



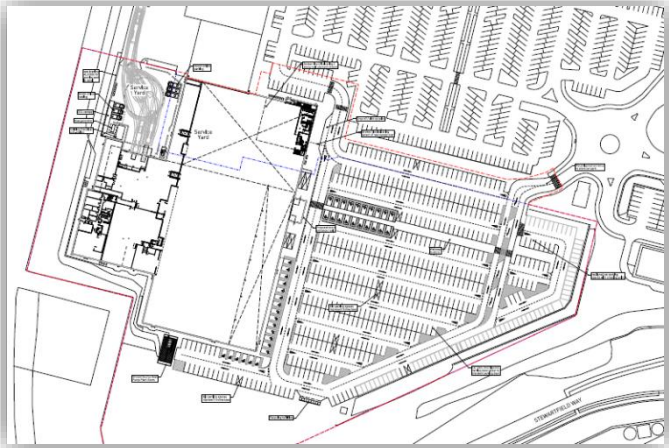
Introduction

At Sainsbury's Kingsgate Store, East Kilbride, GI Energy installed a ground source heat pump system integrated with store refrigeration plant. The system provides 100% of the store heating and hot water, and improves refrigeration efficiency by approximately 25%. The installation was completed during Sainsbury's major store extension project, taking the store sales area to over 70,000 sq. ft. The GI Energy installation is fully funded over twenty five years with a performance related heat management agreement.

Design and Installation

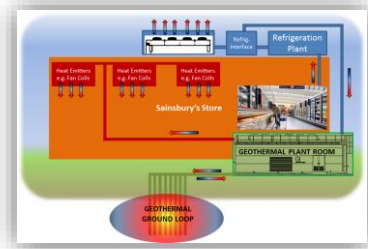
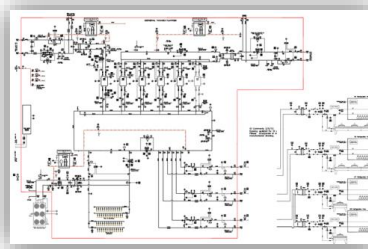
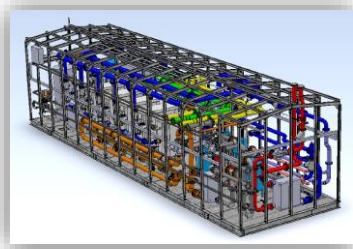
Works commenced in May 2012 and the refurbished store was opened at the start of October 2012. Despite major extension works, both in the store footprint, raised roof and associated services, the store continued to trade throughout the works. This is the first time Sainsbury's have achieved this outside of London.

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The GI Energy scheme includes a ground array of 14 boreholes and a package plant room, (constructed off site), with flow and return pipework to the roof mounted fridge packs and air handling units. All works were completed in close co-ordination with the client taking full account of this being operating store.

Fully integrated with the store BMS, the GI Energy proprietary controls system continually delivers data on heat produced, carbon emission reductions, heating and refrigeration savings.



Retrofit Integration

Using heating and refrigeration system designs provided by the client, GI Energy's design and engineering team developed a solution optimising system efficiencies and minimising the impact on site.

Working in conjunction with the client's refrigeration contractor, GI Energy designed the refrigeration interface which integrates the four roof mounted refrigeration packs. Refrigeration waste heat is recovered to provide efficient store heating, and to "charge" the ground array to be stored for colder times. The effect on the refrigeration plant is to improve efficiency, particularly during the warmer summer months, and improve the operating conditions for the refrigeration system.

