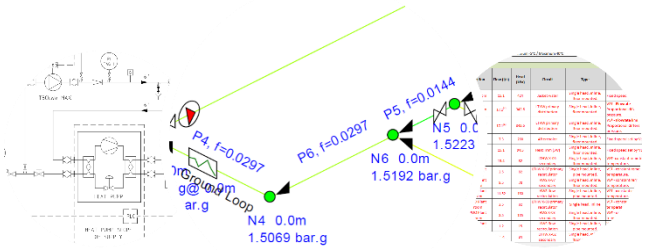
GRATIONEER

Case Study

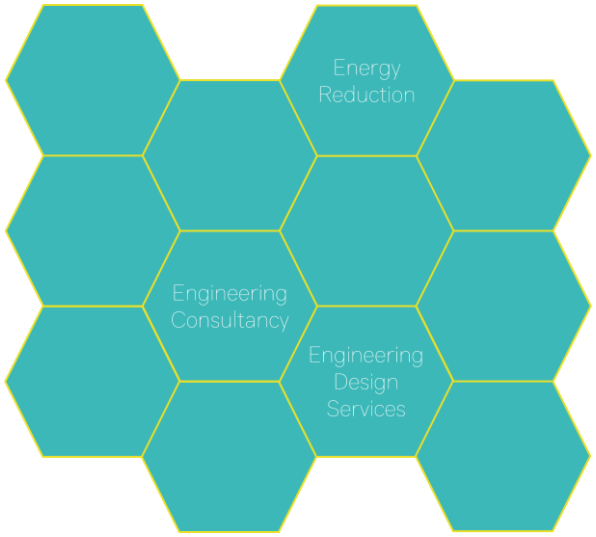
Client:	Centrica
Sector:	Manufacturing
Project:	Ground Source Heat Pump Design
Project Value:	£N/A
Date:	Apr 2020 to Aug 2020



Our Client's Need

Centrica had been awarded a contract to complete the RIBA 3 design for a ground source heat pump concept at a glass manufacturer. They needed to complete the mechanical design works which included development of 2D CAD drawings, Pipework and Air Handling Units 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 energy reduction project which helped the development of this GSHP project.
- 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 started works on this project during the concept stages and became part of the Centrica team working with specialist consultants and their client. The first stages of the work were to establish the design parameters and then start works on the design. The Ground Source Heat Pump (GSHP) array design was within the scope of a Principal Hydrogeologist, who provided the optimised heat extraction information for the team.

The heat extracted from the ground was to be used to provide heating for a warehouse via air handling units. Grationeer Ltd used the design parameters to develop a draft design of the hot water distribution system and the air handling units for the warehouse.

To firm up the draft design, Grationeer Ltd attended the site to carry out a detailed design survey. The purpose of this visit was to review the draft desktop design against the site and identify any areas where design changes were needed to overcome barriers to the proposal. Following the site visit, feedback from the visit was presented back to the design team and final adjustments were made to the design and the GSHP array. This provided a stage gate for Grationeer Ltd to progress with the mechanical design.

Grationeer Ltd took the draft design and made the necessary changes to the 2D P&ID in AutoCAD and submitted it for sign off by Centrica. Together with the P&ID, Grationeer Ltd completed a Heat Recovery Model which showed how much energy could be recovered from the ground with the proposed design. This helped the client to understand the benefits of the design. Following sign off of the P&ID, Grationeer Ltd completed all mechanical calculations, software modelling of pipework pressure for pump sizing and produced the equipment schedules as part of the mechanical design package.

Budget costing for the scheme was obtained and the Air Handling Unit cost was offsetting the payback beyond the client's expectations. Grationeer Ltd worked with Centrica's external consultants to develop an alternative solution to transfer the heat from the ground to the warehouse. The result was that multiple smaller units provided a much better payback for the project. An added benefit was an improvement in resilience as failure of a single unit in a bank of heaters would not impact warehouse heating as opposed to a failure of a main air handling unit.

The full mechanical design was handed over to Centrica who progress this with their client.

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