

Prince Charles opened the much-anticipated £60 million Helius Corde biomass plant in Scotland this April. Frank Lund of technology supplier AET speaks to Keeley Downey about his company's role in the project

Cheers to that!

Scotland's malt whisky industry is worth around £4 billion (€4.6 billion) a year, generating around 423 million gallons of pot ale and 500,000 tonnes of draff annually. Pot ale, also known as burnt ale or spent wash, is a high protein residue and can be mixed with draff – what is left of the grain after fermentation – to make animal feed.

However Helius Energy, a biomass energy development company, believed this solid residue from the whisky process could stretch further and so developed a plant in Rothes which uses the by-products of nearby malt whisky distilleries as feedstock to produce 8.3MW of heat and 8.2MWe of power. The facility was officially opened in April this year by Prince Charles and is today operating at full capacity.

The project came to fruition through Helius Corde – a joint venture company established in 2009 between Helius Energy, Rabo Project Equity and the Combination of Rothes Distillers, comprising the major distillers of Speyside in Scotland. The project received financial backing from Rabo Project Equity, Lloyds TSB Bank and the Royal Bank of Scotland, enabling it to progress into the construction stage.

The £30 million construction contract for the complete CHP plant, excluding civil works below ground level, was awarded to engineering and contracting company Aalborg Energie Technik (AET). 'The high overall efficiency of the co-generation plant and our track record with biomass plants were some of the determining factors



The CHP plant is designed to handle 115,000 tonnes a year of draff

why Helius Corde chose us,' says Frank Lund of AET.

The plant was completed ahead of schedule and took 26 months to design, build, commission and test, plus a further three months for pre-engineering, but did not come without difficulties. 'The site is quite small and this created some challenges as we had to design a compact plant. It also challenged the logistics of the installation,' Lund explains.

He continues: 'The extensive use of 3D design ensured optimal plant layout and successful installation. Our experienced project management meant AET was able to maintain full focus on keeping the time schedule during all the phases of the

project and successfully delivered the plant on time.'

In addition to whisky by-products, the plant has also been designed to handle woody biomass. It handles a total 115,000 tonnes per year of wet draff and a further 60,000 tonnes of clean, uncontaminated woodchips annually.

These uncontaminated woodchips are first screened and then transported into one of the plant's two 350m³ storage silos. The wet draff (distillers grain) arrives at the site in trucks and is first temporarily stored in a 400m³ silo. It is later pressed, dried and then injected directly into the furnace via the AET dust firing system.

The CHP plant's technology is based on an AET biomass boiler, steam turbine and condenser, while its combustion system – made up of a dosing bin, rotary valves, spreaders and travelling grate – and biomass boiler ensure high overall efficiency and low emissions. The woodchips are injected into the boiler via the spreader stoker system and the wet draff is dewatered in a screw press and dried in a rotary drum dryer which utilises extraction steam from the turbine before being injected into the boiler via AET's dust firing system.

The 8.2MWe is generated by the steam turbine generator set. In addition to this, turbine extraction steam is delivered to an evaporator plant and 5.4MW turbine extraction steam is used in the draff drier.

The Helius Corde plant is the second biomass plant built by AET in the UK; the first is a 15MWe power only plant at Western Wood in Port Talbot, Wales, which has been operating since 2008 utilising clean and recycled wood.

As Lund explains: 'We certainly used our experience from the first UK project during the execution of the Helius Corde project. In the meantime we have also delivered plants in France and Italy which are now operating successfully. Our basic technology – the AET Combustion System and Biomass Boiler – are applied in all our plants and we continue to improve and refine the details of this technology as well as our experience in project execution.'

The facility receives Renewable Obligation Credits (ROCs) under the Renewables Obligation. ●