

Scotch Whisky Industry Goes Green

A significant proportion of the £2 billion capital investment by Scotch whisky distillers in new production facilities to meet growing global demand is in the introduction of waste management and energy efficiency technology.

As a long-term business, the Scotch whisky industry is showing its commitment to sustainability and maintaining a pristine environment by launching an ambitious Environmental Strategy in 2009. On the energy front, distillers have committed to sourcing 20% of primary energy requirements from non-fossil fuel by 2020 and 80% by 2050.

Generating energy from distillery by-product biomass, anaerobic digestion of effluent and fuel switching are key to the industry meeting its renewables targets.

Improving Efficiency and Reducing Carbon Emissions

For example, the recently opened £60.5 million Helius CoRDe biomass/feeds combined heat and power facility in Rothes in Speyside is using distillery by-products to

generate electricity, produce animal feed and drastically cut carbon emissions. A joint venture, part-owned by Diageo, Edrington, Chivas Brothers, Inverhouse, John Dewar's, Campari and Ben Riach, it will process around 130,000 tonnes of distillers' by-products annually from 16 Speyside distilleries. The facility will generate enough electricity to power 9,000 homes (see Page 14).

Another project of this nature is at Edinburgh-based North British Distillery, which is cutting its carbon dioxide emissions by 9,000 tonnes per year through the use of anaerobic digestion (AD) technology, which will convert by-products from the distillation process into biogas for generating electricity



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using ENER-G's CHP technology (see Panel One). While the majority of the energy will be used within the distillery's manufacturing processes, displacing existing natural gas supplies to the steam boiler system, the remainder will be sold into the National Grid.

Owned by Diageo and Edrington, North British Distillery is one of the largest Scotch grain whisky producers in Scotland, with its output used in the production of blended Scotch whiskies, including brands such as J&B, Johnnie Walker and The Famous Grouse.

£65 Million Bioenergy Plant

As part of its recent £105million investment programme to expand its Cameronbridge Distillery in Fife, Diageo spent £65million on the construction of a cutting-edge bio-energy plant. The bio-energy facility is the first in the world to combine biomass combustion, anaerobic digestion and water recovery. The bio-energy plant has been built and is run in partnership with energy management company Dalkia.

Cameronbridge Distillery is the largest alcohol beverage distillery in Europe, with the capacity to produce over 100 million litres of high quality single grain Scotch whisky each year and 40 million litres of gin and vodka.

In Perthshire, Tullibardine Distillery is to become the first whisky distillery in the

Panel One: North British Distillery Wins National Recognition For AD

North British Distillery and HydroThane UK have won a major industry award for an anaerobic digestion (AD) project - developed in partnership with biogas digester specialist ENER-G. The project recently won the 'Best integration of AD into a food and drink business' category in the AD & Biogas Industry Awards 2013.

The £6 million green technology project has reduced the distillery's carbon dioxide emissions by approximately 9,000 tonnes per year. The project introduced high rate anaerobic digestion to help North British Distillery provide a sustainable solution to a bottleneck in the back-end production process. This comprises a by-products plant producing Distillers Dark Grain pellets for animal feed.

Instead of investing in additional energy intensive evaporation capacity to process the liquid by-products from the distilling process, a decision was made to install an anaerobic digestion plant which, conversely, produces renewable energy in the form of biogas.

By using HydroThane's ECSB (External Circulation Sludge Bed) high rate anaerobic digestion technology to process a third of the post distillation liquor, North British Distillery has reduced the load on its existing energy intensive evaporation plant - increasing productivity while reducing energy demand.

The AD plant is capable of treating 27,000 Kg of Chemical Oxygen Demand (COD) per day and produces up to 24,000 MW hours of renewable energy in the form of biogas.

A high efficiency 500 kW ENER-G combined heat and power system and a 1,000 kW steam boiler convert the biogas into steam and electrical energy for use on-site. These two energy streams dramatically reduce the distillery's reliance on the use of fossil fuel based energy inputs from the national gas and power grids.

A water treatment plant uses two large aerobic bio reactors and micro-filtration membrane technology to process the effluent stream from the AD plant. This significantly improves the quality of the post-treated water before being discharged to the local sewer, enabling up to 40% of the total volume to be recycled within the distillery. This represents a considerable saving, considering that the distillery uses an average 20 million litres of water per week.