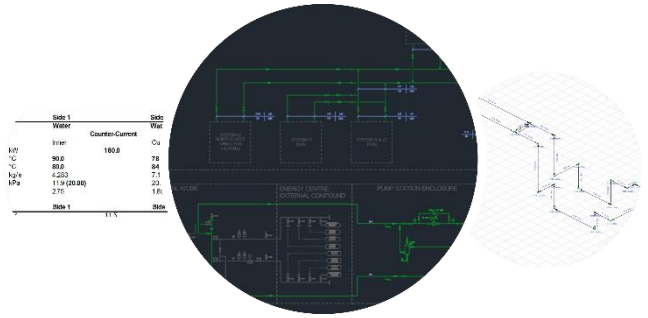


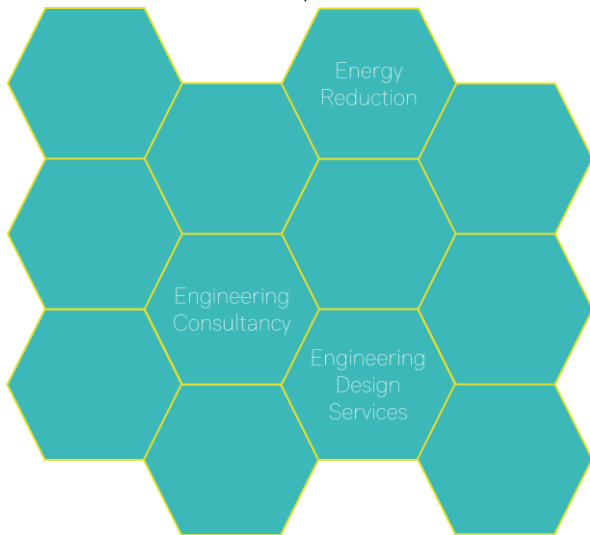
Client: Terra NRG  
 Sector: Life Sciences  
 Project: CHP LTHW Recovery Design  
 Project Value: £N/A  
 Date: Sep 2024 to Oct 2024



## Our Client's Need

Terra NRG won a tender to deliver the RIBA Stage 4 design of a scheme to recover LTHW from a CHP and using it for hot water heating. They needed to complete the mechanical design works for the CHP LTHW Heat Recovery scheme which included development of 2D CAD drawings, Pipework calculations and modelling pipework pressure drop. They engaged with Grationeer Ltd to provide the mechanical design works.

## Services provided



## Benefits Delivered

- Grationeer Ltd were able to provide a Chartered Engineer to complete the mechanical design.
- Grationeer Ltd have several years of experience working on hot water systems which helped with this design package.
- Software capabilities within Grationeer Ltd ensured accuracy of the 2D drawings and pipework design.
- Our understanding of the RIBA stages allowed the design to be progressed with a well-managed approach, reducing any time lost in design rework.

## Works Completed

Grationeer Ltd worked with Terra NRG to develop the concept design and obtained sign off for this. The CHP was installed in 2022 and recovered heat from the exhaust into a waste steam boiler, but approx. 800kW of heat from the engine cooling system was being rejected to atmosphere.

Grationeer Ltd started by producing the draft P&ID for review by the client. Since the heating load in the building was seasonal, Grationeer Ltd performed calculations to estimate the heat recovery over a typical year to determine the correct sizing of pipework to each area of the building. These models were submitted with the draft P&ID to ensure the client had the necessary information to sign off the draft design.

Following sign off of the draft design, Grationeer Ltd developed the final P&ID drawings and worked on sizing calculations for all equipment and ancillaries. A standard design for each area was used which consisted of a heat exchanger to transfer heat from the CHP to the hot water tanks in the area. This ensure hydraulic separation of system which was key to ensuring existing plant could operate in the same way without additional works.

A key element of the project was that the operations within the building had to continue during the works, so long shutdowns were not possible. Grationeer Ltd produced drawings to show enabling works. These were short timescale work activities which could be completed over the weekend period and would provide an isolation point for new pipework. Then, once the new system is installed, these isolation points could be opened. This design reduced the risk posed by the project to the building as should any issues be identified during the commissioning, then the system could simply run as before whilst the issue was being rectified.

With all pipework sizing based on engineering calculations and the layout of the scheme signed off, Grationeer Ltd performed pipework pressure drop analysis using modelling software. This confirmed the pump sizing and enabled all equipment and ancillaries to be specified for tendering.

Grationeer Ltd delivered the mechanical design package which included 2D drawings in AutoCAD, an engineering calculation sheet and a pressure drop analysis using modelling software.

Grationeer Ltd and Terra NRG have built a professional, trusting working relationship and continue to work together on delivering engineering design packages.