

SENSE AND SUSTAINABILITY

Sustainability is a subject that has been rising up the agenda for many years, but what does such an amorphous term represent and how can it be applied in reality? In this article, the Metal Cladding and Roofing Manufacturers Association (MCRMA) explains how to ensure your metal cladding system is sustainable from cradle to cradle.

The phrase 'cradle to cradle' was coined in the 1970s by Walter R. Stahel but was popularised by McDonough and Braungart's book of the same name, published in 2002. According to the Dictionary of Sustainability the term essentially means that all material inputs and outputs can either be recycled or reused with no loss of quality.



Direct Wines Warehouse, Gloucester. Image courtesy of Euroclad Limited

A holistic approach to sustainability can be taken by adopting the cradle to cradle approach; minimising the environmental impact of the production of components, manufacturing processes, transport, installation, use and end of life.

This ethos would also include a life cycle assessment of environmental impact categories such as global warming, resource depletion, embodied energy, eutrophication, acidification and volatile organic compound emissions.

So how do you guarantee that your cladding system offers cradle to cradle sustainability which encompasses all of these various elements? The first step is to source CE Marked products; this will ensure you are buying high quality products, manufactured in an environmentally responsible way, and will result in lower transport costs and emissions than imported products.

Materials form a big part of the overall sustainability of a roof or wall cladding system. Steel and aluminium are the most common materials used in metal building envelopes and, despite the energy associated with the initial manufacture of these materials, they offer significant advantages when considering the entire product life cycle.

The type of system used can have a major impact on the sustainability of an external building envelope. Metal built-up roof and wall assemblies are engineered to be quickly constructed onsite delivering faster project completion. Site assembly allows for optimal transport loads which can reduce disruption to local communities and cut down CO₂ emissions.

Installed performance of a roof or wall is critical to the cradle to cradle philosophy in the context of construction. Thermal performance that can achieve or exceed building regulations, combined with good air tightness, will contribute significantly to achieving an energy efficient building. By selecting insulation which maintains its U-Value over time you can ensure the thermal performance of a building remains constant throughout its life.

At the end of a building's useful life the cradle to cradle circle closes and the end of life options need to be considered. Built-up metal roof and wall cladding can be deconstructed with relative ease and the steel or aluminium external and liner sheets can be recycled. Mineral wool insulation cores contain zero ozone depleting substances; have low global warming potential and no added greenhouse gases. This means that the insulation can be dealt with easily. Mineral wool does not have to be treated as special or hazardous waste and can be completely recycled into virgin product.

Metal has much to offer in the areas of green technology and sustainability and MCRMA members are at the forefront of developing innovative solutions, such as green roofing systems that can improve the thermal performance of a building by providing protection against heat loss in the winter and heat gain in the summer. Other 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 Transpired Solar Collectors (TSCs) to deliver naturally warmed fresh air into the building.

The MCRMA encourages the take-up of a cradle to cradle approach to sustainability with careful consideration of the sourcing of materials and the manufacture of products, through to the implications of their performance when installed and the end of life recycling and disposal.

A recent example that shows how metal roofing can be integrated into a sustainably-focussed new building is the Marks and Spencer store at Cheshire Oaks. This new flagship store is the second largest M&S store in the UK and is their greenest store, using the latest innovations to reduce environmental impact.



Marks & Spencer, Cheshire Oaks. Image courtesy of Euroclad Limited

The roof is a Euroclad Elite 4.17 system, which combines minimal environmental impact with impressive looks. It is comprised of 11,000m² multi-waveform standing seam roof, glass wool insulation and curved liner sheet. The aluminium roof reflects excess heat and 100% of the aluminium is from a recycled source. It also helps to achieve outstanding air tightness in the store of less than three (3m³/hr/m² @50 pascals).

By sourcing a cladding system which is able to tick all of the boxes, it is possible to protect your pocket as well as the planet. A cradle to cradle approach can deliver a sustainable metal roof and wall solution that does not cost the earth.

This article was prepared for MCRMA by Phil Cook, managing director of Euroclad Limited. This article first appeared in RCi magazine December 2013

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