

# Making housing better in a warming world

**Simon Storer, chief executive of the Insulation Manufacturers Association, looks at the thermal efficiency and positive benefits of polyisocyanurate (PIR) and PU insulation, accurate specification through digitalisation and how this essential product can help the UK's housing stock adapt to the impacts of a changing climate**

The UK government's plans for a Future Homes Standard by 2025, which ensures new build homes are built without fossil fuel heating and to a world-leading energy efficiency standard, will go some way in helping the UK meet its net zero targets. Good insulation is essential if homes and buildings in the UK are to become more energy efficient, sustainable and offset some of the increasing energy costs and climate change ambitions the country faces.

The challenge for the UK reaching net zero and a cleaner future will not be easy when you consider the built environment is responsible for almost 50% of carbon emissions. Our 29m homes are a big part of the problem and account for 15% of the UK's greenhouse gas emissions through their use of oil and gas for heating and hot water.

The proposed Future Homes Standard is in line with the recent Committee on Climate Change (CCC) report, UK Housing: [Fit for the Future?](#), and should influence the Part L revision later this year.

In truth, it only confirms what many of us have been highlighting for many years. If we are to create high quality, low carbon and climate resilient homes then we must insulate more. A thermally insulated building envelope installed correctly will achieve high performance, low maintenance, reduced energy bills and provide long-term energy efficiency.

The prioritisation of insulation within the building envelope will significantly restrict air leakage, which in turn prevents heat loss. This 'fit-and-forget' solution can ensure a home will perform as intended for decades, with little or no maintenance.

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. 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, negating any of the potential energy efficient gains.

**“The prioritisation of insulation within the building envelope will significantly restrict air leakage, which in turn prevents heat loss. This ‘fit-and-forget’ solution can ensure a home will perform as intended for decades, with little or no maintenance.”**

## Lower U-values

A consistent and 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 and composite panels, as well as a spray and panel insulation.

For designers, the growing popularity of PIR insulation has meant they can achieve the highest insulation values from the minimum thickness of material. 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 means it is used widely across residential, commercial and refurbishment projects.

### **The devil is in the detail**

Taking time for the details will also make a difference and go some way to ensure homes perform to the standard intended. 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 necessitate a proper level of quality assurance throughout design and construction, and good detailing is particularly important for new build and retrofit alike.

Competency in installation is vital because when a high performing product such as PIR/PUR is not installed correctly, it could compromise that performance and drastically reduce the thermal performance. All contractors need to make sure that not only are levels of site supervision of a good standard, but also 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.

### **Digitalisation of products**

The issue of product substitution also needs to be addressed. For example, if a PIR insulation product were to be substituted by a product of the same thickness with poorer insulation properties, it would have a significant impact over the lifetime of the building. This could result in the building not meeting its thermal performance, as determined by Building Regulations, increase the lifetime energy costs for the building occupants and reduce the carbon savings,



as well as potentially impacting on the health and wellbeing of the building occupants.

Therefore, digitalisation of construction products will provide some traceability of products across the supply chain and is seen by many as the best way to reduce the performance gap and increase performance certainty across the built environment.

Building Information Modelling (BIM) has become tremendously important in the construction industry and has enabled manufacturers to share product information in more accessible forms. According to the NBS, three-quarters of manufacturers agree that BIM is the future of product information. Through the BIM Level 2 programme, building product manufacturers can provide a wealth of product information to specifiers online, in an immediate and standardised accessible digital structure.

### Futureproofing

Focusing on the building fabric will enable specifiers to futureproof 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.

**“For designers, the growing popularity of PIR insulation has meant they can achieve the highest insulation values from the minimum thickness of material.”**

Ensuring continuous insulation, minimising thermal bridging and achieving high levels of airtightness in buildings all play their part in a well-designed building fabric and decarbonising our homes. Addressing these aspects of construction means the Building Regulations’ thermal targets can be met and those performance levels can be incorporated into the finished building’s performance targets.

If we are going to make our housing stock better for the long term then we must achieve more thermally efficient building envelopes, which in turn will result in more comfortable buildings. Getting the fabric of the building properly insulated should always be the starting point and this includes insulation such as high performance PIR. It will remain the most direct route to achieving the net zero target, as well as compliance with the energy performance requirements of the revised Building Regulations Part L. Only then will we begin to have housing stock that is resilient to a changing climate. ■

.....  
**Simon Storer**

**Chief Executive**

Insulation Manufacturers Association

Tel: +44 (0)161 672 7387

[www.insulationmanufacturers.org.uk](http://www.insulationmanufacturers.org.uk)

