



Archetypal Heat Pump Retrofit for 175,000 Non-Trads

Project Lead: RJ Barwick

Funding:

Partners: Energiesprong UK, Gravesham Borough Council,
West Kent Housing Association

£899,000

R. J. BARWICK



The problem: Installing heat pump retrofits in non-traditional homes

A million non-traditional homes in the UK have poor energy performance, putting their occupiers at increased risk of fuel poverty. These homes and their building characteristics present a challenge to energy efficiency upgrades that typically precede a heat pump installation.

The solution

This project is leveraging the consistency in these common post-war home archetypes to design a whole house retrofit approach that improves energy efficiency and enables heat pumps to be an integral part of the home upgrade.

RJ Barwick Ltd is a retrofit management company. They are developing scalable retrofit solutions for four hard-to-treat non-traditional home archetypes in the UK using the Energiesprong approach to retrofit, with a focus on standardisation of the solutions to make them applicable to a potential 175,000 homes of the same archetypes throughout the UK.

“ We are really excited to be taking part in Heat Pump Ready to develop the next generation of heat pump technology for hard-to-treat residential properties, and measure its performance in a true to life environment. ”

Richard Barwick
Director, RJ Barwick Ltd



A typical street scene of solid wall Laing Easiform archetypal homes in Kent

Developing scalable retrofit solutions for non-traditional homes

What are we going to do?

The Energiesprong whole house approach is a deep retrofit standard that can be designed, manufactured and installed for identical neighbouring homes in 'one go' i.e not disconnected energy efficiency measures over many years that may not work together. The 'platform' production approach allows for a continuing reduction in cost, and a reduction in disruption for individual homeowners – as volume grows.

RJ Barwick are working with Energiesprong, West Kent Housing Association, and Gravesham Borough Council to develop retrofit solutions for the four selected non-traditional home archetypes in West Kent (Wimpey, BISF, Laing Easiform, ORLIT).

Why is this an improvement on current solutions?

Post-war non-traditional archetypes are characterised by quick-to-build materials and processes implemented during a housing boom in the UK. These homes are poorly insulated, and poorly set up for conventional insulation retrofitting e.g. no cavity in walls for insulation, and very often, inherent design faults.

The 'hard-to-treat' nature of these homes means that they are often classified as unsuitable for heat pump installations. Our approach will improve user comfort in these homes, as well as, providing a solution that challenges the notion that certain homes are unsuitable for heat pumps, presenting an approach that can be replicated for hard-to-treat home archetypes throughout the UK.

What would success look like?

A replicable retrofit solution is developed and installed in numerous homes (with landlords collaborating to maximise efficiencies) for each of the four non-traditional archetypes, with higher consumer comfort, improved health and much reduced lifetime energy bills.



'Factory Zero' in Netherlands, a production line for roof-mounted air source heat pumps

How will this project help towards the target of installing 600,000 heat pumps per year by 2028?

To meet the target, heat pumps will need to be installed in all types of properties, and in many cases this will involve an accompanying deep energy efficiency retrofit. This project will provide further proof that it is possible to install heat pumps in hard to treat homes, and provide a blueprint that can be applied to 175,000 homes of the same archetypes throughout the UK.

The Optimised solutions development stream of the Heat Pump Ready programme supports the development of innovative tools, technologies and processes to overcome specific barriers to heat pump deployment in the UK. This stream supports solutions aiming to reduce the life time cost and increase the performance of domestic heat pumps, minimise home disruption whilst providing high quality installations, develop and trial financial models to support heat pump deployment, improve the heat pump consumer journey and provide a smart and flexible home energy system.

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Contact information

Name: Richard Barwick

Email: office@rjbarwick.co.uk

www.heatpumpready.org.uk

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Key Findings

- There is better buy-in to retrofit proposals where the local authority is still closely involved with the housing stock.
- Inflation in building costs has increased significantly in the last couple of years, affecting the budget available per house and thus the size of retrofit projects
- The Social Housing Decarbonisation Fund programme has increased the market costs for onsite insulation due to increased demand.

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Project Progress (Autumn 2023)

What progress have we made so far?

We have now engaged with a number of local authorities and housing associations with Wimpey No-fines, Laing Easiform, BISF and Orlit post-war archetype homes in their housing stock. We are looking to undertake whole house retrofits including heat pumps to upgrade the energy performance of the least energy efficient homes.

In Spring 2023, we surveyed the properties designated for retrofit, progressed conceptual designs and issued these to the two landlords we were working with. Our partners were Energiesprong and Kin Architects. The social landlords then identified which pilots to progress beyond the Stage 1 concept development in April 2023. The next stage was to identify qualified contractors to work alongside to agree budget costs.

What barriers have we identified and how has this changed our approach to delivering our project?

Two of the housing providers we initially chose to partner withdrew after designs had been completed and the costs were presented, citing competing requirements for funds as the main issue. We have spent time engaging replacement landlords which led to increasing the timescale of the project from 18 months to 30 months.

The two years of extreme construction cost inflation coinciding with this project has put pressure on the original objectives, so we have needed to 'pivot' to find new solutions.

What are our next steps?

Over the next six months, we will be working with Wolverhampton Council, United Living and the architect Studio Partington on ten three-storey Wimpey No-fines homes, to retrofit them to the Energiesprong standard. We will begin with pre-retrofit monitoring and occupancy surveys and work up designs to trial heat pumps and infrared heating. We are also in conversation with another landlord.



The three-storey Wolverhampton Wimpey No-Fines houses before surveying