



Department for
Business, Energy
& Industrial Strategy

Yeo Valley Heat Recovery Project

Industrial Heat Recovery Support (IHRS)
Programme Case Study

August 2021

Context

Here at Yeo Valley, we are committed to reducing the environmental impact of our operations and constantly seek to reduce energy consumption – and our carbon emissions – by every means possible. Refrigeration accounts for 40% of our electricity consumption and the heat rejected from our air-cooled refrigeration condensers has long been a lost opportunity to reduce energy consumption from our sites. The Industrial Heat Recovery Support (IHRS) programme helped us to change that.

How IHRS supported the project

We installed a carbon dioxide (CO₂) refrigeration plant that came specially fitted with an integral plate heat exchanger for the recovery of heat. We proposed to connect this up to process to produce 'free' hot water for cleaning. The refrigeration plant incorporates a heat reclaim plate heat exchanger with a heat load of 250 kW which is able to heat water from 10-65 degrees Celsius. A water regulating valve was used to control the flow rate along with a water switch for heat exchanger protection and the hot water stored in an insulated tank.

Benefits and added value

Recoverable energy i.e. 943 MWh per annum is now being used to heat water for use in the existing process hot water ring main. This hot water was previously produced using steam generated through the combustion of natural gas.

Based on a boiler efficiency of 85% and a natural gas price of 2p/kWh, the cost of generating steam for heating hot water was estimated to be almost £22k per annum. This cost has since been offset using recovered heat from the refrigeration condensers. Thanks to this one innovation, we will reduce our annual carbon emissions by 175 tonnes of carbon dioxide equivalent (CO₂e).

Lessons Learned

Overcoming technical factors critical to the feasibility of the heat recovery project were among the biggest lesson learned. Commercially, we are relying on continuous demand from our products requiring full time availability of recoverable heat to achieve the projected payback period.

It would also have been difficult to justify the project without partial grant funding which we achieved from the IHRS programme. The application process and information required was new to us but since we needed the funding, we followed the guidance and took the time to provide as much accurate information as possible.

“The capital cost of this project to recover waste heat from our refrigeration condensers was over £64k but we were very pleased to receive a government grant of 30% of the capital costs. This resulted in a payback period of two years, which made it a very viable project.”

(Donald French, Engineering Technical Manager)

Heat exchanger and supply and return pipework



This publication is available from: www.gov.uk/guidance/industrial-heat-recovery-support-programme-how-to-apply#case-studies

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