wetherby
creating a greener future

External Wall Insulation

The Steps to Safe High-Rise: Specification & Installation

STEP 1

Initial Specification

- BBA / BDA / ETA Fully Tested Systems
- Systems of non-combustibility or limited combustibility to be building reg compliant
- High impact / robust systems
- Thermal performance ensuring U-values are achieved
- Condensation Risk Analysis
- Preliminary Specification
- Preliminary CAD Drawings

ADDITIONAL SERVICES

- Overlays, Planning Support & Samples
- Funding guidance / budget costings

STEP 2

Pre-Installation

- Structural Survey + Ventilation Checks
- Wetherby Survey, check substrate & create site specific detailing + CAD drawings
- Pull Out Testing to ensure fixing performance
- Wind load calculations & site specific fixing patterns

ADDITIONAL SERVICES

- On site/Management training if required

STEP 3

Training & Installation Report

- Wetherby Recognised Installers
- High Rise Approved Installers (Approved by SWIGA / GDGC where required)
- Site Support & Inspections
- Nominated Wetherby support staff for project

ADDITIONAL SERVICES

- Onsite toolbox talks / Management training if required

STEP 4

Maintenance, Aftercare & Warranties

- Project specific maintenance pack
- Maintenance/ Cleaning & Inspection Information
- Repair Guide
- Information on living in an insulated building for tenants

ADDITIONAL SERVICES

- 3rd Party Warranty Provider / SWIGA Approved Systems

High-Rise Safety

High rise failures have come under the spotlight recently with renewed pressure being placed on the EWI industry following on from well documented failures such as Grenfell Towers.

This brochure has been put together to emphasise the lengthy measures Wetherby Building Systems take in order to ensure high rise buildings are correctly designed and systems accurately installed.

This is completed through a stringent process which is detailed in this easy to follow step by step guide.

Fire safety is of the utmost importance to Wetherby Building Systems and under no circumstances do we use desktop studies throughout our testing and certification.

All systems are fully tested prior to application so you can be assured that your building is safe. Wetherby Building Systems take the same approach when it comes to wind loading to ensure any system applied can withstand the additional pressures put on them.

All this is done through critical detailing which is highlighted throughout this document ensuring systems are correctly detailed and designed to last.

By following these strict guidelines we can ensure our systems are not only durable but minimum maintenance is required in the future.

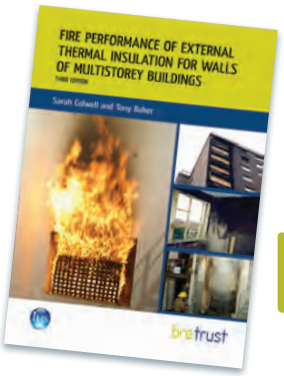
STEP 1

Initial Specification

Fully Tested System

Wetherby will only specify fully BBA/BDA/ETA tested systems for use on high rise projects. The system is fully tested to the appropriate European Standards (e.g. ETAG 004 for masonry).

Fire Performance



Wetherby only specify non-combustible systems or systems of limited combustibility. (A Fire Rated Systems to EN13501-1)

Wetherby hold an unrivalled number of systems that have completed the large scale fire tests to BS8414 / BR135 proving these systems perform to the highest fire standards and providing reassure to our clients.

Wetherby A Rated Systems - approved for high rise applications

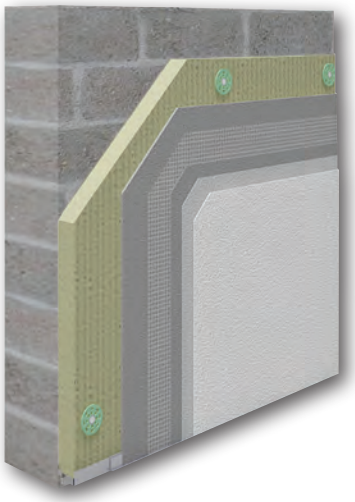
Substrate	Insulant	System Finish	System Fire Rating
Masonry	Stone Wool	Mineral Render	A1
Masonry	Stone Wool	Silicone Render	A2 - s1, d0
Masonry	Stone Wool	Spar Dash	A2 - s1, d0
Masonry	Stone Wool	Brick Slips	A1
Steel Frame	Stone Wool*	Silicone Render	A2 - s1, d0
Steel Frame	Stone Wool*	Brick Slips	A1
Steel Frame	Render Carrier Board*	Silicone Render	A2 - s1, d0
Steel Frame	Render Carrier Board*	Stone Render	A2 - s1, d0
Steel Frame	Render Carrier Board*	Brick Slips	A1

* Cavity system - The majority of leading building insurers, such as NHBC, Premier Guarantee and LABC, insist on a cavity between the cement particle board and insulation board. This is a drainage cavity and is not a fully ventilated cavity.

