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# *Nottingham District Heating Feasibility Case Study*

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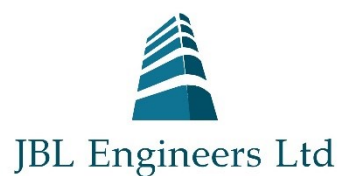


**Project Value: £24,600**

**Project Start Date: 18<sup>th</sup> August 2020**

**Project End Date: 5<sup>th</sup> November 2020**

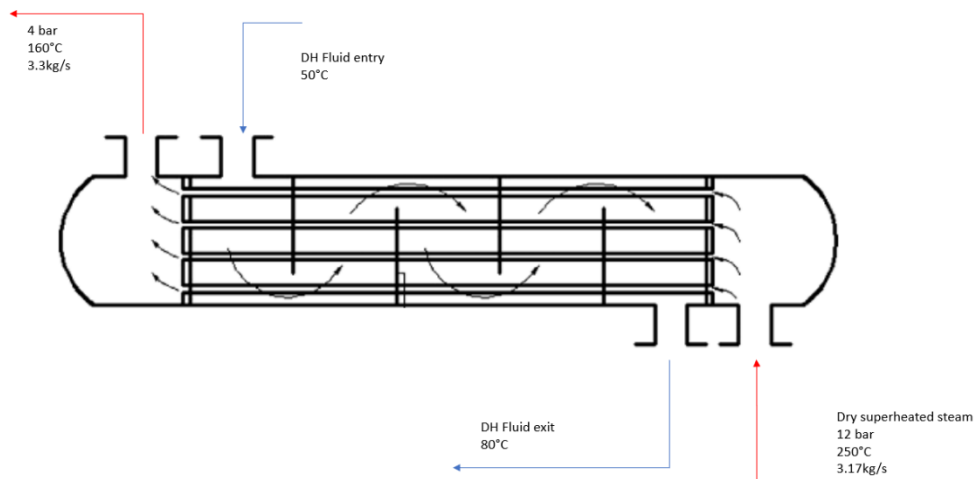
**Client: Uniper Technologies Ltd**



## Nottingham DHN

JBL Engineers Ltd was commissioned by Uniper Technologies Ltd to provide a feasibility study for a Bulk Heat Supplier led initiative to provide a low carbon district heating network with innovation to extract heat from industrial processes. JBL Engineers employed Viridis Energy for support on the project, with Viridis providing Energy & Carbon support functions.

JBL Engineers as project lead engineers through a series of client, industrial partner and developer



meetings determined the scoping requirements for the project and after successful presentation to all stakeholders defined the project requirements and outputs.

The Project required an innovative bulk heat supply to provide heat to a development of 675 properties, the properties were new build by a developer specialising in off site fabrication/construction. As such in depth discussions were had to determine the timeframes and requirements of the developer to integrate the district heating supply to the properties. This was combined with site specific details for networks routing and the availability of multi utility trenching. A key benefit of the project minimising onsite excavations, costs and retaining consistency of placement for the district heating pipe work in relation to other services.

Initial concepts by the client

were to utilise the

Industrial Facility for both

bulk heat supply and back-

up utilising existing high

pressure boiler plant. This

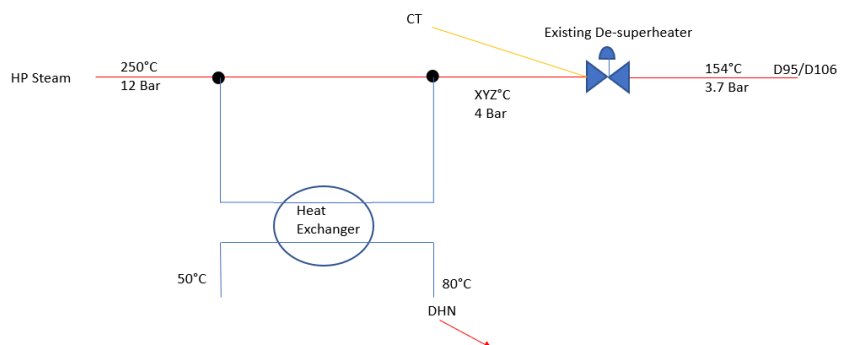
was deemed an inefficient

and carbon intensive

method of providing back-

up heat and provided a

complete dependency on the industrial bulk heat supply (BHS) for the District Heating ESCo business case.



