Shane McDonald
Managing Director

- Shane is an Industrial refrigeration Engineer and controls specialist originally from a farming family in New Zealand. He focuses on the design of the systems and has a leaning towards maximising the global picture of the project, including chilled outlets and power balancing across the sites.
- As a leader Shane brings a mix of accountability and an inspirational vision to motivate his team to operate at their best.
- Shane’s vision from the outset has been to create multiple revenue streams across the group, as such the wider group has 2 factories to use as test beds, which enables the group to tightly control their modularised approach, and costs.
- Shane’s passions include his young family, vintage vinduro motorbike racing, skiing and shooting as well as most outdoor sports.

Calibrate
Energy Engineering

Calibrate Energy Engineering

Calibrate Group is the culmination of two businesses spanning 15 years, it focuses on large scale heat pumps 1000kW+ primarily focusing on the chilled usage to maximise the systems potential.

Calibrate have installed multiple simultaneous heat / chill systems for a wide range of commercial clients installing up to 15mW per annum.

Our systems have a modulised plantroom, which we manufacture out of two factories reducing project time and on-site disruption.

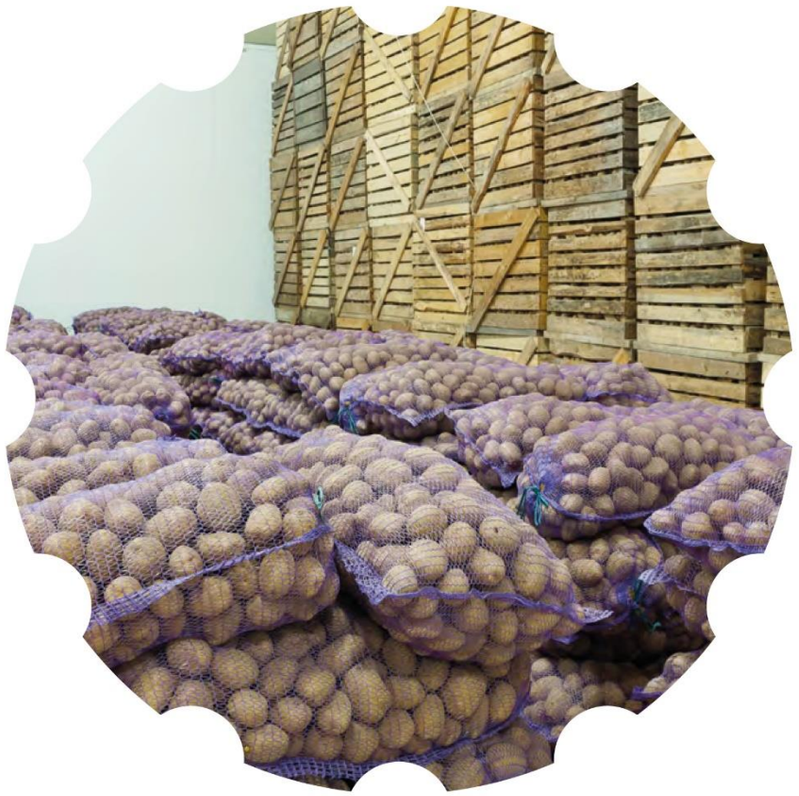
The software we write inhouse controls chilling, dehumidification and heating from -6°C to 45c, with variable demand from 10% to 100%. With the next phase being seamless demand side response and power balancing.

Bespoke control programs enable 24-hour monitoring and adjustments; maximising tariffs and efficiency.

