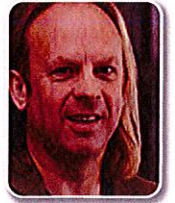


Passivhaus retrofit - a magical solution



Over the last two issues, we have argued that the Passivhaus standard for new care homes offers the very highest levels of comfort, warmth and internal air quality for a fraction of the energy costs of conventional buildings, whether that is during the freezing depths of winter or a summer heatwave. But what about all the care homes that already exist? What opportunities are there to improve conditions for residents there?

The answer lies in refurbishment of course or, more specifically, retrofit which is the term used in the industry for energy efficiency upgrades to buildings. Retrofit typically involves adding insulation to walls, roofs and, where possible, floors to eliminate heat losses, alongside window upgrades and improvements to (or replacement of) heating and ventilation plant.

The challenge for care home operators is to undertake refurbishment that genuinely improves resident health and well-being, significantly reduces operational running costs and has a deep and lasting impact on carbon emissions which may align with corporate social responsibilities. Retrofit needs to be designed holistically and implemented to a high standard. The Intergovernmental Panel on Climate Change recently reported that "... each building retrofitted in a sub-optimal way, locks us into a high climate-footprint future." The message is therefore 'do it once and do it well' or, at the very least, follow a strategy of retrofit stages that leads to the complete solution.

The Passivhaus principal relies on the ability to optimise a building's form and orienta-

tion to maximise performance but obviously this is not possible with retrofit, so the standard is adapted slightly to reflect the challenges of refurbishment, giving a certification standard known as EnerPHit. The ideal retrofit scheme involves a complete overhaul of the building fabric, which might involve wall insulation and cladding, air leakage reduction measures, window and door replacements and the introduction of heat recovery ventilation.

Most of these works can be undertaken externally if the style of the building and planning constraints permit. For older properties of heritage value, these upgrades will have to be carried out internally but, advantageously, this then allows upgrades to be done on a room-by-room basis which might be a manageable solution for care home operators.


Many specialist products and techniques have been developed in the retrofit field in recent years such as high performance insulations that are pinned to the existing structure and can improve the thermal performance to the same levels as new buildings. Typically, roof finishes are removed, insulation added and new roof finishes replaced. Floors can be trickier but in the worst case scenario an insulated 'apron' can be installed around the building perimeter to create a heat island underneath the existing structure. Improvements to air leakage levels are also a pre-requisite for high performance and comfort so that even in retrofits, very low

MARK ELTON of Cowan Architects looks at what existing care homes, young and old, can do to upgrade with Passivhaus technology to reduce running costs and keep their residents comfortable.

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rates can be achieved through analysis by an experienced retrofit designer.

A new approach, involving prefabricated retrofit, is gaining interest, where a new external skin is fabricated in its entirety under factory conditions (including linings, insulation, windows and cladding) and tailored specifically to correlate to an accurate laser survey of the existing building. The new roof and wall panels are assembled on the outside of the building, with residents still in-situ, with the only intervention internally being the removal and re-lining of the old windows. Air leakage and heat recovery ventilation distribution can all be dealt with in the new outer skin.

I was involved in using this method with a 1960s housing block in east London and the potential is huge with predicted energy savings in the order of 75-80%. This technique might just be the 'silver bullet' or even a magic wand: maximum performance and quality for minimum disruption, with the opportunity to transform tired old buildings. 

Randolph Hill appoints Muir Construction to reconstruct Gullane nursing home

Randolph Hill Nursing Homes Group has appointed Fife-based Muir Construction to rebuild and expand its Muirfield nursing home in Gullane.

The £5.75m contract will be carried out in two phases with work on phase one beginning immediately and expected to take 12 months to complete, focused on creating the facility's main building.

Muirfield's existing residents, who are currently being accommodated in a period stone building on the site, will then be moved into the newly built section of the home.

The second phase of the project, which is ex-

pected to be completed in around eight months, will then begin with further construction around the façade of home's existing building. This will be joined to the phase one section of the build, completing the facility.

Work on the project, which is supported with financing from HSBC, began last year with the demolition of the neighbouring Bissets Hotel, acquired to enable the extension of the existing Muirfield site. Design and engineering work as well as site surveys have also been carried out since that time.

Edinburgh-based Randolph Hill will invest around £8m on the overall project which will

expand the facility, creating 60 high specification rooms with en suite facilities. The company, which owns and operates six nursing homes across central and east Scotland, initially acquired Muirfield in 2008 with the aim of the re-developing it to bring it up to the standard of their other sites.

Founded in 1985, Randolph Hill provides residential nursing care for 340 residents and employs more than 500 members of staff. The company recently secured a £26m finance package from HSBC to help fund the redevelopment in Gullane and support its wider growth plans.

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