

CASE STUDY

# BIOGAS UPGRADING AT BREWDOG'S HQ BIO-PLANT

**Start of Operation:** March 2021

**Location:** Scotland, Ellon

**Product:** Carborex<sup>®</sup>MS

**Plant Capacity:** 600 Nm<sup>3</sup>/h

**Biogas Feedstock:** Brewery waste

**Application:** Pipeline Injection

The Brewdog Brewery makes biogas from leftover grain and that helps fight climate change by producing renewable energy. Through DMT's three-stage membrane separation technology, biogas from two anaerobic digesters is processed and upgraded to a purified Biomethane stream which is then injected into SGN's pipeline to provide thermal energy for homes and businesses in the local town of Ellon.



**Project shortlisted AD and Biogas Industry Awards 2023 'Best Biogas Plant Above 1MWe Equivalent'**

**99,5%** methane recovery using 3-stage membranes

**98%** plant uptime in the field



**Reduction CO2 emissions**

The new £12 million bio-energy plant at the firm's Ellon headquarters in Aberdeenshire will result in 7,500 fewer tonnes of carbon emissions every year when running at full capacity.



**Recycle wastewater**

The anaerobic digester will help the business recycle most of the 200 million litres of wastewater produced every year in the beer-making process, as well as generating bio-methane to power the brewery's boilers.



**Future plans: use the CO2**

Over the coming years, BrewDog also plans to use the CO2 created by the digester to carbonate its beer.

# About the Project

At many breweries, the rinse water used in the brewing process is purified and reused. The wastewater treatment plant at the BrewDog HQ bio-plant will reduce the water usage of the brewery by 50%. A waste stream containing sludge is released during this purification process. This sludge is transferred to a digester and here a digestion process takes place in which biogas is produced. The biogas at the BrewDog brewery has a typical biogas composition, 55% methane, 44% carbon dioxide and some gasses with impurities such as H<sub>2</sub>S. Biogas upgrading means separating the gas into main streams; one stream will be almost 100% pure carbon dioxide and the other stream [bio] methane will be above 90%. The CO<sub>2</sub> can be reused in the brewing process thereby lowering CO<sub>2</sub> emissions and closing the circle by using the CO<sub>2</sub> as a product that otherwise would have gone to waste.

## Targeting zero net emissions

DMT will supply the biogas upgrading technology with a capacity to clean 600Nm<sup>3</sup> per hour. The biogas upgrading plant is a key part of BrewDog's zero emissions goals and is expected to inject the first gas to SGN's gas grid in February 2022. Since DMT's first UK project in 2012 DMT has installed and maintained many projects in the United Kingdom.

DMT's team in the UK will take care of the daily management of the scope, working closely together with SGN and our partner Heat & Power Services to ensure timely delivery of a successful project.

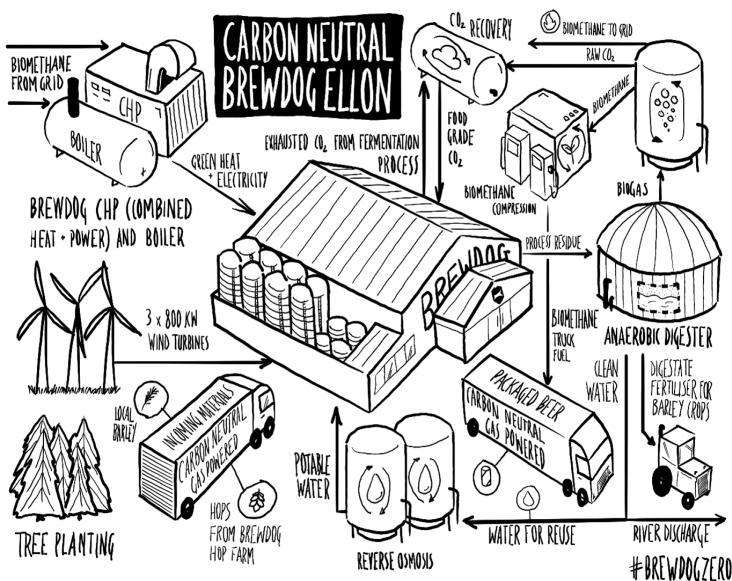


## Creating a sustainable future

The project with BrewDog is a great example and shows how innovative technologies can be used to reduce carbon emissions and contribute to a cleaner environment, creating a sustainable future. DMT's has a wealth of experience helping companies achieve their sustainability goals. Our mission is to reduce the environmental burden is very similar to BrewDogs. Since DMT was founded in 1987 it has developed technologies to solve environmental issues.

**"BrewDog is the perfect example of what can be achieved not only through their core brewery operations. Add their considerable efforts in BrewDog Forest, proving the determination in their mission to reduce carbon emissions is more than just words."**

- Stephen McCulloch - DMT Sales Director UK & Ireland



## Biogas in Your Industry

Biogas is produced during anaerobic digestion of organic substrates, such as manure, sewage sludge, the organic fractions of household and industry waste, and energy crops.

It is produced in large scale digesters, as well as in small scale digesters. Biogas produced in an anaerobic digester is very suitable for upgrading, increasing the value of the waste of your production site.

DMT Environmental Technology's mission is to create a sustainable world by offering renewable gas solutions. Our technologies, products and services offer the best solutions in biogas conditioning and upgrading. DMT is a leading total solutions provider offering gas to grid, bio-CNG, bio-LNG, locally or central, or virtual pipeline options. With high customer satisfaction, easy to operate products, 24/7 service support, and extensive industry experience, customers see a profitable return on investment when partnering with DMT.



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