Calibrate
Energy Engineering

The Calibrate Heat pump Heat / Chill System

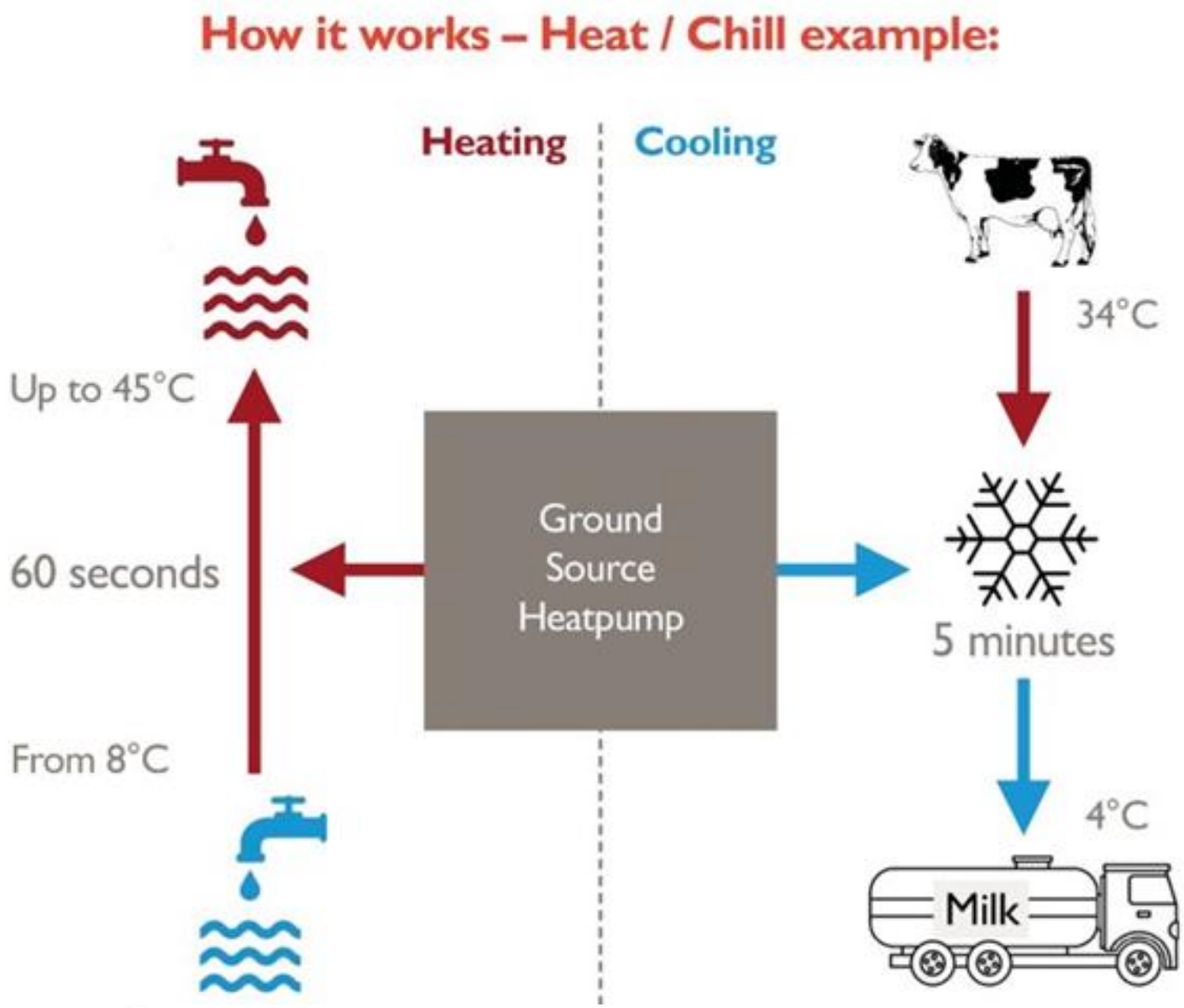
can be used for many applications including:



Calibrate
Energy Engineering

Dairy

A Heat / Chill solution can heat the parlour, the water and chill the milk.



