

The Punch Bowl, Manchester Road, Buxton.

Sustainability and Based on the results of our recent field trial, typical savings from a well-installed and properly used system are £55 per year when replacing gas heating and £80 per year when replacing electric immersion heating; however, savings will vary from user to user.

Typical carbon savings are around 230kgCO₂/year when replacing gas and 510kgCO₂/year when replacing electric immersion heating.

Energy efficiency report – Supporting the SAP Calculations.

This report is designed to identify the efforts that have been made to improve the overall efficiency of the planned dwellings. The SAP Calculations shows that building regulations standards have over achieved. Below is detail identifying the specific efforts that have been made in individual areas.

Fabric U-values –

Ground Floor – Building Regulations minimum u-value 0.25

With the use of 100mm of Kingspan product the ground floor achieves a u-value of 0.15.

External Walls – Building Regulations minimum u-value 0.30

With the use of an energy efficient inner block and 60mm Kingspan product the wall achieves a u-value of 0.25.

Roof – Building Regulations minimum u-value 0.20

With the use of two layers of a Kingspan product the roof achieves a u-value of 0.20

Windows and doors – Building Regulations minimum u-value 2.0

Using energy efficient frames and panes the openings will achieve a u-value of 1.2

Thermal Bridging –

The use of government approved “Accredited Construction Detail” for thermal bridging for internal and external junctions rewards the best possible outcome to reduce heat loss through bridges.

Design Air Permeability –

Building regulations require that all buildings are designed to achieve a minimum air permeability rate of 10m³/h/m²@50 Pascal's. The design of this project is to achieve a minimum of 510m³/h/m²@50 Pascal's. This is an additional saving to ensure carbon emissions are kept to a minimum.

Heating Efficiency –

The dwellings are designed to be using an A Rated boiler with a minimum efficiency of 90%. Planned use of a dual fuel (Wood and Anthracite) burning room heater for secondary heating will improve the reduced carbon emissions.

Heating controls for the system are to incorporate "Time and Temperature Zone Control". This enables the independent programming of heating times in individual areas. This ensures lesser used areas are not over heated and, reducing energy usage.

The hot water system will also include an independent timer and boiler interlock. The boiler interlock ensure the boiler will only run when there is a requirement for heat or hot water. A system without this kept cycling even though there is no requirement. This results in 5% reduction in operating efficiency.

Lighting –

The design is to use 100% low energy light fittings. Building regulation requirement is only for 75%. Again this will reduce the Carbon Emissions.

Renewable Solar water heating –

The planned solar water heating system is to utilise the collection of radiant via solar panels. Solar are not designed to be the sole source of water heating due the unreliable weather in the UK. To ensure the water is delivered at the optimum temperature the gas heating system assist when required.

To ensure the solar is used to its maximum capacity a combined cylinder in used to store solar water storage before passing through traditional cylinder and assisted if required.

Typically during the summer months the boiler will not be required.

Conclusions –

Significant effort has been made throughout the design of these dwelling to ensure the Energy Calculations identified the individual areas that could be improved.

In all areas the minimum targets set by Building Regulation have over achieved to ensure the carbon emissions and energy usage has been reduced.

The inclusion solar renewable energy is to ensure the dwellings use the best possible ecological and sustainable resource whilst also enabling the eventual owners to have decreased energy bills.

Produced by -
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