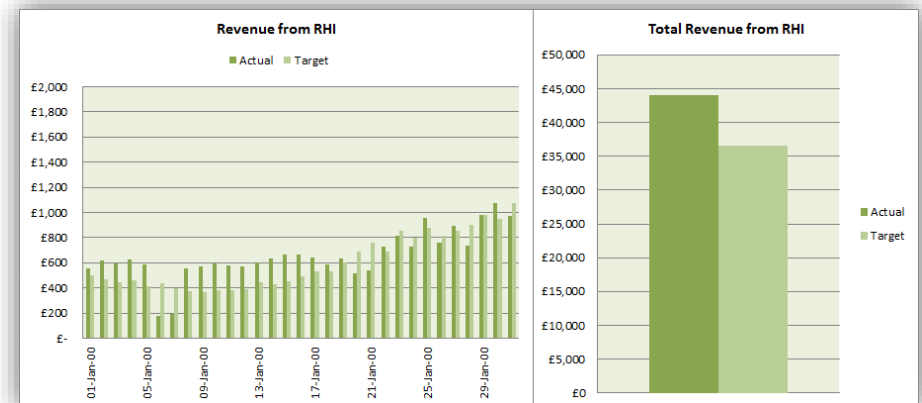
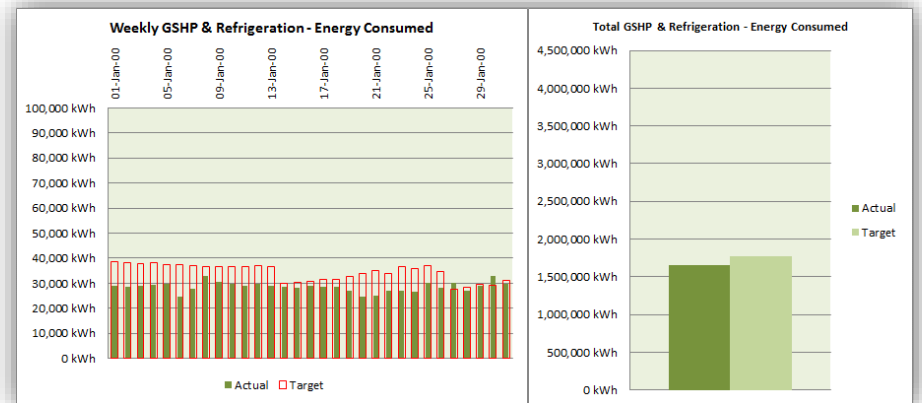
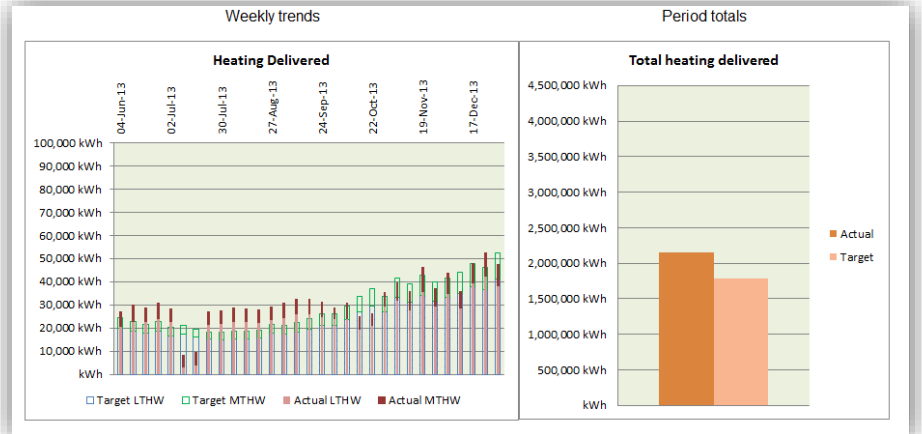
As part of the major extension work on the store, the client removed the existing gas boilers making East Kilbride a fully electric store. New duct work was installed throughout the building and all systems were sized for a 45°C flow temperature with the heat pumps delivering 100% of the space heating load. The GSHP system delivers 70°C heat to hot water system and over door heaters.

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Performance

Summary of key performance factors over a 12 month period – January to December 2013



Summary

Working closely with the client, GI Energy delivered this ambitious project on time and on budget on a store that continued to trade throughout these major extension works. Operationally the ground source heat pump system is delivering heat in excess of the design brief but with energy costs below the originally projected levels.

This store is developer owned and sits as part of the retail development and was funded through a 25 year ESCO structure with GI Energy maintaining the plant over the full contract term.

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