



## THE IMPORTANCE OF CORRECT SPECIFICATION

The current economic climate makes it increasingly tempting to cut business costs. In an effort to achieve the cheapest price, less reputable cladding contractors will source materials and associated components from different manufacturers and then assemble them as a cladding system when it is nothing of the sort.

Unfortunately this results in a system that has no approved design, no U value calculation confirmation and no tested fire boundary rating. This raises serious issues for the structural integrity, thermal performance, fire performance and lifespan of the materials and has serious implications for the building owner; in the event of a problem there is no recourse from a sole manufacturer and there is no system warranty.

It is essential in each step of the materials selection process to understand that any one choice of a material type or component does not exist in isolation and has potentially far reaching implications on other aspects of the performance of the completed building envelope. For example, the effect of thickness (gauge) on the performance of metal systems in building applications cannot be underestimated and the responsibility for not only ensuring that appropriate materials are specified, but selected and used correctly, belongs to all parties within the supply chain.

With regard to the selection of coil or sheet for use in roll-forming applications it is of particular importance that the material selected and used complies fully with the appropriate standards of tolerance on dimension and shape: BS EN 10143:2006 for pre-finished steel and BS EN 485 Part 4 for cold rolled aluminium with normal tolerance as a minimum requirement.

The specification or use of cladding profiles manufactured from material which does not comply with the appropriate standard can have a significant impact on the structural performance or spanning capacity of the profile when compared with the theoretical performance shown in manufacturers' load-span tables. This can result in local deformation due to foot traffic, major structural or catastrophic failure which may result in injury or loss of life and contravention of the health and safety regulations and possible prosecution under the regulations.



*Newport Station, Kalzip Limited*

Designing a building for fire safety is rather different from many other design exercises. Fire may never occur throughout the life of the building, so fire safety design and precautions may prove to be unnecessary and the design may never be tested. However, it is vital that cladding contractors understand the basic performance of materials, components and structures when exposed to fire attack. They will then be able to make the correct decisions that will reduce fire risk and produce a robust fire assessment.

The manner in which all elements of building constructions perform in the event of fire is of prime concern to the designer, the occupants, the building owner and the building insurance company. Profiled metal cladding constructions must therefore conform to specific requirements which are defined in the Building Regulations Approved Document B. They may also have to comply with other requirements defined by building insurance organisations, such as the Loss Prevention Council (LPC).

The specification, construction or modification of a firewall which has not been tested or does not have a supporting fire performance certificate for the system can result in the designer or cladding contractor being held responsible for non-compliance. Non-compliance may be highlighted during the construction phase but certainly in the unfortunate aftermath of a fire which may result in loss of life or loss of facilities.

When it comes to thermal performance, all buildings must achieve the correct U value to comply with Building Regulations however, it is the case that less reputable contractors will assemble a range of component parts from different manufacturers which are then sold as a 'cladding system'. In this case, the responsibility for compliance lies with the cladding contractor who has put the system together; and without a detailed thermal calculation the achievable U value is unknown.

MCRMA systems manufacturers will provide calculation through finite element analyses in accordance with BS 10211 parts 1 and 2 to demonstrate the U values of their systems.

Unless the building is unheated, designers or systems suppliers must be able to show compliance with the current regulations. This primarily involves proving the heat loss through the cladding system expressed as a U-value and for metal systems this must be shown by test or calculated from thermal modelling, where all bridging paths are included. MCRMA members will also provide robust details that include the psi-value, the heat loss through the detail and the f-value which measures the risk of internal condensation. The robust details and the cladding system must be sealed to be airtight.

It should be noted that this does not guarantee a building will comply with the Regulations, because heat and air may also be lost through doors, windows, smoke vents and other junctions. It is the designer's responsibility to ensure that the whole building complies with the Regulations.



*Amex Community Stadium, Brighton & Hove Albion FC, CA Group Limited*

Acoustic performance is another consideration; many commercial and industrial projects have acoustic performance requirements, due to either their position or the nature of use within the building. Metal building systems can be designed to offer a good performance both in sound reduction and sound absorption and sometimes both at once. MCRMA member companies offer advice on their systems that offer acoustic performance and their suitability for specific applications. In many cases the acoustic performance of a system has undergone a rigorous test programme at one of the UK's leading acoustic research laboratories and the results will be supported by certification.

Metal cladding systems provide efficient, attractive and reliable solutions for a wide variety of external building envelopes. However, as with all construction components, the ability of the cladding to satisfy its functional requirements is dependent on its correct specification and installation and, equally as important, on its interaction with the other elements of the building envelope and structure.

It is the clearly stated position of the MCRMA and its members that the best assurance of compliance with the appropriate standards and performance expectation 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.

Alternatively it may be a case of 'Buyer Beware'.

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