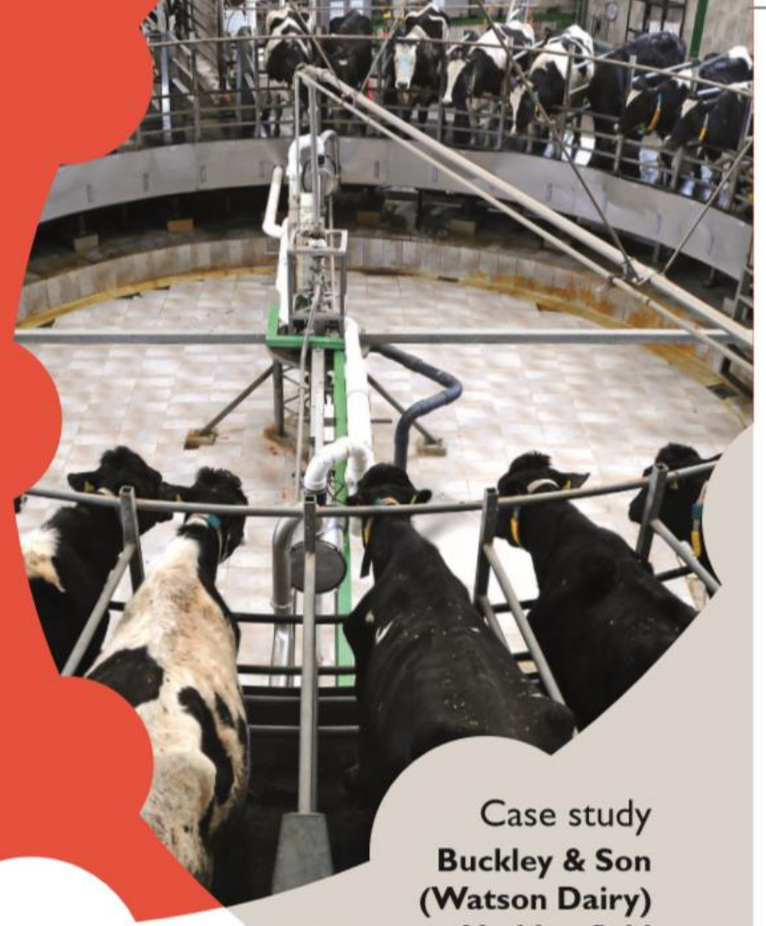
Calibrate
Energy Engineering

Buckley Case Study

Heatpump Heat / Chill has projected generation of £2,330,197 of income and savings with the 20 year Government Tariff.

"Calibrate have delivered a system that operates seamlessly alongside my existing technology. The remote access means I can continue to operate my business without concerns about tariff monitoring. The installation was completed on time and on budget and I was highly impressed by the calibre of the onsite team. Calibrate are a great solution for businesses trying to add another undisruptive income stream."

Steven Buckley
(Watson Dairy)
Huddersfield



Case study
Buckley & Son
(Watson Dairy)
Huddersfield

The Introduction.

Buckley and Son (Watson Dairy) based in Huddersfield process 1,000,000 litres of milk and cream per week at their Dry Hill Farm processing factory.
A 998kW Heat Chill Heatpump has been installed with 26km of in-ground pipework to benefit from the Government backed 20yr RHI scheme to pre heat the pasteurisation process, heat the packing sheds and hot water.
The free by-product of this heating process is chilling. This is used to assist the chilling of the milk, cream and cold stores.

The Process.

This solution is fully automated to provide efficient heating and chilling, maximising and monitoring every aspect of the system via our in house designed and built remote access control system.
To maintain the required chilling by-product 50,000 litres of water for the factory processes per day is being heated. At the times when the heatpump is heating, there is 100% fossil fuel replacement.
80% free chilling while there is a heating demand down to 0°c for the milk, cream and cold stores results in increased savings.

www.**calibrate**energy.co.uk

*All formulas and calculations are derived from industry suppliers and MCS guidelines, it is advisable to have the calculations and formulas checked by a certifed 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.

The Figures.

- £2,704,043 pf projected income and savings with the 20 year Government Tariff
- A 4 year pay back
- 35°c at 350% heating efficiency
- 1°c at 300% chilling efficiency
- Total energy efficiency of 650%

