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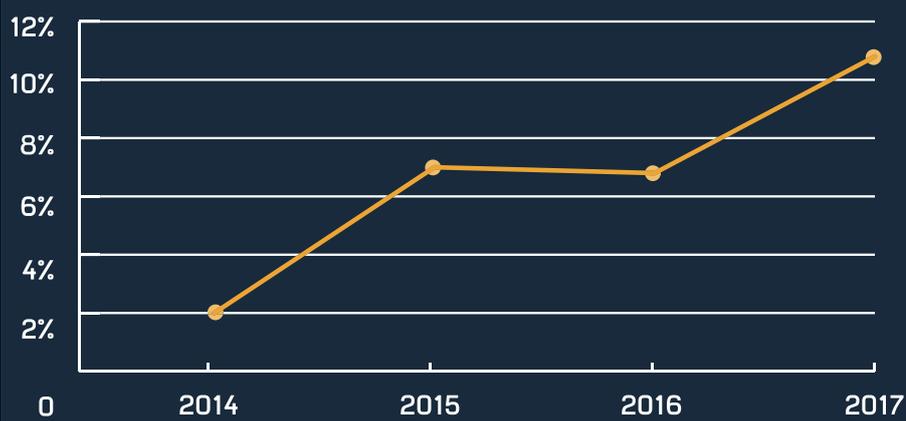
MMC AND ITS ROLE
IN THE CONSTRUCTION
INDUSTRY
INCLUDING FACADES

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This eBook will look at **The Evolution of MMC** and when it was first introduced to the **5 Reasons Modular Construction is Increasing in Popularity** and looking at a Client Spotlight HUB and M&G **Using MMC in Build to Rent**. It will then go onto discuss **The Complexity of Facades and the Risks Involved** and finish off with some **Top Tips for Avoiding Failure with Facades**.

Working closely with the construction industry, Premier Guarantee has seen the steady rise in the number of registered projects using MMC methods from 2.54% to 10.73%, an 8.2% increase. This accounts for all on and offsite methods including sub-assemblies and components, hybrid, panellised and volumetric.

Figure 1: Percentage Increase Of MMC Use Year On Year



With a team looking after product approval we promote the use of Modern Methods of Construction, encouraging the progression within the industry. Whether it's a new product on the market we've heard of, a manufacturing company coming to us directly or we are working with a Developer who is using a new product/system we've not currently approved, we will go out to manufacturing sites wherever they are in the world to check that they are acceptable and suitable for sign off.

Premier Guarantee also has a team of in-house specialists able to consult on the use of MMC, with the latest edition being Clive Everett, Facades Technical Standards Director, helping Developers and Builders on best practice and understanding the different elements suitable for the best performing facades.



THE EVOLUTION OF MMC

It was after the Second World War the UK saw a rapid demand for house building and solutions needed to be provided quickly and efficiently. It was during this time that new techniques and products were introduced to the building industry to meet these demands, but unfortunately there was an oversight in quality due to the extreme quantity that was being produced leading to many publicised failures.

Sixty years on and modern methods of construction (MMC) has seen a staggering evolution and investment. Legislations have forced a change in the way we build, based on climate change, performance based building standards and the code for sustainable homes. Much of what MMC promotes is efficiency, quality, environmental performance, sustainability and short time scales using better products and processes. The methods consist of offsite construction where parts are manufactured and assembled in a factory and brought to site already complete, or onsite construction which brings components and systems together onsite.

At Premier Guarantee we have a product and system approval process which has been developed to help manufacturers gain accreditation under our technical requirements. For developers and builders this is important as we want to make sure the MMC products and systems you use are approved by us and accepted by our warranty cover.

We are continuously working with manufacturers to expand our approved MMC products and systems. To see which ones have already been given the seal of approval, please see our [product approval page](#).



5 REASONS MODULAR CONSTRUCTION IS INCREASING IN POPULARITY

Once believed to be a second-rate construction method, the first modular building was produced in 1958 and has since seen an incredible advancement in design and production. Formerly described as a simple, two or four module structure, modular building is now more complex in design with the help of Computer-Assisted Design programmes and modern factory settings.

We can see from building trends that modular construction is gaining popularity most likely due to the reduced time and money it takes to construct, as seen with the new Google headquarters and the new 24-storeys tower in Plymouth by Elements Europe.

Why is modular building increasing in use and acceptance?

- **Faster return on investment:** Construction companies can save considerable amount of time on a project meaning the build can meet its functionality and generate ROI quicker.
- **Better cost saving:** As the build is more predictable and less site-intensive there is less chance of extended on-site time and therefore labour costs are reduced. There are also less weather related delays as the modules are created inside.
- **Environmentally friendly construction process:** Since the modules are produced off-site less waste material and resources are created and used during the actual construction process.
- **Flexibility:** You can continually add to a modular building, including creating high rise.
- **Improved reputation:** Building materials and techniques have improved as technology progresses.

Simon Underwood, Managing Director at Elements Europe, told building.co.uk:

“In recent months we have seen an increasing demand for high rise schemes looking to use modular solutions. Our clients demand high quality, faster build programmes and cost certainty. We have the capacity and capability to deliver in a better way than traditional construction.”



