

When a Scottish farm needed to expand its renewable portfolio for its site in Dundee, the company turned to a German gasification specialist

Farm power

JS Baird is a family-run farm of mixed arable, livestock, broiler chickens and laying hens set over 600 acres. The farm produces eggs, wheat, lamb, beef, and wheat. With a history of diversification and innovation the farm is attempting to bridge the gap between farming and energy.

The farming specialist needed to obtain gasification technology in order to go green and reduce its heating costs. Gas produced from wood has been used for many years in small-scale installations as a substitute for petrol. The great advantage of gasification is that instead of burning wood chips in a biomass burner, the gasifier converts the wood chip into syngas, which is then used to drive a combined heat and power (CHP) facility.

JS Baird strives to transform waste wood into a valuable fossil fuel substitute that can be used within gasification plants to create energy. So when it came to selecting new technology for its Dundee operation, JS Baird needed a robust gasification system which could consistently and cost effectively produce gas for heat.

Contacting the expert

Familiar with the gasification

technology of Germany-headquartered Spanner – and aware of the company's reputation in this complex field – JS Baird began to investigate whether the team could help. As conversations unfolded, JS Baird soon realised that Spanner could take care of its problem.

Intrigued by Spanner's proposals, JS Baird staff travelled to the team's German headquarters to try out five of its gasification installations. This demonstration day proved that Spanner's technology could fulfil JS Baird's requirements which, coupled with the German company's reputation for gasification technology, confirmed this solution was the right decision for the family-run farm.

Thereafter a team of Spanner's engineers installed the entire gasification system. Spanner produces two principle units, a 30kW electrical output system and a 45kW electrical output system. For JS Baird, one unit was sufficient to provide all the electricity required on the farm including a 25,000 broiler shed, a 200-tonne grain drying unit, and one eight-bedroom house.

The construction of the installation area had to be a perfect combination of high insulation and good ventilation. The units are



The Spanner gasifier used by JS Baird

located separately with the gasifier "pallet" located in the "hot room" and the engine generator CHP installed in the "cool room". A simple climate control computer operates the single fan ventilation. This is also connected to the carbon monoxide monitoring equipment which ensures the unit is operated in a safe environment. There is also an external emergency switch, warning horn and automatic shutdown.

The unit is not just a simple on and off system – it requires an understanding of the process from chip store to filtration to engine running. A cold start needs the gas flared, to allow the system to heat up without sending cold gas into the engine. After some alterations to the wiring and temperature sensors, the

units are switched on and rise immediately to full output.

JS Baird and Sons took the simple option to buy timber and hire a chipper to create the fuel. This process is important as the quality and moisture content of the chip is paramount to reliable running.

Payback

In the current climate of low arable prices, an installation like this can go a long way to securing the future of a farming enterprise with the holy trinity of low-carbon energy, diversification, and profitability. ●

For more information:

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The CHP engine used in the gasification process