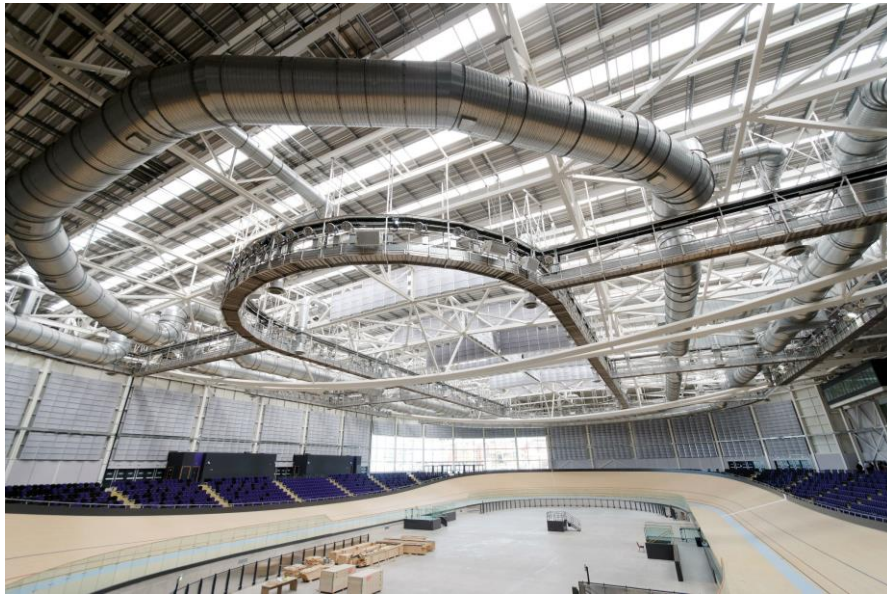


METAL-CLAD BUILDINGS CAN LEAD THE WAY TOWARDS ZERO CARBON



Rooflights installed at the Sir Chris Hoy Velodrome in Glasgow reduce the reliance on artificial lighting. Image courtesy of Brett Martin Daylight Systems Limited

The Government has announced the end of the UK's zero carbon buildings policy and that it does not intend to proceed with the zero carbon allowable solutions carbon offsetting scheme. This means that the 2016 zero carbon homes target is being dropped, as is the 2019 target for non-domestic zero carbon buildings. It also means that there will be no further changes to Part L in any form before 2016.

However, the UK will still be required to deliver nearly zero carbon buildings from 2021 (and 2019 in the public sector) and to meet the nearly zero carbon target, non-domestic buildings will need to be designed and built to be as sustainable as possible and to contribute as little as possible to carbon emissions. Metal-clad buildings can lead the way in reaching the zero carbon targets.

In this article, the Metal Cladding and Roofing Manufacturers Association (MCRMA) advocates that the historic 'fabric first' improve U value approach has perhaps reached its limits for some aspects of building design. It is generally accepted that the use of U values as a means of achieving thermal compliance are now approaching their economical and functional limits for most industrial, commercial and warehouse applications and it is time to take a more holistic approach to building design. MCRMA recommends that adopting the holistic fabric first approach involving improved air permeability levels, natural and artificial lighting and shading plus the use of mechanical or electrical building services systems and controls will improve efficiency, reduce carbon emissions and also reduce costs.

When designing a building, it is now widely recognised that airtightness has to be a crucial consideration as improving airtightness levels can now make a greater contribution to the Building Energy Rating (BER) on compliance than some other means. Over recent years the industry has shown that with good design detailing, on-site inspections and robust installation practices metal based roofing and cladding systems can achieve low air permeability levels which offer a significant low cost CO2 saving. -

Doors (both personnel and vehicle access) and windows also have an important part to play; thermally efficient solutions are key but the designs and interfaces with surrounding materials must be based on quality design and incorporate air seals and insulation. MCRMA profilers should be consulted at the early design stage for guidance on quality design and construction detailing, such as flashings, laps, interfaces, seals and fillers.

Renewable energy sources will shortly become a must-have option to ensure compliance with Building Regulations and the wish for a nearly zero carbon strategy. Changes to Building Regulations will result in more renewables being installed on both new and refurbishment projects and MCRMA members are at the forefront of developing innovative metal roofing solutions, such as photovoltaics (PVs) and transpired solar collectors (TSCs), which will contribute to achieving the zero carbon target.

Examples include the integration of solar PV systems with existing and new roof assemblies, enabling buildings to generate their own electricity; and the development of perforated TSCs to deliver naturally warmed fresh air into the building. On a cautionary note, renewables such as PVs should not be installed on a fragile roof; advice should be sought at the outset by an MCRMA independent consultant.



*SolarWall® transpired solar collector system was used at Jaguar/Land Rover, Leamington Spa.
Image courtesy of CA Building Products Limited*

Daylighting also plays an important part in the design process and rooflights are an ideal choice to provide a natural daylighting solution. In addition to providing daylight for a good working environment, natural light also offers passive solar gain that is, a free heating source which provides significant potential to reduce energy usage. The internal lighting of a building should always form part of a holistic design strategy using a balance between daylight, artificial light, shading, positioning and layout together with a robust and user friendly control system.

Delivering low-energy buildings with excellent in-use energy performance is a challenge. MCRMA members understand the factors that can affect the performance gap (the gap between the designed and expected and actual energy performance in the built environment) and how this can be minimised to achieve maximum as built performance.

It is important to recognise that the 'pick and mix' approach to projects where non compatible systems and components may be brought together by some contractors can adversely affect the requirement for a nearly zero carbon strategy.

Whilst the installer may be tempted by the cheaper option, the ultimate responsibility for meeting the performance specification should remain with the designer and the client. Working with a main contractor and manufacturer who understands the risks and the value of a specification should not be underestimated.

The best assurance of compliance to meet the nearly zero carbon target is to source systems and products from reputable manufacturers who can demonstrate the pedigree of the materials used and support design requirements with job specific data. We should also be mindful that even a well-designed building system will fail to comply with the regulations if it has not been properly installed by trained, experienced and supervised contractors. A very low carbon and energy efficient solution can be achieved through good design, the use of tried and tested compatible products linked with trained installers who have a track record and who can demonstrate a high level of competency.

Engaging an independent consultant at the outset will also ensure that what is specified and, more importantly, what is installed and constructed on-site meets the zero carbon target. It will also ensure that the client has a fully compliant building which is built to the highest standard and offers tenants minimum in-service running costs and a long term sustainable solution.

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