



Delph Lane - Case Study

Torus, who have a portfolio of over 20,000 properties contacted Ground Heat when considering a GSHP project in Prescot Merseyside. The project, Delph Lane, consisted of four blocks of nine apartments over three floors, all currently being heated via electric panel heaters. The DHW was via a direct electric un-vented heater. All apartments had benefitted from a 2.5kw PV array consisting of 394 PV panels and a battery storage system to each of the four blocks for the landlords' supply to communal area lighting.



Ground Heat had previously installed 52 GSHPs into a tower block utilising shared ground loops, and a further 57 GSHPs on a pre-heated brine system, fitting fixed speed compressor heat pumps. Taking this experience into account, we came up with a design that required an inverter driven compressor and a range rateable output. Ground Heat met with Heliotherm who excel in inverter driven GSHPs and collaboration resulted in the innovative 1-6 kw inverter driven heat pump with the facility to link with PV, battery storage and address DSR.

Ground Heat liaised with Electricity North West regarding the Delph Lane project and they were extremely keen to collaborate with us on the DSR capacity of the heat pump. They requested that we trial a new type of filter to the inverter to prevent frequency problems from the grid. Heliotherm invested heavily in this adaptation to the unit. The project will be monitored by the DNO to inform future practice.

With the advantage of having four separate apartment blocks on one site, we have installed two blocks using a shared ground array and two blocks on individual bore holes. This will provide us with vital data to reinforce previous findings where we have experienced shared ground arrays being far more efficient than individual bores. Ground Heat will apply for Domestic RHI on two of the blocks and Non-domestic RHI on the others. The information that we gather will be reported to the GSHPA and used to further advance research into shared ground arrays.

Ground Heat was asked to provide a system with as little maintenance as possible. The site had no mains gas supply. The landlord had requested a new system that was to be innovative and easy to use for the residents. The system was to significantly reduce the carbon footprint whilst taking advantage of any grant or feed in tariffs available. It should incorporate the use of the PV and battery storage already installed to the apartments. The system should also help eradicate fuel poverty for the residents who at the time had only electric heaters. The work should be completed by March taking in the worst time for weather issues. We had to be flexible within budget constraints. The system had to be MCS and DNO and RHI compliant.

Torus in partnership with Ground Heat have driven the project forward. Heliotherm, who have been designing and manufacturing heat pumps for over 25 years, designed and manufactured a unit in record time. They liked the idea of shared ground loops and multiple heat pumps within one dwelling rather than large wasteful district plant rooms.

Torus differed from other RSLs in that they came directly to Ground Heat rather than via a procurement provider. This decision was based on experience of previous GSHP projects successfully completed by Ground Heat.





Ground Heat – Passionate about Heat Pumps

The already fitted PV systems and battery storage lent itself to GSHPs. The DNO, concerned about demand on an already overloaded infrastructure, have taken an interest in the use of PV and battery storage. They are using this project to trial a different filter system fitted to Ground Heat's bespoke ground source heat pumps.

The project involved integrating other technologies with ground source heat to increase efficiency and capture electricity to run heat pumps for minimum cost. We are able to put 1kw of generated electricity into a ground source heat pump and get 4.3kw of heat making them 420% more efficient than any other heating appliance available.

Ground Heat's system takes the most common renewable technologies and integrates them as one technology. No other ground source heat pump has this facility. The system has been designed to address the issue of Demand Side Response which will future proof ground sources technology and revolutionize the way that we operate heating systems. It will alter the way the DNOs and aggregators look at heat pumps, giving assurance that a huge new infrastructure is not required. This will enable heat pumps to be used prolifically in the UK, addressing fuel poverty, reducing CO2 emissions and making a significant contribution to the 2020 carbon emissions target.

Communication with residents ensured minimum disruption. All residents were contacted by various means of communication where possible at least 7 days prior to the contract date with a start date and details of the operatives on site. Names and photos of operatives were prominently displayed in the building with contact details for key personnel available 24/7. Where required, communication to residents was available to non- English speakers via a multi – language leaflet drop. All residents had the opportunity to meet regularly with relevant personnel before, during and post contract works to ensure that they fully understood the proposed work and had the opportunity to ask any questions to identify specific requirements within the local community. Appointments were arranged with residents prior to accessing the property to advise on any action that they were required to take to ensure a smooth process. During the handover process, the operation of the new system was clearly explained to the residents until they were confident in its use. Instruction manuals were provided to each resident and Ground Heat staff liaised with the residents to set controls to their requirements. During commissioning, residents were given the opportunity to complete a Customer Satisfaction Survey, which will be used to further improve our quality management system. Ground Heat feel that residents should be confident to contact Ground Heat should there be any issues following installation of the new system and be assured of a quick response.

The customer, Torus Housing, were very pleased with the result. They have awarded Ground Heat further contracts and are exploring the possibility of a joint venture with Ground Heat. The residents have been looking forward to their new systems for over a year, and were glad to see the back of the electric panel heaters. The only complaints are of being too hot, a situation that is easily remedied. The installation was recently awarded the accolade of Innovation of the Year at the British Renewable Energy Awards.