USING MMC IN BUILD TO RENT

CLIENT SPOTLIGHT: HUB AND M&G

The newly completed Rehearsal Rooms is one of the UK's first institutionally backed Build to Rent projects. The £49m project has been delivered by HUB, a mid-market developer, for M&G Real Estate, one of the world's largest property investors. It offers 173 homes for long-term rent that will be managed onsite under a single, corporate ownership giving customers high quality accommodation and professional service.

Designed by Newground Architects and constructed by main contractor Henry Construction, the development leads the way in not only design but in the use of innovative construction techniques.

Their dedication to creating design led homes to fit the needs and wants of their clients motivated them to undertake an extension of their project half way through development. The east block of the building was originally constructed as a 10 storey RC frame which when nearing completion received planning approval to add an additional 3 floors. To apply the minimum additional load onto the already constructed frame and piled foundations the developer opted to construct the additional floors using a lightweight steel construction by Vision Built, which was clad using a brick slip system.

Alongside providing Structural Warranty cover for the development, Premier Guarantee also worked closely in partnership with HUB, contractor Henry Construction, and Vision Built, both approving the quality of the product and ensuring that the additional floors would not hinder the already exceptional quality of the original structure. Although a complex project the team work between all partners - including cladding consultant Glass Facades – has helped in delivering a high quality model of purpose built rental homes.

Commenting on the partnership Damien Sharkey, HUBs Associate Director of Development stated, "Premier were always proactive particularly in dealing with the complexities of the additional 21 units. They were very helpful and worked closely with us and Henry construction to make it happen. We are proud to have delivered one of the first institutionally backed Built to Rent projects in the UK which is setting a new bench mark for Built to Rent homes in London."

THE COMPLEXITY OF FACADES AND THE RISKS INVOLVED

Clive Everett, Premier Guarantee's Facades Technical Standards Director, discusses the importance of facade specialists in today's construction market and what risks are involved with these complex systems.

In the last 10-15 years the building industry has gone through a multitude of changes which have impacted the role of facades and its growth in the construction industry. Some of these influences are driven by:

- Advances in manufacturing and material technology
- Pressure to reduce project duration by using different construction methods
- Environmental concerns
- Aesthetics

No longer consisting of simple building elements, modern facades utilise new materials in increasingly complex systems and these are being assembled in untested combinations with other modern methods of construction (MMC) as well as traditional wall types. Untested unique and bespoke building interface arrangements have an increased risk of one or more of their performance parameters failing.

MODERN METHODS OF CONSTRUCTION: RISKS

- More components
- More interfaces
- Less historic data / testing / familiarity
- More complexity of design and geometry

Unravelling the complexities of modern facades and ensuring that the facade is considered holistically rather than elementally has become a specialism, and facade consultants are now often required on many projects. The role of the Facade Consultant is to ensure that both the aesthetic and performance requirements of the façade are met during the design and installation stages. It is important that a facade consultant with the appropriate level of expertise and diversity of experience for the project is selected.

Finding a specialist contractor that can complete all elements of a facade is difficult, and in some cases impossible. As a consequence building envelopes are frequently divided up in to smaller packages. However, there comes a point when having too many specialist contractors becomes detrimental. Using a rainscreen wall as an example, we frequently see these packages being broken up into layers of, rainscreen and insulation, cement particle board, structural framing system (SFS), vapour control layer and plasterboard etc. with each layer being installed by different specialist contractors. This creates a multitude of conflicts and split design responsibilities within the 'standard' through wall element alone. Subsequently, these issues are multiplied several fold as soon as this construction hits an interface.

The short term savings generated by the splitting up of facade packages can quickly be eroded by extra management costs, site delays, additional costs from missed interface elements, etc. The risk of longer term (legacy) failures is rarely factored in when savings are tabled during the pre-construction phase; the 'cost to remediate' for legacy issues are many times more expensive than the original installation costs.

There are many reasons a facade can fail, all of which are avoidable, but to have any chance of mitigating failures the way that the specialist contractor packages are divided up needs to be carefully considered and it must be done giving due consideration to the capabilities of the specialist contractors that have been selected for tender.

Modern buildings are required to have much reduced air permeability, greater u-values and better waterproofing. To do this they rely heavily on gaskets, sealants, tapes and membranes. At junctions and interfaces it is critically important that these elements are detailed and installed correctly, and that the different specialist contractors co-ordinate their works.

When properly managed and designed, modern methods of construction can offer economic, rapid and robust solutions that were unobtainable with traditional methods.

TOP TIPS FOR AVOIDING FAILURE WITH FACADES?



With such a high percentage of building failures being attributed to their facades during a building's lifetime we have provided a few key tips to help avoid failure from the outset. Some may seem obvious but are also imperative when deciding on the different elements and installation of the facade.

- Keep the number of specialist contractors to a minimum.
- Ensure contracts provide clarity on design responsibilities and scope, with particular emphasis on interfaces.
- When considering savings that may be offered/proposed at the pre-construction stage, question whether these savings have the potential to generate costs in the longer term (risk assess).
- Diarise regular design team meetings with all specialist facade contractors present.
- Engage suitably experienced facade package managers and facade consultants.
- Test unusual / untried interface details off site.
- Agree robust QA procedures prior to starting on site.
- Construct quality and installation reference benchmark areas on site that include examples of both the standard and non-standard details/arrangements.
- Site test 5% of all interface waterproofing details.



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