

# The all-round solution to heat-loss

The average UK household spends around £1,230 on fuel bills each year, which can be up to 50% more than necessary, due to the lack of energy saving measures being implemented in the home. Poor insulation is a major contributor to domestic energy wastage, according to **Simon Storer**, chief executive of the **Insulation Manufacturers Association (IMA)**

**D**espite improvements being made to a proportion of our draughty and inefficient housing stock, the UK has some way to go to ensure homes have high levels of thermal efficiency and are climate resilient. One of the issues is the lack of awareness on the part of homeowners or occupants as to what energy improvement work needs to be carried out in the first place.

Good insulation is key to future-proofing housing stock; with the fabric-first approach to energy efficiency prioritising insulation within the building envelope, significantly restricting air leakage, which in turn, prevents heat loss.

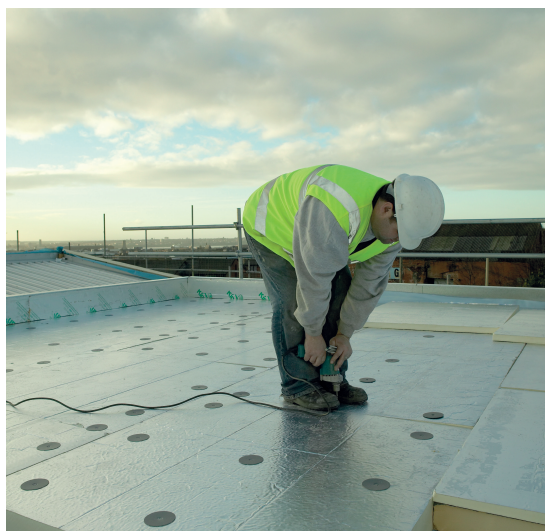
## Thermal performance

The 'fit and forget', fabric-first approach to building design will maximise the energy performance of the structure itself and require little or no maintenance. When installed correctly, insulation is considered to be more sustainable than installing energy-saving technology or renewables. Other technologies can play their part and be added in future, but for many homeowners, additional technology can prove to be complicated to operate efficiently, missing potential energy efficiency gains.

Achieving optimum thermal-resistance with a good level of fabric insulation will limit heat loss through the building envelope. The better or lower the U-values in walls, floors and roofs, the less heat that is lost, resulting in enhanced thermal performance, which in turn, will help to deliver the standards required.

One of the best ways to achieve this is through PIR and PUR insulation products. Highly effective and incredibly versatile, these insulation solutions are available in a range of forms, including boards and blocks, cavity-injected, composite panels, as well as a spray and panel insulation.

For specifiers, the growing popularity of PIR insulation has meant they can achieve the highest insulation values from the minimum thickness of material, making maximum use of



space possible. With lambda values as low as 0.021 W/mK, PIR insulation performance can be achieved with less thickness than other commonly used insulation materials. Its exceptional insulating properties, high strength and light weight, has seen it used across residential, commercial and refurbishment projects. It also has excellent water-resistance properties, making it suitable for flood risk areas.

## Construction detailing

Taking time for the details will also make a difference in the fabric-first approach. For example, ensuring junctions are appropriately designed and constructed, as this makes a significant contribution to reducing heat loss. Thermal bridges occur at breaks in insulation junctions and openings causing heat loss, which ultimately leads to a drop in internal temperature and an increased demand for heating. This can increase the risk of surface condensation and mould growth.

Good design and workmanship necessitates a proper level of quality assurance throughout design and construction, and good detailing is particularly important for newbuild and retrofit alike.

Competency in installation is vital because when a high performing product such as PIR/PUR is installed

incorrectly, it could compromise that performance and drastically reduce heat loss. All contractors need to make sure that, not only the levels of site supervision are of a good standard, but the manufacturer's installation instructions are followed and installation instructions around potential cold thermal bridges and awkward details are achieved. Once the high-quality building fabric has been completed, there should be no need to worry about it.

Fabric-first will enable specifiers to future-proof their designs, which can be employed on projects of any size, from the largest public building, to the smallest domestic extension. A more energy efficient fabric from the outset can be upgraded later on through improved services, ventilation measures or the addition of renewable technologies.

Ensuring continuous insulation, minimising thermal bridging, and achieving high levels of airtightness in buildings, all play their part in the fabric-first approach.

Addressing these aspects of construction means the Building Regulation's thermal targets can be met and those performance levels can be incorporated into the finished building's performance targets.

If we are going to future-proof our housing stock, then we must achieve more thermally efficient building envelopes, which in turn, will result in more comfortable buildings.

Ultimately, the 'fabric-first' approach, which includes insulation such as high-performance PIR, will remain the most direct route in helping to achieve the net zero target, as well as compliance with the energy performance requirements of Building Regulations.

Building a structure correctly in the first place will ensure it continues to perform as intended both now and in the future, and go some way to ensure UK homes are climate-ready. **rci**

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