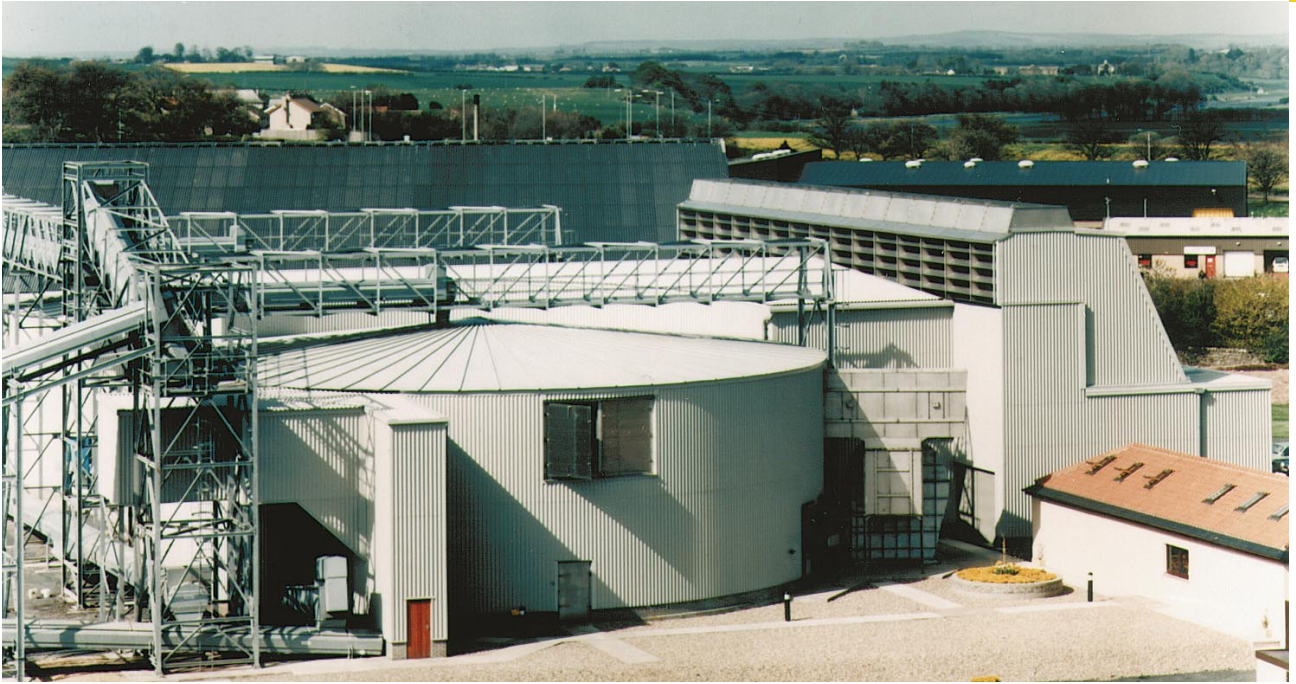


# ABB drives halve malt kilning energy consumption



Overall energy consumption has fallen from around 200kWh per tonne of barley to less than 100kWh following the installation of two, variable speed a.c. drives at Simpson's Malt's new malt kilning installation in Berwick-Upon-Tweed.

The 400kW ABB frequency converters, installed by Slater Drive Systems, have aided these savings helping to make the kilning process among the most energy efficient in the UK.

The a.c. drives control the speed of two 9m diameter kiln fans which are used to reduce the moisture content of the germinating barley in the 250 tonne production units. The high air volumes which are needed during kilning – typically 500,000cu.ft/minute – mean the need to save energy is paramount. “It is quite an air volume, so we need to optimise the process to

save energy,” says Allan Malcolm, chief engineer at Simpson's Malt. “It is essential we don't use more air or energy than required.” Because of the substantial size of the fan propellers a high starting torque is required and this can be adequately handled by the ABB drive.

“We can programme many parameters including a ramp start and can also see at a glance what is our maximum demand figure,” says Malcolm. “The power factor level is excellent - typically between 0.94 to 0.95 and with no need to install any power factor correction capacitors.”

During the kilning process temperatures reach 90°C, but in order to stabilise the malt, this temperature needs to be rapidly reduced. “Traditionally, at the end of the kilning cycle,

*The kilning process at Simpson's Malt is now one of the most energy efficient in the UK - following the installation of two ABB variable speed a.c. drives.*

we would have to cool the product down to stabilise the colours.”

At Simpsons Malt, the inverters take a command from a PLC and switch the fans down to zero speed. Once the cooling doors are opened, the fans are accelerated back to a predetermined level. “We operate the inverters on a 4-20mA signal from the PLC,” says Malcolm.

Furthermore, if on start up, one fan runs correctly and the other starts in reverse mode, the a.c. drive will brake that fan to zero before applying the power to drive it up.

In other malting installations the fans are controlled by using mechanical inlet guided vanes or resistor banks but these proved to be uneconomical to run in terms of energy consumed.

“Every kiln programme is tailor made and is dependent on air flows, temperature etc. These parameters affect the moisture content and colour of final malt and so kilning is a very critical part of the overall operation,” says Malcolm.

“Above all else, though, is the reliability of ABB’s drives,” he continues. “Once barley starts to germinate there is no turning back. It is a living cell and therefore part of a continuous process which is started up to eight days prior to kilning. So we really need reliable equipment because if something goes wrong during the kilning mode you have eight days of the process behind you. Therefore we need



to be in total control of all process parameters at all times.

“The highly reliable a.c. drive and the fact that ABB’s distributor, Slater Drive Systems, are virtually on our door-step for back-up, convinced us to use the a.c. drive.

“I find the degree of flexibility in ABB inverters and its possibilities, absolutely excellent. We looked at other inverters but chose ABB, partly because of the stronger name and because it was one of the first drives on the market.”

## ABB Industrial Systems Ltd

9 The Towers  
Wilmslow Road  
Didsbury  
Manchester M20 8RB

Tel: + 44 (0)161 445 5555  
Fax: + 44 (0)161 448 1089