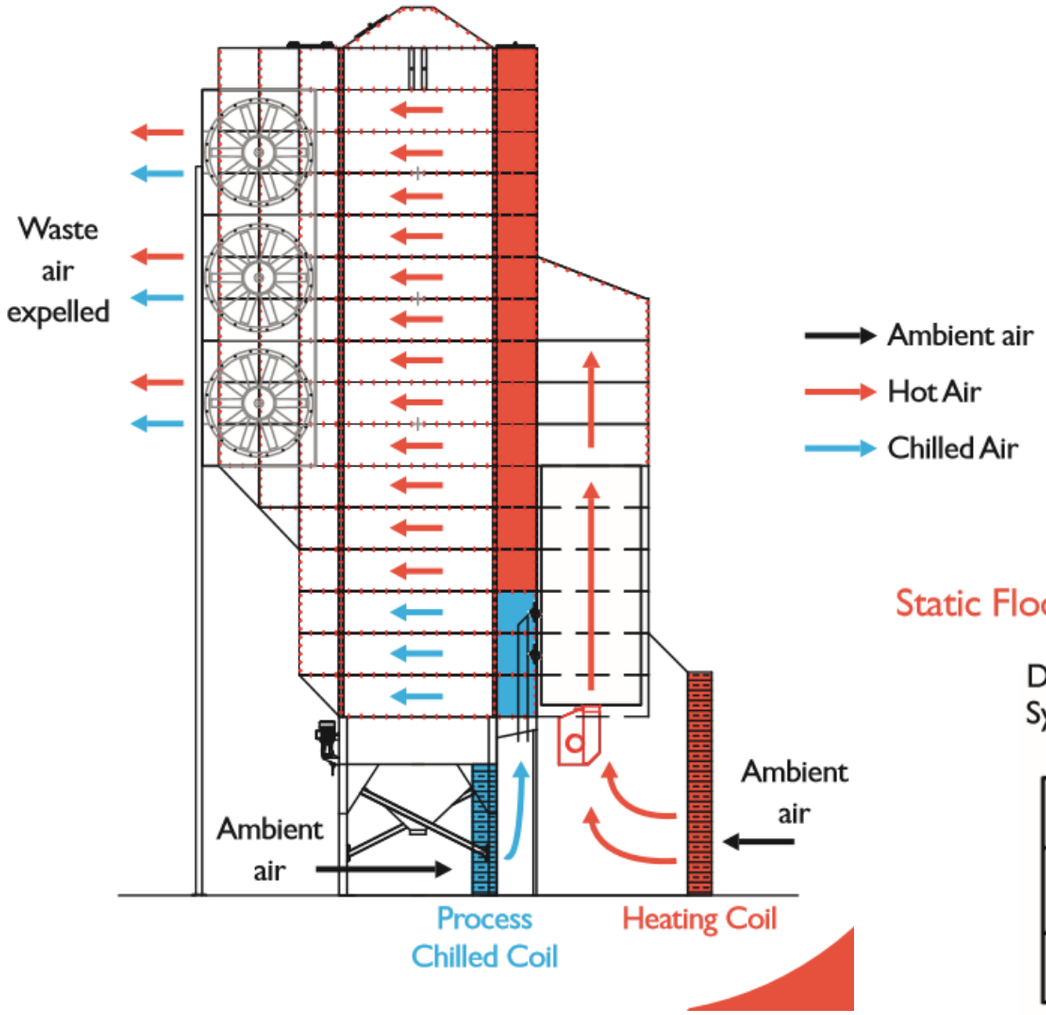
The Conclusion.

An intelligent bespoke Calibrate Controller ensures that the system is operated remotely for all tariff monitoring and peace of mind, a true 'Hands-off Heatpump Heat Chill solution'.
The Calibrate 20 year maintenance and extended warranty package means that there is no unexpected expenditure for the lifetime of the tariff.

Calibrate
Energy Engineering

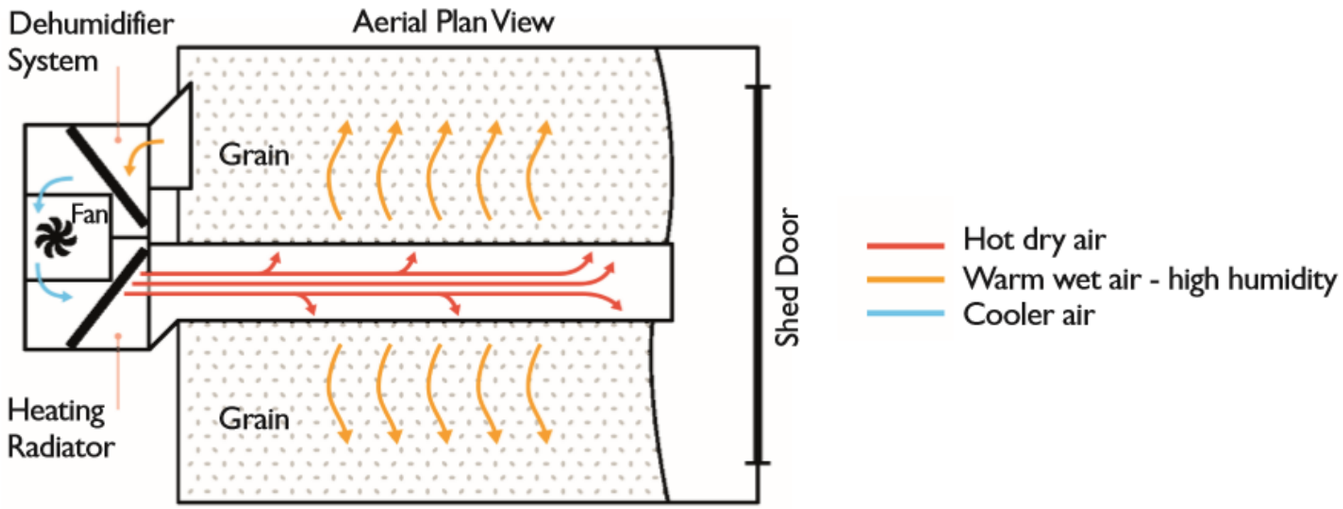
Heat Pump Grain Dryer

Continuous Flow Grain Drying Example:



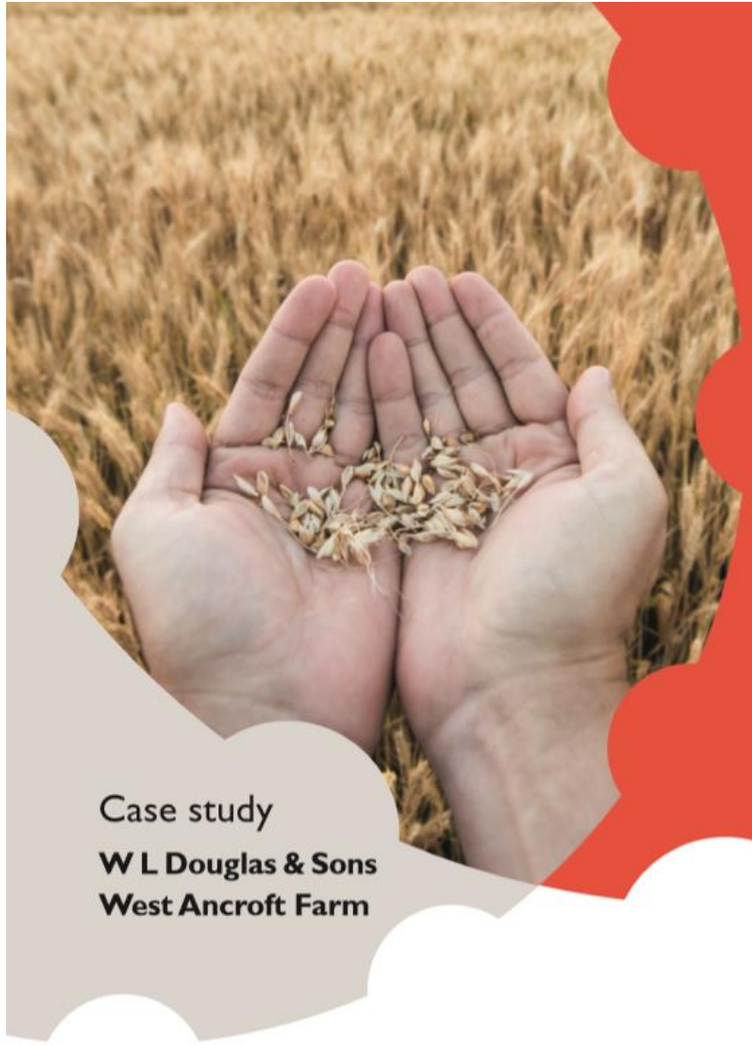
A by-product of the heat pump's heating cycle is chilled water, this is used to dehumidify the recirculated air through the grain as well as chilling the grain to anywhere between 10°C to 15°C before it is stored.

Static Floor Grain Drying Example:



Calibrate
Energy Engineering

West Ancroft Case Study



Heatpump Grain Dryer generates over £2,609,251 of income and savings with the 20 year Government Tariff.

"Calibrate exceeded expectations by having our Heatpump Grain Dryer installed in 9½ weeks ready for the 2018 Harvest. I would happily recommend them for a customised solution."

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

Case study

W L Douglas & Sons
West Ancroft Farm

The Introduction.

W L Douglas and Sons are based near Berwick-upon-Tweed in North Northumberland. This business has seen rapid growth in the last several years resulting in a Grain Drying requirement of some 25,000 tonnes.

Partner Ian Douglas approached the Calibrate Energy Engineering team to look at ways they could speed up and streamline their Grain Drying and cooling process. It was agreed that Calibrate's 1mW Heatpump HeatChill system seemed like the perfect fit for their 40t/hr Continuous Grain Drying system.

A bespoke Control System remotely manages this system enabling The Douglas' to have a 'hands off' approach as well as enabling real time tariff generation and power consumption readings.

