Alwyne Capital

BioCow's Somerset Farm AD expansion in construction

Alwyne Capital helped BioCow find a financial backer to develop their 5,000sm^3 (roughly equivalent to 50MWh[1]) direct gas-to-grid on-farm Anaerobic Digestion plant and injection point that will inject biomethane directly into the Main Transmission System of the UK.

MACQUARIE

BioCow

BioCow is one of the UK's most experienced owners and operators of on-farm[2] Anaerobic Digestion (AD) in the UK[3].

At its own operation at Somerset Farm in the Cambridgeshire Fenns, BioCow is building a 2,000 sm^3/hour (broadly equivalent to 20MWh[1]) plant that will recycle all of it's livestock muck, slurry, bedding- and feed-waste and a 3,000 sm^3/hour injection point (broadly equivalent to 30 MWh[1]) from additional on-farm AD generated biomethane gathered from local farms in one of the UK's most agricultural rich areas.

This is the first pilot plant to inject biomethane directly into the National Transmission System (the main transit gas network or gas main of the UK) as part National Grid's Project CLoCC[4] that will help revolutionise on-farm AD in the UK and help decarbonise the Country's gas supply and reduce the import dependency on foreign fossil fuel derived gas[5].

Alwyne Capital

Working with BioCow from late 2018 through the Autumn of 2019, we:

- Developed a robust investment story and the supporting financial models of how BioCow would be able to revolutionise on-farm AD in the UK with its low-cost farm recycled feedstock and the Project CLoCC technology
- Introduced BioCow to a small and pre-selected group of equity investors that all understood AD and had the appetite to invest in a construction stage project as well as supporting BioCow's future ambitions
- Helped shepherd the investment through term-sheet negotiations, third-party diligence, documentation through to close.

Derek Bourgoyne, Founder and Director of BioCow commented:

"My business partner John Dale and I formed BioCow in 2012 to develop food and farm waste fed energy production by anaerobic digestion in an environmentally and economically sustainable manner."

"We have pioneered professional management and environmental standards, having turned-around failing plants, developed new plants and have successfully been operating these plants at class leading environmental and economic efficiencies."

"In Macquarie, we have found a financially strong partner, and a leader in renewable energy, that can help us develop on-farm anaerobic digestion as a mainstream UK base-load energy plant, providing clean biomethane to replace our depleting North Sea gas and lessen our Country's dependency on imported natural gas."

"Robin Menzel really knows the investors active in AD and so introduced us to the right people from the start. No meeting was wasted. He was tireless in presenting our investment case, wishes and requirements; finding intelligent, creative and workable compromises when necessary as well as providing a useful sounding board and a guiding hand when required to secure our preferred financial partner."

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1 The conversion of volume of gas express in standard metric cubes of biomethane is dependent on pressure, temperature and the calorific value of the gas, so a factor of ten is a typical rule-of-thumb conversion factor to obtain an energy equivalent measure expressed as Megawatt per hour (MWh). 1 MWh is roughly equivalent to powering 2,000 average houses for an hour.

2 On-farm AD is a hugely environmentally beneficial modern way of farming in that it recycles farm crop and slurry wastes into energy as a baseload 24/7, 365 a day producer. Traditionally, farmers have spread their muck and slurry from livestock to land and ploughed under any crop residues to extract the nitrogen as a natural fertiliser. The organic matter then rots on and in the fields releasing methane which is the most potent of the greenhouse gases. By placing the organic slurries, muck and crop residues in a digester, the methane can be captured, leaving a nitrogen rich digestate that can be spread to land as a more efficient natural fertiliser. The methane after cleaning can then be burned for power or transformed into biomethane which is chemically the same as natural gas. Burning the biomethane in an engine to produce power is typically only 42% efficient, with a disproportionate loss of energy as noise and heat. Therefore, it is preferable to use the biomethane once cleaned and upgraded as natural gas, by either injecting it into the gas grid or using it as a road-fuel substitute.

3 Rural farms in the UK, however, tend not to be near a gas main, or if they are, it is usually at the very end of the distribution network. Gas flows from high pressure to low, and demand is seasonal as well as fluctuating across a day, so it is not easy to economically inject into the end of a distribution gas network. Injecting into the National Transmission System or gas main avoids these seasonal fluctuation issues and is more economic as the biomethane does not need to be blended to a distribution specification with for instance the addition of propane as an odorant

4 BioCow currently operates 3.1 MWh biomethane fed CHP and 1,200 sm^3/hr (=~12 MWh) biomethane direct gas-to-grid across four anaerobic digestion plants in Cambridgeshire and Suffolk

5 CLoCC = customer low-cost connections

6 Gas remains the UK's most critical energy source, burning with 50-60% less CO_2 emissions than coal. 80% of the UK's 25m homes use gas and it still provides between 30-40% of our electricity. Biomethane can also significantly reduce our dependency on gas imports. The depleting North Sea gas fields now only supply 44% of our gas. 47% comes from the European inter-connectors, that feed-in mostly Russian and some Norwegian gas and 9% from LNG from Qatar, Russia and the US.