

Ground Source Heat Pump 8.2MW System

Including Modified Capacity

Up to
20 yr
Maintenance
and Extended
Warranty

Background

Client: W L Douglas and Sons Ltd, located in Berwick-upon-Tweed, Northumberland. A progressive agri-business in the Borders that have just completed their third significant renewables installation through Calibrate.

Project: 3 heat pump installations over 4 years (1MW, 6.2MW and 1MW) to expand the capability and capacity of their offering and future-proof their grain farming and transport business.

In 2020/21 they completed the installation of a massive 6.2MW Ground Source Heat Pump (GSHP) based on the success of their original Calibrate 1MW installation in 2018/19, followed by a modified capacity extension in 2022 with an additional 1MW GSHP.

An intelligent bespoke Calibrate controller (Calibrate Analyser) allows remote access and monitoring.

Timeline

2018 This original system was the first-of-its-kind to provide simultaneous heat and chill to dry one of the largest tonnages of grain of any GSHP in the UK. The customer, Ian Douglas, approached Calibrate in 2018 to look at ways they could speed up and streamline the grain drying and cooling process and also reduce the company's carbon footprint. It was agreed that Calibrate's 1MW heat pump heat/chill system was the perfect fit for their 40t/hr continuous flow grain drying system.

2020/21 Fast forward 3 years and W L Douglas and Son added an impressive 6.2MW system. This significant heat pump includes 60km of below ground array pipework, 170m² of heat exchanger surface area and 150L/s fluid flow rate.

2021/22 Benefitting from the Ofgem modified capacity scheme, another 1MW heat pump was added to the original ground array in 2022 to create additional space and water heating for the production shed, taking the system's full capacity to 8.2MW. This 1MW addition equates to 229 extra tonnes per annum of carbon saved.

The Figures

2.9 year

payback on the 20
year RHI scheme

825%

total energy
efficiency

45°C at 500%

heating efficiency

1°C at 325%

chilling efficiency

"When we made the decision to invest in heat pump technology, we looked at various companies who offered this service, we narrowed these companies down to Calibrate due to their professional approach and because they were able to carry out the full bespoke design, installation and also support the system with a comprehensive long term maintenance agreement. We were not disappointed with Calibrate and have completed 3 large projects and would highly recommend them."

Mr. Ian Douglas
West Ancroft Farm
Berwick-upon-Tweed



Process

The key driver for the upgrades was the success of the original system and rapid growth of the business, which resulted in a grain and grass drying requirement of some 30,000 tonnes. A Calibrate heat / chill pump heats and dehumidifies the air up to 45°C before it is passed through the grain and grass on the drying floor and also chill the produce post drying prior to storage to 8-12°C below ambient which aids the overall efficiency of the system and ensures quality of product. Calibrate's cloud-based software remotely manages the full process from a smart device, enabling the client to have a 'hands off' approach as well as allowing real time tariff generation and power consumption readings.

The Calibrate team put together an outline plan to pre-heat the air onto the burners to 45°C, whilst also using the free chilling to cool down the product to 8-12°C below ambient, prior to storage.

Outcome

Using Calibrate's ground-breaking technology, the client has future-proofed their business. With a large capacity of over 8MW over 3 heat pumps, they are cutting fossil fuel usage along with reducing their carbon footprint. The system is multi award-winning.

The system enables reduced fossil fuel usage and derives a high 20 year RHI tariff and speeds up the process throughput by chilling the grain after drying. With the further benefit of little or no mechanical ventilation within the storage sheds afterwards, and more importantly peace of mind that the valuable product is stored correctly.

The Calibrate 20 year maintenance and extended warranty package means that there is no unexpected outlay for the lifetime of the tariff.



Calibrate
Energy Engineering



Calibrate

Energy Engineering

Environmental • Energy • Engineering

Calibrate Energy Engineering supply intelligent, hands off, commercial heating, chilling and electricity generating solutions to high energy-use industries.

As a company, we aim to reduce the impact that carbon emissions have on our environment.

Our aim is to rethink and reshape how energy is more economically utilised and consumed - **Making Net Zero a Reality.**

We have been doing this in New Zealand and the UK for nearly 20 years and our team, experience and reputation has grown exponentially so that we are now recognised as industry leaders in energy generating solutions.

Ground Source Heat Pump (GSHP)

We install between 499kW and 6MW UK-wide and pride ourselves on our bespoke, innovative, modularised and 'hands off' solution. To date we have installed and maintain 300MW of heat pumps.

Combined Heat & Power (CHP)

With output ranging from 50kW to 200kW, the Calibrate CHP can run on gas, LPG, CNG or hydrogen and produces electricity and heat up to 85°C.

Calibrate Beltdry

Our modularised Calibrate Beltdry uses a high temperature-resistant belt and is ideal for many industries from food to chemicals, and ensures the processing of the highest quality end product.

Gridflex

Our energy balancing service allows customers to profit by matching their energy generation and use to the needs of the National Grid.

Calibrate Analytics[®]

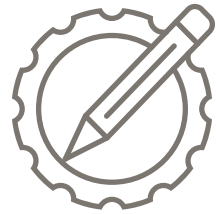
Our innovative controller can assess your energy usage, identify inefficiencies and recommend improvements and renewable solutions to reduce your costs and carbon footprint.

Maintenance

All our products come with the option of a 1 – 20 year maintenance package for continued support and peace of mind.

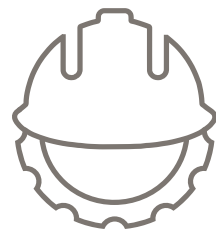


We remain focussed on helping commercial businesses to meet the Government's goal to reach net zero carbon emissions by 2050 for a more sustainable future.



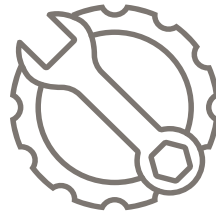
Design

We design a system around your business, not the other way around, providing you with full remote access.



Install

We ensure that all Calibrate systems are installed on-time and with least disruption to your business.



Maintain

Our systems come with the option of a 20-year warranty ensuring you have peace of mind at all times.

Contact:

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Calibrate Energy Ltd



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*All formulas and calculations are derived from industry suppliers and MCS guidelines, it is advisable to have the calculations and formulas checked by a certified mechanical engineer, and as such, Calibrate Inc. Ltd (Company # 08277206) will not be held liable for any incorrect formulas or calculations or any accidental misrepresentation.