Thermal Performance ensuring U-Values are achieved

Project specific U-Value calculations are completed for the existing substrate to show the benefits of an EWI system.

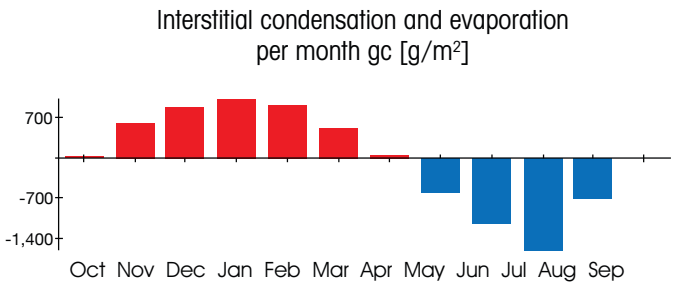
- ✓ Surface temperature to avoid critical surface moisture: No danger of mould growth is expected.
- ✓ Interstitial condensation: No condensation is predicted at any interface in any month.



Condensation Risk Analysis

As part of the U-Value calculation a Condensation Risk Analysis is carried out to ensure no problems after install.

Example Graph >



Preliminary Specification & CAD Drawings

Wetherby will complete a 14+ page preliminary specification for the project providing information on the system and a photo application guide. This specification is subject to pre-installation surveys, pull out tests and wind load calculations.

RIBA

NBSPlus

STEP 2

Pre-Installation

Structural Survey + Ventilation Checks

A structural survey must be completed to confirm the buildings condition and suitability for installation of an EWI system.

Any required repairs must be completed before the EWI system is installed. Ventilation checks must be completed to ensure adequate ventilation is in place.

Wetherby Survey: Site Specific Detailing & Drawings

A Wetherby Site Supervisor will attend site to inspect the substrate and confirm the suitability or advise of any substrate preparation required before work begins.

A survey of bespoke site specific details can be agreed alongside the installing architect/contractor. Custom CAD detail drawings can then be completed and issued specific to the project.

Pull Out Testing

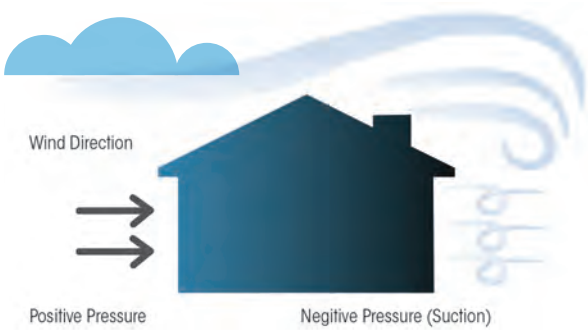
The fixing manufacturer will be deployed to site to carry out the required pull out testing. This will include a minimum of 15 tests (to ETAG 014 guidelines).

Further pull out tests will be completed on the project as works commence to ensure the substrate is consistent.

Wind Load Calculations

A wind load calculation specific to the building must be completed in accordance with BS EN 1991-1-4.

This will provide figures for the maximum wind loads taking into consideration the buildings location, orientation, surroundings, building height and building design/shape.



Site Specific Fixing Patterns

Wetherby will use the site specific wind load data to provide a suitable fixing pattern for the project. This calculation will ensure the specification is correct in regards to:

1. **Pull out**
   Fixing performance into the substrate.

2. **Pull through**
   Resistance to the insulation pulling over the fixing head.

STEP 3

Training & Installation Report

Wetherby Recognised Installers

Only Wetherby trained and suitably experienced installers would be considered for high rise schemes.

High Rise Approved Installers

All contractors must not only be Wetherby approved for high rise projects but they must also be approved by the 3rd party warranty providers such as SWIGA or GDGC.

Site Support & Inspections

Wetherby Site Supervisors will inspect high rise projects on a weekly basis as a minimum. Standard of work and competence of applicators will be inspected.

Application solutions will be offered quickly and backed up by Wetherby Detail Drawings to ensure projects can continue to run smoothly.