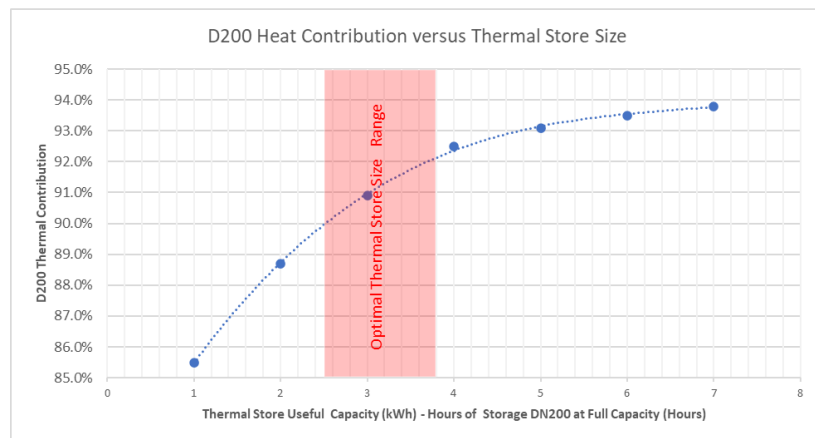
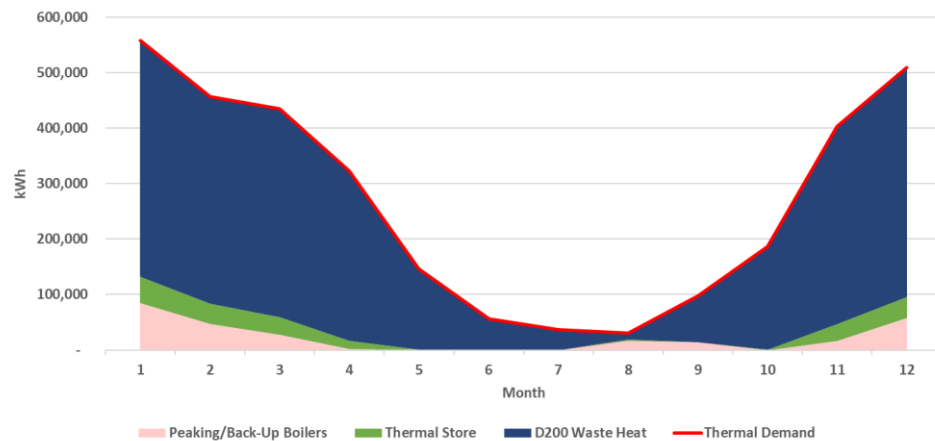
The requirement for an ESCo owned and operated Energy Centre was required such that the DHN and BHS could operate independently of each other without single

sided dependencies. The ESCo Energy Centre allows provision of hydraulic separation to ensure ESCo operations do not impact the BHS industrial process.

The Bulk Heat Supply was investigated through several site visits and interrogations of the client system and operating procedures. Key to the project was finding a low carbon source of heat and through consultation with BIES, TriplePoint and their technical advisors a final innovative and first in the UK solution was found. JBL Engineers Led the development of the concept design for the innovation, with Carbon content calculated at  $0.0564 \text{ KgCO}_2 / \text{kWh}_{\text{th}}$ , A considerable reduction from the BAU of  $0.210 \text{ kgCO}_2 / \text{kWh}_{\text{th}}$ .

The system Peak Load was determined to be 2.27MW with an annual demand of 3.93GWh. The Bulk heat supply, given its innovative nature was determined to be capable of supplying 711kW peak load, however due to the point of extraction multiple extraction points were possible enabling future expansion.

Thermal Storage was required to balance the supply and demand capacities, as such  $65 \text{ m}^3$  of thermal storage was calculated as the optimal capacity.



The project techno-economic study utilising the preferred solution was delivered to the client and has attracted private investment enquiries. It is hoped that the housing development shall gain planning permission shortly with construction anticipated early 2022.