The Process.

Having 22 years of industrial refrigeration experience in the chilling sector, and 12 years as a Heatpump Business owner, the Calibrate Technical Director Shane McDonald put together an outline plan to pre-heat the air onto the burners to 45°c, whilst also using the free chilling to bring the grain 8-12°c below ambient prior to storage. This worked to reduce fossil fuel usage, derive a high 20 year RHI tariff and also sped up the throughput by chilling the grain after drying. With the further benefit of little, or no mechanical ventilation within the storage sheds afterwards.

The Figures.

- £2,609,251 of income and savings generated with the 20 year Government Tariff.
- A 4-5 year payback on the 20 year scheme.
- At least 60% oil reduction, with no burners required for the rape drying.
- 45-50°c at 400% heating efficiency.
- 1°c at 325% Chilling efficiency.
- Total energy efficiency of 725%.

The Conclusion.

This is the first site of its kind in the UK to have a Simultaneous Heating and Chilling system.

Plans are being made to further utilise the 900kw of 1°c chilled water now available onsite, with ideas such as free chilled storage, free dairy milk chilling and free potato chilling as options. A grid application has also been submitted to install a 250kW Solar system to further utilise Calibrates unique inhouse developed Export Management system to vary the power usage of the Heatpumps from 10% to 100% depending on the level of power generation available, meaning no power input cost when the sun is shining, further reducing the payback and grid reliance.

www.**calibrate**energy.co.uk

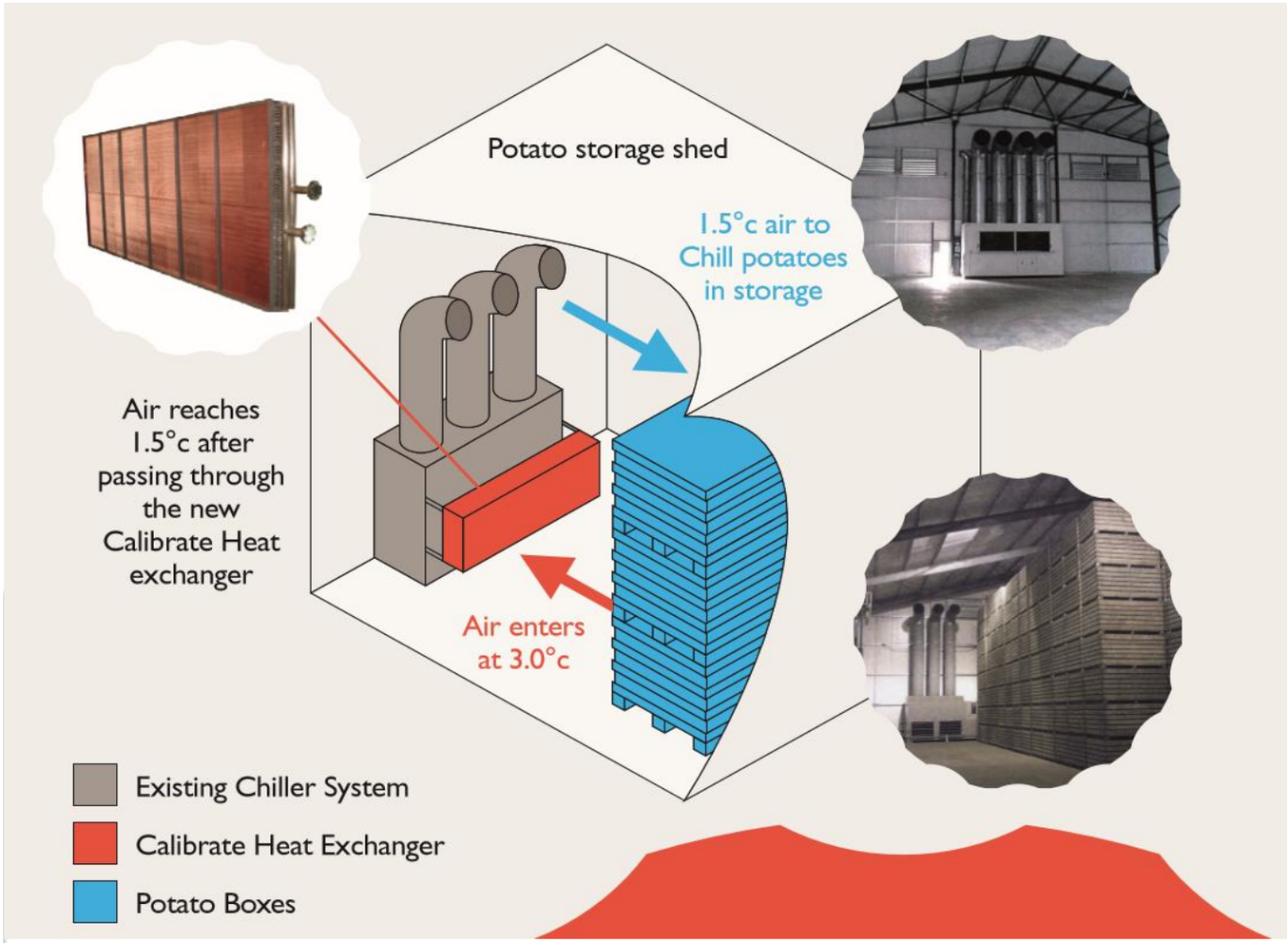
*All formulas and calculations are derived from industry suppliers and MCS guidelines, it is advisable to have the calculations and formulas checked by a certifed mechanical engineer, and as such, Calibrate Inc. ltd (Company # 08277206) will not be held liable for any incorrect formulas or calculations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

