

# The durability of offsite construction

Lucideon discusses the test regimes and standards that cover offsite manufactured facades and external cladding

Traditional masonry construction in brick block or timber frame with brickwork cladding is a known quantity as far as the durability of the outer exposed leaf is concerned. There are European standards for testing the long-term performance of masonry units for the effects of weather. 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 life span.

With offsite, the external cladding can be made up of a number of different systems and can incorporate renders on to insulation, renders on to render carrier boards, clay brick slips, acrylic brick slips, cement fibre boards and ship lap cladding, all of which can be made from various materials.

Facades can be direct fixed, ventilated or drained cavity, and manufactured from any mixture of the above materials. If a selection of individual materials is chosen, the resulting external face will constitute a system that may be made up of materials that have not been tested as a complete system. This can lead to the materials being incompatible and result in an underperforming or failing system. As well as this causing aesthetic issues, it can also bring about water ingress and condensation, and ultimately, deterioration of the loadbearing frame.

Manufacturers often assume their facade will automatically have a 60-year lifespan if they choose a brick slip or render that has been tested and has a CE mark, along with a render carrier board that has been certified

and an adhesive or framing system. This is not necessarily 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 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 provide an overall 60-year performance guarantee, it must be proved that the materials are compatible and the brick slip will still be adhered to the adhesive and carrier board after 10 years, and ultimately after 60 years. There is a move in industry to differentiate from traditional build by pushing out to a 75-year classification.

There are a number of European Technical Approvals (ETA) that prescribe a test regime, which subjects the full system to an accelerated weathering test regime, including 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-plus year design life for a facade if the normal caveats of good installation and an adequate maintenance schedule are followed. The difficulty lies in choosing the correct test regime for the system in question.

There are three test standards that cover a range of different systems: direct fixed render, framed and cladding. Many commonly used combinations fall outside of the scope of

these standards so it requires an experienced test laboratory to understand the method of proving the system. After completing the test regime successfully, a desk study is required to ensure all ancillary components used in the system have their own sufficient guarantees and system compatibility to achieve the required 60-year warranty.

With such an expanding industry, it would 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.

Warranty bodies are expected to sign-off modules for a 60-year warranty with inadequate product test data instead of system data. This lack of care may result in a ticking time bomb of failed facades 10 years down the line.

Find out about Lucideon and its testing services for offsite and modular buildings using the website and/or contact details below.



**Joanne Booth**  
Business Manager – Construction

Lucideon

Tel: +44 (0)1782 764410

joanne.booth@lucideon.com

www.lucideon.com/construction