# Thermal bridging emerges as hidden barrier to UK net-zero construction targets



As nations strive towards ambitious net-zero goals, the construction industry faces a multifaceted challenge in reaching these benchmarks while ensuring sustainability. Central to this dilemma is the issue of thermal bridging—an often overlooked but critical factor that undermines energy efficiency in buildings. According to Paul Beech, General Manager of Armatherm, timely identification of thermal bridging during the design stages is not just advisable; it's essential for achieving a truly sustainable future.

Since the introduction of net-zero targets in June 2019, many projects have integrated sustainable materials, with 70 per cent of initiatives reportedly now encompassing eco-friendly objectives. However, a mere 43 per cent have managed to meet these targets. One significant hurdle has been the rising costs associated with sustainable materials, with estimates indicating that 70 to 80 per cent of these products are more expensive than traditional alternatives. Consequently, while solar panels and other renewable technologies have substantially helped reduce the UK’s carbon emissions by 53 per cent, experts remain sceptical regarding the country's ability to meet more stringent targets before 2050, especially under the current framework.

A primary concern is thermal bridging, where weak spots in a building's envelope allow heat transfer, leading to fluctuations in internal temperatures and increased energy demands. This inefficiency not only undermines the sustainability objectives of new builds but also contributes to a cycle of excessive energy consumption that hampers net-zero ambitions. The ramifications of thermal bridging extend beyond energy efficiency, as it can also lead to condensation problems, risking both structural integrity and the health of occupants due to mould growth. According to some sources, thermal bridging can account for as much as 78 per cent of heat loss in a façade, underscoring its crucial role in building performance.

To tackle these challenges, it is crucial that architects and builders embrace proactive planning strategies. Specific areas prone to thermal bridging, including balconies, canopies, and structural junctions, should be identified early in the design phase. The integration of thermal break materials at these critical points can significantly mitigate heat loss and energy consumption. For instance, correctly implemented thermal breaks can cut heat loss by up to 75 per cent, directly contributing to the goal of energy efficiency and, by extension, lower greenhouse gas emissions.

Moreover, the rise of retrofitting projects is notable. While such projects can address existing inefficiencies, they often come at considerable costs, prompting many to consider demolition instead. This approach is frequently seen as a more viable short-term solution but fails to account for the broader environmental implications, such as increased waste and further pollution. The industry must therefore balance immediate economic considerations with long-term sustainability goals.

In summation, as the construction sector progresses toward achieving its sustainability objectives, it is evident that simply incorporating renewable energy technologies and sustainable materials is insufficient. To truly move the needle towards net-zero, addressing issues like thermal bridging is imperative. By prioritising the identification of thermal bridges and integrating effective solutions from the design stage, the industry can circumvent the pitfalls of costly retrofits or demolitions. As the 2050 deadline looms closer, proactive planning and execution stand as the linchpins for creating a sustainable built environment.

### 📌 Reference Map:

* Paragraph 1 – [[1]](https://ccemagazine.com/news/the-overlooked-obstacle-to-net-zero-goals/), [[4]](https://www.armatherm.com/knowledge/whats-the-difference-between-a-thermal-bridge-and-a-thermal-break/)
* Paragraph 2 – [[1]](https://ccemagazine.com/news/the-overlooked-obstacle-to-net-zero-goals/), [[2]](https://www.facadetectonics.org/articles/thermal-bridging-the-missing-key-to-low-energy-building-design), [[5]](https://www.structuremag.org/article/thermal-breaks-in-building-envelopes/)
* Paragraph 3 – [[3]](https://www.thermal-engineering.org/understanding-thermal-bridging-in-buildings/), [[6]](https://www.welldoneinc.ca/understanding-thermal-bridging-and-its-impact-on-building-performance/)
* Paragraph 4 – [[1]](https://ccemagazine.com/news/the-overlooked-obstacle-to-net-zero-goals/), [[7]](https://www.karsonsconsulting.com/blog/21022025141713-what-is-thermal-bridging--preventing-heat-loss-in-buildings/)
* Paragraph 5 – [[1]](https://ccemagazine.com/news/the-overlooked-obstacle-to-net-zero-goals/), [[5]](https://www.structuremag.org/article/thermal-breaks-in-building-envelopes/)

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://ccemagazine.com/news/the-overlooked-obstacle-to-net-zero-goals/> - Please view link - unable to able to access data
2. <https://www.facadetectonics.org/articles/thermal-bridging-the-missing-key-to-low-energy-building-design> - This article discusses the significant impact of thermal bridging on building energy performance, highlighting that 78% of total heat loss in a façade can be attributed to thermal bridges. It explains how thermally conductive components bypass insulation, creating shortcuts for heat flow, and emphasizes the importance of addressing thermal bridging to achieve low-energy building designs.
3. <https://www.thermal-engineering.org/understanding-thermal-bridging-in-buildings/> - This resource provides an in-depth explanation of thermal bridging in buildings, detailing how heat transfers through materials with higher conductivity than surrounding insulation. It outlines common sources of thermal bridging, such as structural elements and design flaws, and discusses strategies to mitigate its effects, including continuous insulation and proper construction practices.
4. <https://www.armatherm.com/knowledge/whats-the-difference-between-a-thermal-bridge-and-a-thermal-break/> - This article clarifies the distinction between thermal bridges and thermal breaks in construction. It defines thermal bridges as connections within a building that have higher thermal conductivity than surrounding materials, leading to heat loss. Thermal breaks are materials inserted to interrupt this path, reducing heat transfer and improving energy efficiency.
5. <https://www.structuremag.org/article/thermal-breaks-in-building-envelopes/> - This article explores the role of thermal breaks in building envelopes, focusing on how they can prevent thermal bridging by inserting materials with low thermal conductivity into structural elements. It discusses the challenges in balancing strength, stiffness, and thermal conductivity when designing thermal breaks and highlights their importance in enhancing building energy performance.
6. <https://www.welldoneinc.ca/understanding-thermal-bridging-and-its-impact-on-building-performance/> - This article examines the impact of thermal bridging on building performance, explaining how it leads to increased energy consumption and potential issues like condensation and mould growth. It identifies common causes of thermal bridging, such as gaps in insulation and structural elements, and suggests mitigation strategies like continuous insulation and advanced framing techniques.
7. <https://www.karsonsconsulting.com/blog/21022025141713-what-is-thermal-bridging--preventing-heat-loss-in-buildings/> - This blog post provides an overview of thermal bridging, explaining how it occurs when heat escapes through structural weak points, bypassing insulation and increasing energy loss. It discusses the significant impact of thermal bridging on energy efficiency, noting that it can account for up to 30% of a building’s heat loss, and outlines materials and methods to prevent it.