Calibrate
Energy Engineering

Heat/ Chill Solution for Potato Chilling

A heat pump Heat / Chill system uses heat naturally occurring in the ground. The heat is increased with a 350% efficient heat pump to the required heating output whilst earning the 20-year Government RHI Tariff.

A by-product of the heat pump's heating cycle is chilled water. This is used to chill the stored potatoes whilst heating the grading shed and workshop.



Calibrate
Energy Engineering

Real life examples

We have installed 8mW of heat / chill systems in the UK this year.

Heatpump Heat / Chill has a sizeable projected income and savings with the 20 year Government Tariff.

"We commissioned Calibrate to design and install the system that suited our heat and cooling requirements within our business. The project has progressed efficiently and is now complete and in full operation. The installation process ran smoothly with good communication and work quality from Calibrate staff and engineers. We look forward to the overall benefits of the project."

Peter Allan
East Reston Farm
Scottish Borders

Case study

RH & DH Allan
East Reston Farm
Scottish Borders

The Introduction.

David and Peter Allan (RH & DH Allan) farm 2400 acres of arable land in the Scottish Borders growing a variety of commodities including; potatoes, swede, grain and oil seed rape.
The installation of a 1996kw Ground Source Heatpump has enabled the business to reduce fossil fuel expenditure, increase efficiency of the existing business and also benefit from the 20 year RHI scheme.

The Process.

Having designed the system with the client to ensure it is best suited to the individual needs of the business. 34,000m of underground pipe take the heat that is naturally occurring in the ground and multiplies that through the Heatpump.
A mixture of Heat Exchangers and Plate Exchangers, hot air and hot water is provided through a fully automated system.
The pre heated air is directed into the grain dryer, drying floor and workshops. The hot water for cleaning equipment providing 100% fossil fuel replacement all whilst also benefiting from the RHI scheme.
This enables the client to maximise his cost savings by utilising the free by-product, chilling to satisfy 80% of the chill load in the cold stores using a non-toxic glycol system.

www.**calibrate**energy.co.uk

*All formulas and calculations are derived from industry suppliers and MCS guidelines, it is advisable to have the calculations and formulas checked by a certifed 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. **Time and seasonal variables dependant.

The Figures.

- 4 year Payback
- 35°C at 350% efficiency
- 1°C at 300 % efficiency
- Total efficiency of 650%

The Conclusion.

By using Calibrate's site specific control system we are able to provide an efficient and effective solution to the carbon foot print and cost benefit to your existing system whilst also providing expansion options into the future.
The exclusive Calibrate 20yr maintenance and extended warranty package means that there are no unexpected expenditure for the lifetime of the tariff.

Calibrate
Energy Engineering

Calibrate
Energy Engineering

Calibrate
Energy Engineering

Q and A

Is a Heat/ Chill System certifiable by Ofgem?

Can the Heat/ Chill system be remotely accessed?

How does Calibrate maintain the Heat/ Chill System?

Calibrate
Energy Engineering

Thank you

www.calibrateenergy.co.uk

@energycalibrate

Calibrate Energy Engineering

@calibrateltd

calibrateenergy.co.uk

Calibrate
Energy Engineering