

THE DURABILITY OF OFFSITE CONSTRUCTION SYSTEMS

Longevity, lifespan and long term durability is a key consideration of specifying any construction product or component. With a focus on offsite manufacture, what can be understood on cladding and building finish standards and warranties?



Traditional construction in brick and block or timber frame with a brickwork cladding is a known quantity as far as the durability of the outer leaf is concerned. There are European standards for testing the long-term freeze-thaw performance of masonry units. Although the standard test does not give an actual stated lifespan in years, the industry understands that a masonry unit with a classification of F2 will have a 100-year lifespan.

Offsite construction has a number of different finish types that can be used for the outer cladding, including renders onto insulation, renders onto render carrier boards, clay brick slips, acrylic brick slips, cement fibre boards and ship lap cladding, which can be made from various materials. These facades can be direct fixed or ventilated or drained cavity and combine any of the above finishes. When choosing a 'pick and mix' of finishes and fixing techniques, there is a risk that the finished facade has not been tested for its durability as a complete system.

As a test laboratory, Lucideon has seen many manufacturers assume that because they have chosen a render that has been tested and a render board that has been certified, their facade will automatically have a 60-year weatherability or durability classification. This is not the case - the render may well be capable of lasting for 60-years, but whether the render bond to the render carrier board is compatible and is able to perform over 60-years, needs to be proved.

Likewise, clay brick slips with a relevant guarantee along with an adhesive and a sheathing board can be put together as they all have their own test certificates. Again, individual performance warranties do not give an overall 60-year performance guarantee; it must be proved that the materials are compatible and that the brick slip will still be adhered to the adhesive and carrier board after 10-years, and ultimately, after 60-years.

There are a number of European Technical Approvals (ETAs) which subject systems to an accelerated

weathering test regime: high heat and humidity, cold water soak providing thermal shock, high heat followed by freeze at low humidity and wet freeze. A full test regime with a successful outcome will give a 25+ year design life for a facade if the normal caveats of good installation and an adequate maintenance regime are followed. The difficulty lies in choosing the correct test regime for the system in question. There are three test standards, but many systems fall outside of the scope of these standards and hence an experienced test laboratory is required to understand the method of proving the system. Once the system has been proven, a further desk study exercise will be needed to ensure that all ancillary components used in the system have their own sufficient guarantees and system compatibility to achieve a 60-year assessment.

With such an expanding industry it will be easy for less diligent manufacturers to exploit the fact that there is unclear guidance and rules for proving the long-term performance of a system subjected to weathering. It would be a shame for the reputation of the industry is bought down by a small minority. Warranty bodies are expected to sign-off volumetric modules for a 60-year warranty with product test data instead of adequate system data. A lack of care may result in a ticking time bomb of failed facades 10-years down the line.

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Images:

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