INSTALLING INSULATED ROOF PANELS – WHAT YOU NEED TO KNOW

The performance of any building envelope is highly dependent on a number of factors; not least of all the correct installation of the roof. This article by the Metal Cladding and Roofing Manufacturers Association (MCRMA) outlines the key issues that need to be taken into account when installing an insulated roof panel system.

Insulated panels include through fixed and secret fixed panels where the fasteners are not visible. They provide quick installation times, factory production quality and a ‘one pass’ fixing sequence. Long length panels reduce the number of end laps and therefore potential leak locations but specialist lifting equipment will almost certainly be necessary. Panel cut back lengths at lap joints and eaves will vary to suit differing scenarios and conditions.

It is imperative that the work is carefully planned to ensure that it can be done in a safe manner and in line with good site practice. Method statements and risk assessments need to be prepared and the site operatives must be fully aware of their contents and trained in the installation of insulated panels.

Insulated panels are typically delivered to site in plastic wrapped packs with edge protection and each manufacturer will provide information concerning their instructions regarding off-loading, the use of bearers and recommendations regarding the use of forklifts.

Before fixing any panels check the squareness and accuracy of the steelwork; panel manufacturers have their own guidelines on steelwork tolerances that must be followed and which should have been agreed upon at the design stage. Misalignment of sub structure and excessive tolerances can lead to complications at the fixing stage such as fasteners not engaging with sagging purlins, panels holding away from the sub structure or the sub structure pulling to meet the panel.

Insulated roof panels at Radnor Hills Mineral Water Company, Powys
Courtesy of A Steadman & Son

Accurately positioned purlins

Panels require the purlins to be accurately positioned prior to the installation of panels, especially where there are three or more panels being used on a slope. Many purlins have a relatively narrow bearing surface onto which the panels have to be laid and there are both panel and steel tolerances to consider. The panels need to butt up to each other to avoid cold spots where condensation can form and be adequately supported to achieve their structural integrity.

It is vital that the purlins provide adequate bearing for the panels to suit the manufacturer's requirements and that where panels lap they are either sufficiently wide or have ledger plates or angles fitted to support panels and rooflights.

Fastener considerations

Fasteners should be obtained from a reputable manufacturer who offers a meaningful warranty or guarantee. Fasteners need to pass through the external skin of both panels at end laps and consideration needs to be given to the use of heavy drilling fasteners where purlin cleats occur and at the eaves if there is a wrap over gutter installation; when installing rooflights care must be taken to ensure the non-fragility of the roof. Calculations will need to be carried out to assess the wind loads for the particular site and building so that the appropriate number of fasteners can be used to withstand the loads (See MCRMA document *Guidance for wind loadings on roof and wall cladding*).

Trisomet® insulated roof panels at Crown Crest's distribution centre in Leicestershire. Courtesy of Tata Steel

Panels need to have the full complement of fasteners installed as work proceeds and not be ‘fly fixed’. The practice of ‘fly fixing’ will result in the partial installation not complying with the system non-fragility category expected. This may also lead to unexpected failure during the installation process and contribute to an accident such as a fall from height.

Sealants are to be installed to the manufacturer’s recommendations and will involve 3 runs of sealant for end laps and a single run for the side laps. In general, sealants should be 6mm x 5mm Class A butyl. At end laps a line of sealant should be installed either side of, and close to the fastener line, and another within 15mm of the exposed end of the overlap. Side lap seals need to meet and lap onto the lowest end lap seal.

The installation sequences for both single panel and multi length roof panels are described in the MCRMA document *A guide to site installation of insulated roof panels* which sets out in detail the general methods for laying and fixing insulated roof panels.

Final checks

When all the panels have been installed check that all fixings are correctly fitted and tightened; the fixings do not distort the panels; minor scratches have been treated and that the surface of the roof is clean and free of any swarf or debris.

Manufacturers are best placed to offer advice about their particular products and MCRMA member companies can advise on the suitability and performance of their materials, systems and assemblies to ensure that the installation of insulated roof panels is carried out correctly and in a safe manner. Additional project specific advice may also be obtained from one of the independent roofing and cladding inspectors featured on the MCRMA web site.

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