

CLEAN ENERGY USING RENEWABLE FUEL

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Scottish and Newcastle (S&N) is one of the world's leading beer-led beverage companies, offering top beer brands such as Baltika, Foster's and Kronenbourg 1664 - known all over Europe - and national brands such as John Smith's and Strongbow in the UK, Kronenbourg Red White in France, Sagres in Portugal, Lapin Kulta and Karjala in Finland and Kingfisher in India.

The new BioPower plant will be located on S&N's brewery premises in Manchester in the UK. It will have a thermal output of 7.4 MWth and an electrical output of 3.1 MWe. Scheduled to come on stream in the first quarter of 2009, it will produce steam and electricity for the

WÄRTSILÄ TECHNOLOGY IS WELL SUITED FOR BURNING WOOD CHIPS AND SPENT GRAIN.

brewery manufacturing processes with any excess electricity exported to the UK national grid.

A by-product becomes fuel for a power plant

Fuel for the BioPower plant will consist of a mixture of wood chips and spent grain. The wood chips will come from local sources and the spent grain will be delivered by S&N's own breweries. Spent grain, which is primarily cellulose and includes other residual compounds not converted to fermentable sugars by the mashing process, is a by-product of the brewing process. When delivered from the brew house, the moisture content of spent grain is approximately 80%. This level is subsequently reduced to 58-60% in a belt press and then the spent grain is suitable for use in Wärtsilä's BioGrate technology without

any additional drying being required.

"For a long time, Wärtsilä has been creating environmentally sound technologies and gaining experience in applications involving alternative fuels. After running a large number of grate firing tests and analysing the chemical properties of spent grain, we convinced this customer that our combustion technology is well suited to burning this material. The decision to purchase was also supported by the fact that Wärtsilä is one of the few suppliers that can deliver entire power plant systems," says **Tauno Kuitunen**, Regional Director, Biopower Sales, Wärtsilä.

"For S&N, burning spent grain as a fuel for energy production allows this by-product to be used in alternative way – as a source of renewable energy. This also complies with national demands for the use of renewable energy sources in the UK. Currently the spent grain is sold for animal feed," says Kuitunen.

Clean and efficient energy production

Wärtsilä's biomass-fuelled plants are efficient and have minimal environmental impact. Based on patented Wärtsilä BioGrate combustion technology, they burn fuels at high levels of combustion efficiency with low NO_x and CO₂.

BioPower plants employ a steam-feed water cycle. Steam is generated in an efficient water-tube boiler and passed to a condensing extraction steam turbine that drives an alternator. Steam extracted from the turbine at a pressure of 10 bars is used in brewery processes.

Wärtsilä's BioPower plants are modular and based on well-proven standardized components. Delivery and installation times are short and high levels of automation allow unmanned operation. ●

WÄRTSILÄ HAS SIGNED a contract with Scottish and Newcastle, a major international brewing company, to supply and install a biomass-fuelled combined heat and power (CHP) plant. The BioPower plant will burn a mixture of wood chips and spent grain. This is the first time that spent grain is to be used in energy production.

