



## Industry meets anaerobic digestion (AD)

Singleton Birch is a Lincolnshire based lime business with nearly 200 years' experience in one of the oldest industrial processes; quarrying. As part of a commitment to control energy costs, lower carbon footprint and reduce reliance on grid electricity, the company is embracing one of the latest and greenest agricultural technologies: electricity production from biogas.

For Managing Director, Richard Stansfield, a small green area amidst the chalky white landscape of the quarry symbolizes the company's future. Commenting on the decision to invest in biogas technology he said:

"Quarrying is a hugely energy intensive sector. We spend on average £10-million a year on energy. In order to reduce those costs and limit our environmental impact we considered various options for generating our own energy. However, we were looking for something we could control and given our location in a largely agricultural area, using crops and on-farm waste to produce electricity seemed like the most logical solution".

"The process of finding the right technology and manufacturer took some time but in PlanET Biogastechnik GmbH we found a reliable partner and the project soon took shape. In less than 18 months we developed a feasible design, secured the finance and gained the necessary permissions to commission a 1.5MW biogas plant."

Looking back at the process, Martin Haworth, Technical Director at Singleton Birch is happy to have chosen PlanET as technology provider: "Since commissioning began in March 2014 things have gone remarkably smoothly. The plant was delivered on time, on budget and has been running very well. We are extremely pleased."

Prior to commissioning, Haworth and his team visited several PlanET plants throughout England and Germany and

### At a glance

Company:	Singleton Birch Limited
Core business:	Lime production
Location:	Melton Ross, North Lincolnshire
Substrate supply:	Cooperation with four local farmers

**Why AD?** Simple energy production with a security of price

**Why PlanET?** „We carried out due diligence on a number of AD technology suppliers, and following this process and some site visits to PlanET Biogas facilities we were convinced that they were the right provider for our project". (Martin Haworth, Technical Director)

**Which benefits?** Saving of up to one third of the annual £10-million energy bill

received the same impression each time: high quality products, well trained plant operators and superior running thanks to quality German manufacturing and a company that delivers both a technical and biological service.

"Overall the plant has been a real success with minimal risks. The investment has been easy to manage and we have been able to reduce our energy costs by up to a third," Haworth added.

Besides the financial benefit, Singleton Birch's investment in this technology is helping to reduce climate change. The energy the company produces saves 6000 tonnes of CO<sub>2</sub> emissions each year, lowering the company's footprint and improving its environmental reputation.

Another positive part of the project has been the cooperation with nearby farmers who provide the agricultural input material for the plant, which includes poultry manure, maize, silage, vegetable waste, potato peelings and sugar beet silage. All of which are fed into 6m high and 25m wide in-situ concrete tanks via a PlanET Vario with additional loosening auger (muck and grass version). In addition to this, grass cuttings from the nearby Humberside Airport are regularly added to the feeder. Together, with water, the material is digested and the resulting biogas is used to fuel six 250kW<sub>el</sub> CHP units.

The biogas is desulphurised by the PlanET eco® cover, a close-meshed fabric, which is installed beneath the double membrane roof (PlanET Flexstore). In the final step of the process, the digestate is separated to reduce

the required storage capacity and make transportation easier. The substrate is used as fertilizer by the local farmers to spread on their fields. With substrate requirements matching the farmer's crop rotation it is a win-win scenario for all and the basis for long-term cooperation between the industrial and agricultural parties.

## The biogas plant

**Commissioning:** March 2014

**First Extension:** September 2014

**Input material:** maize silage, poultry manure, vegetable waste, potato peelings, sugar beet silage

**Pre-storage tank:** 3m diameter, 9.15m height, 60m<sup>3</sup> volume

**2 Digester:** 25m diameter, 6m height, 2,945m<sup>3</sup> volume, wall and base heating, PlanET eco® cover +, PlanET Flexstore

**Agitators:** 1 PlanET eco® paddle, 3 PlanET eco® mix

**CHP:** 6x 250kW<sub>el</sub> Gas-Otto engines

**Dry feeding system:** PlanET MultiRotor Vario 96 m<sup>3</sup> „muck and grass“

**Feature:** PlanET Cutter, Separator

Commenting on PlanET's involvement, Stephan Hoffmann, UK Sales Manager said:

“We knew when the facility was expanded just a few months after commissioning that this would become a long-term project, with the final set up still to be achieved. During our 16 years of building plants and delivering a biological service from our own laboratory we have developed the expertise and knowledge to design plants for long-term operation, even with slight changes in substrate”.

“Since Singleton Birch was first commissioned we have added four CHP's, a slurry tank, and prepared for the addition of a

glycerine inlet. This is our fifth biogas plant in the UK and it's certainly one we are very proud to be a part of.”



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