

Case Study – Old Oak Common New Crossrail Depot Renewable Energy Solution



Key Facts:

- Ground Source Heat Pump
 - Peak Heat 900kW
 - Peak Cool 560kW
- Energy Piles & Boreholes
- 530kWe/560kWth CHP Unit
- 1500m² Solar PV
- 220m² Solar Thermal
- Due to be completed September 2018



Energy Pile Installation



GI Energy was appointed by Taylor Woodrow, to design and deliver the extensive hybrid renewable energy solution on the new Crossrail Rail Depot building at Old Oak Common, West London in 2014. Taylor Woodrow, the Civil Engineering Division of Vinci Construction UK Ltd, is Bombardier Transportation UK Ltd's appointed Contractor to deliver the Design and Build contract for the depot and sidings due for completion in 2018. The facility will support the stabling and maintenance of the Bombardier designed Crossrail fleet over the 30-year contract term.



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Our vision is to be Recognised as the partner for Leading Sustainable energy Solutions

Borehole Installation

GI Energy were selected by Taylor Woodrow as their single source delivery partner for renewable energy solutions early in the 2-year bid process; working closely with the Bombardier Taylor Woodrow integrated team, alongside other single source partners including NG Bailey, RPS Associates and Atkins Global to develop a renewable energy solution that will deliver over 30% of the Depots energy demands from renewable technologies.

The GI Energy solution includes the design and installation of a multi-technology renewable energy solution consisting of:

- Ground Sourced Heat Pumps(GSHP) utilising energy piles and 150m deep boreholes
- Extensive Under Floor Heating and Cooling systems
- Combined Heat and Power (CHP) Systems
- 220m² Solar Thermal
- 1500m² Solar PV

In many cases, renewable technologies are installed by a multitude of different contractors, that supply and install equipment only, leaving the end user in most cases confused about the long term management of the system, especially if something goes wrong. Having one contractor design and install the complete renewable solution ensures the optimised efficiency of the system and the clear integration with conventional back-up equipment (boilers chillers etc.).

GI Energy will be providing remote long term management of the installed equipment through our controls package that will allow system optimisation and ultimately, enable improvements to be made to the installed renewable system once the building goes live with the simple target of improving the currently predicted annual run costs and CO2 savings for Bombardier”.

Approximately 54% of the new railway depot’s heating and cooling will be provided from renewable technologies and 20% of electrical load will be generated on site from a combination of CHP and Solar PV technology, providing the rail depot with an overall 33% renewable energy solution. It is assessed that once operational, run cost savings will be circa £100,000 per annum when compared against conventional equipment, and will save some 530Tonnes of CO2 per annum. The entire system is calculated to provide payback on the initial investment in less than 10 Years.

Of significant importance to this system will be the sophisticated control system that GI Energy has developed and designed to optimise the integration of the renewable technologies installed, to maximise both annual run cost savings and CO2 savings, and at the same time enable remote monitoring.

Tony Amis, Business Development Director for GI Energy, emphasises the importance of early contractor involvement and collaboration.

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“We worked closely within the integrated Taylor Woodrow team for the past 3-years in support of the Bombardier offer to Rail for London; initially on the bid proposal and now recently in detailed engineering and installation.

Mike Beagle, Senior M&E Manager for Taylor Woodrow added,

“We realised that the nature of our client’s contract presented opportunities to fully engage in a hybrid renewable solution, to effectively develop and realise a viable solution both for the bid and the longer-term contract deliverables we felt it was imperative to engage with market leading specialists from first principles. This has enabled us to jointly develop a scheme that represents a robust and effective solution using the full integration of systems to develop a hybrid energy solution. GI Energy has proved to be a committed supply chain partner supporting Taylor Woodrow to develop their winning solution to the energy demands of the project.”

The Old oak Common project recently won the Vinci 2015 Sustainable Development Prize UK & Ireland region and is tipped to secure the Vinci International prize later this year.

As the market leader in the UK, GI Energy has considerable experience designing and installing renewable energy solutions, having installed a total of more than 200MW of renewable energy solutions in schools, hospitals, universities, supermarkets, commercial developments, housing associations and Railway infrastructure since its inception in 2000. GI Energy recognise the need to offer turnkey solutions to clients utilising the most appropriate renewable solutions to best deliver their objectives for each project, our role acting as an ‘Energy Partner’ is key to ensuring we offer the best possible solution for every scheme. GI Energy was recently voted Heating and Renewables Installer of the year

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