Best Practice in the Thermal Upgrade of High Rise Buildings

Over recent years, the building industry has embraced the benefits of External Wall Insulation (EWI) more than ever before - but not all installations are the same.

Specification for multi-storey application is very different to that of low-rise projects, with health and safety procedures being a key consideration in the thermal upgrade of high rise buildings.

Mark Gibbs is Facades Technical Manager at Alumasc, an award-winning UK manufacturer of external wall insulation and render systems that practices a strict high rise buildings policy. Here Mark explains what specifiers should be looking for in their chosen EWI system for high rise and why safe installation is paramount.

What is EWI?

EWI is a cost effective method of achieving the thermal and aesthetic upgrade of buildings. Installation of EWI systems involves fully encapsulating the building with insulation boards which are fixed to the substrate, strengthened by a reinforcement mesh and over-coated with a choice of high performance, attractive finishes.

EWI has been used in the UK for the refurbishment of high rise projects for over 25 years. The solution is particularly effective for, although not limited to, high rise social housing schemes of non-traditional or traditional type construction. The poor thermal performance of many of these blocks has been addressed by specifying EWI, providing a U-Value to comply with current Building Regulations.

Fast-track building methods used to construct many high rise blocks have, in the past, led to condensation and water ingress as a result of wind driven rain and cold bridging effects, creating low energy efficiency due to lack of thermal insulation. EWI provides protection to the building fabric and in most cases is capable of eradicating these problems.

EWI System Build-up for High Rise

To achieve the thermal requirements of the project, the appropriate type of EWI insulation board is selected then mechanically and adhesively fixed to the substrate. A polymer modified reinforcing base coat, incorporating a fibreglass reinforcement mesh, is then applied.

Once the base render has fully cured, there is a choice of finishes ranging from the more traditional dash or painted renders, to more modern through-coloured silicone renders.

The new render finish will transform the appearance of the high rise block, improving the local area in general and encouraging a positive social impact. The thermal blanket also improves air tightness and acoustics (insulation choice and substrate dependent).

High Rise, not High Risk

High rise EWI specification is different to that of low rise because the insulation boards must be adhesively and mechanically fixed (subject to manufacturer's certification). Wind load calculations are essential so as to generate a project-specific mechanical fixing pattern for the insulation boards. The edge zones, external corners and openings require increased mechanical fixings to accommodate the higher wind loads in these locations. The calculations must always be conducted by Structural Engineering Consultants to ensure structural stability, required performance and system longevity. The insulation board adhesive and high rise mechanical fixing pattern increases the square metre material and install costs in comparison to low rise.

Specified EWI systems must be officially accredited and approved for use in high rise application. A large scale fire test or reaction to fire test is required for the system when used above 18m in height. Technical guidance is available from the system manufacturers.

Installation Considerations

During the project, system manufacturer site surveyors work closely with their registered and fully-trained EWI installers to ensure that the install is as per the specification and that all details are installed in accordance with the system manufacturer's and project designer's detail drawings.

As well as through-the-wall square metre rates, compared to low rise there are additional detailing considerations. These include parapet, lightening conductor, CCTV, external lights, robust window cill details, and ground floor entrance areas etc.

EWI system manufacturers provide their own site install inspection regime. The site surveillance methodology requires a regular and thorough check of the EWI install. It is critical that all the detailing is robust and installed as per specification. Once the wall access is removed any repairs are more difficult and costly to address than for low rise projects.

Scaffold and mast climbers are the typical options for access. Scaffold ties need to be fixed in the most practical locations and protected scaffolding is recommended. Alternatively, mast climbers are an economical and faster track option for EWI install but offer less protection to newly installed work. Programming considerations should always allow for weather conditions.

Warranty

The install will be signed off in stages and a final inspection by the system manufacturer is required before the project warranty is issued to the client. The system manufacturer will also address any questions and queries post install. This may include advice on maintenance and fitting of fixtures through the EWI system.

External Wall Insulation is covered by 10-25 year system manufacturer warranties and in the case of ECO (Energy Company Obligation) funded projects, a 25 year guarantee is provided by a third party insurance company.

System manufacturers should provide a before, during and after service for high rise. This includes a pre-survey and project specification, mechanical fixing pullout tests including wind loading calculations and a consulting engineer's report along with specialist technical advice and maintenance guidance.

ALUMASC EXTERIOR BUILDING PRODUCTS LTD
Tel: +44 (0)1744 648400 Fax: +44 (0)1744 648401
Email: info@alumasc-exteriors.co.uk www.alumascfacades.co.uk

Energy Efficiency

EWI is a cost-effective and energy efficient solution for high rise blocks allowing for an aesthetic transformation of the building and the surrounding area. Improved thermal performance results in less fuel consumption and therefore less CO_2 emissions leading to a typical saving of around 30% on tenants' heating bills.

The carbon savings contribute to the Government's target to cut CO_2 emissions by 80 per cent, based on 1990 levels, by 2050. This carbon saving EWI measure is, in part, ECO-funded by utility companies, with a contribution from the Local Authority or Landlord.

EWI can also be combined with other measures such as communal heating system upgrades, to maximise ECO funding thus significantly reducing the cost of the refurbishment works.

Conclusion

With stringent processes in place for the correct specification and installation of EWI on high rise projects, along with a comprehensive warranty package, safe, durable and thermally efficient buildings can be successfully achieved with the added benefit of attractive facades.

Alumasc have developed their High Rise Building Policy as a measure to safeguard all parties involved in High Rise EWI installation. It serves to provide the client with peace of mind that the install will be carried out to strict Health and Safety standards, ultimately ensuring the long term well-being of the building's tenants.

For more information on External Wall Insulation and ECO funding please contact Alumasc on 01744 648400 or visit **www.alumascfacades.co.uk**

Liscard House, Wirral
System: Swisslab EWI
Insulation: 60mm Phenolic
Finish: Silkolitt 1.5mm Silicone Render
U-Value: 0.25w/m2K

Black Friar Court, Salford
System: Swisslab EWI
Insulation: 60mm Phenolic
Finish: Silkolitt 1.5mm Silicone Render
U-Value: 0.3w/m2K

ALUMASC EXTERIOR BUILDING PRODUCTS LTD
Tel: +44 (0)1744 648400 Fax: +44 (0)1744 648401
Email: info@alumasc-exteriors.co.uk www.alumascfacades.co.uk