KNAUF INSULATION

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PHCP PASSIVE HOUSE - CASE STUDY

June 2020

WHAT WAS THE CHALLENGE?

challenge.

The purpose of Passive House design is to keep the internal environment comfortable and healthy with a tightly-sealed building envelope, good ventilation and the elimination of thermal bridging which can compromise insulation. A key part of achieving compliance was dependent on the building having very high thermal properties based on bulk insulation installed within the ceiling, wall and floor cavities. This demanded the application of highly efficient products to meet these strict specifications.

WHAT PRODUCTS WERE USED?

create.

Knauf Insulation was engaged by Justin O'Connor to provide products which would help to meet or exceed the desired R-values for this residential project. The insulation material contributed heavily to the thermal performance outcomes outlined in the Passive House certification standards. Knauf Insulation Earthwool® and Jet Stream® MAX solutions were used in the walls and ceiling cavities to achieve extremely high R-values and help create a truly sealed building envelope. "The building surpasses Passive House standard requirements considerably," O'Connor commented. "I don't aim to achieve the minimum, I always try to go beyond."

The minimum requirement to achieve Passive House standard for ceiling insulation for this property was R7.0. Jet Stream® MAX was installed to achieve a R7.7 in a 390mm ceiling cavity utilising a reinforced, high-performance vapour retarder. This product required no binders and filled every crack and crevice of the cathedral ceiling space. O'Connor noted, "It only took two days to install the ceiling insulation and air-tightness layer, I was surprised at how quick and easy the product was to use. Even using multiple layers of batts, it wouldn't be possible to achieve this level of blanket coverage with zero gaps."

For the walls, a high density Earthwool® R4.0, 140mm wall batt was used to achieve the optimal thermal performance for the external envelope. "I prefer to work with Earthwool® as the material does not irritate when handled like other glasswool products. It also has higher sustainability credentials," commented O'Connor. Produced using up to 80 per cent recycled glass, Earthwool® features ECOSE® Technology, a sustainable, bio-based binder with no added formaldehyde. O'Connor has already achieved a value of R4.0 in the walls with the insulation and is seeking to increase this value even further. "We had a service cavity on the inside which we filled in with insulation. This will increase the wall insulation to R5.25 when it is all complete."

WHAT WAS THE RESULT?

care.

Knauf Insulation solutions have helped to exceed the stringent requirements for insulation and thermal performance outlined for Passive House design. This rural home, which is exposed to extreme temperatures throughout summer and winter, will further reduce its carbon footprint with the addition of solar panels. With obvious benefits to the owner, and an extreme reduction in energy costs, achieving the stringent Passive House certification is largely benefitted by creating a high performing thermal building envelope, unique construction methods and building membranes that create superior air tightness for the overall project.

For more information please contact:

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challenge.
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