Site reports are provided for each visit which will include any actions that may be required. Management training and tool box talks can also be completed on site.

Nominated Wetherby Support

A Wetherby support team will be specified and dedicated to a high rise project.

This will include an Area Technical Manager, Site Manager and a nominated Sales Order Processor.

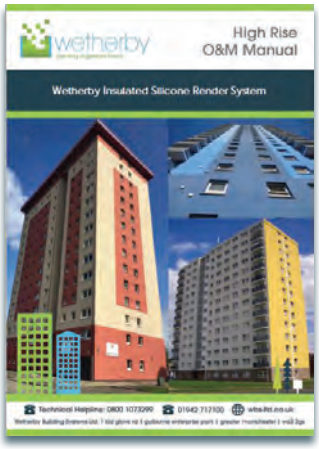
STEP 4

Maintenance, Summaries & Aftercare

Project Specific O&M Manual

A project specific O&M manual will be issued on completion of the project with information on the exact system installed.

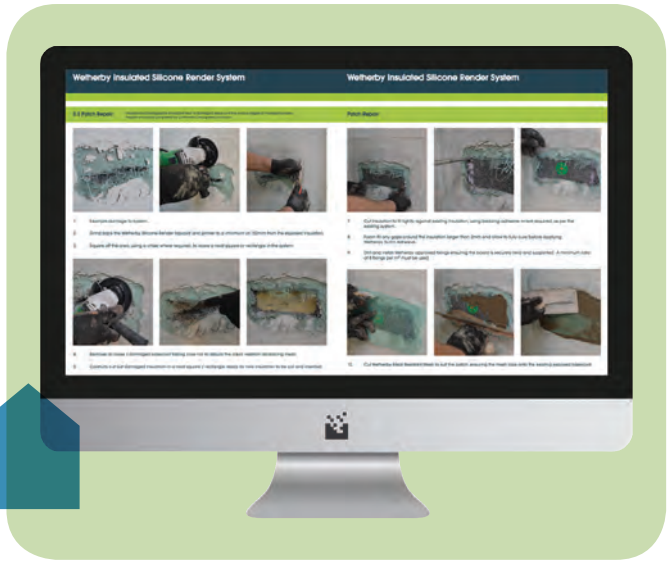
The O&M includes information on a range of areas including aftercare, guidance on installing items onto or through the EWI system, changing windows or doors and re-pairs in event of damage. Maintenance requirements and cleaning is also included to ensure the system remains in good condition throughout its life cycle.



Repair Guide

Wetherby specify high impact robust systems reducing the likelihood of damage. A full photo repair guide is provided within project specific O&M Manual for any minor repairs or full patch repairs required to the installed system. Wetherby technical information is also provided for queries on remedials.

Download our Repair Guide PDF online at www.wbs-ltd.co.uk



Information on Living in a Building after EWI Installation

Information for tenants on living in an extremely insulated building is also provided, giving guidance on:

- The effect of EWI
- Reducing heating usage
- The importance of the correct ventilation
- Living habits

Third Party Insurance Backed Warranties

Wetherby work with a number of Ofgem approved Third Party Warranty Providers. Wetherby are a founder member of SWIGA and have SWIGA approved high rise systems.

25 year warranties are available for funded schemes, fully backed by approved providers to give security to clients and tenants.

Fire Performance Information

Stone Wool Insulation

Standards

Stone Wool EWI Slab is non-combustible insulation made from inorganic rock wool.

Thermal Performance

EWI Slab has a thermal conductivity of 0.036 W/mk.

100-110mm is required to comply with building regulations depending on the substrate.

Fire Performance

EWI Slab is classified as Euroclass A1 to BS EN 13501-1. EWI Slab can be used up to an operating temperature of 850°C. In the event of fire it will emit negligible quantities of smoke and fumes. The heat emission from the products is insignificant.

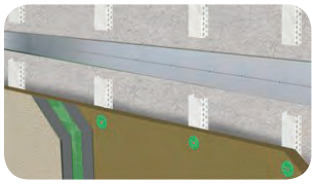
Wetherby have completed a large number of fire tests to BS 8414 which is an extremely stringent test providing the highest testing standard in the industry and allowing use of our systems on high rise buildings.

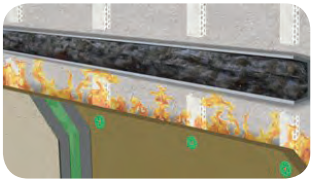
"Non-combustible insulation within an encapsulated render system"

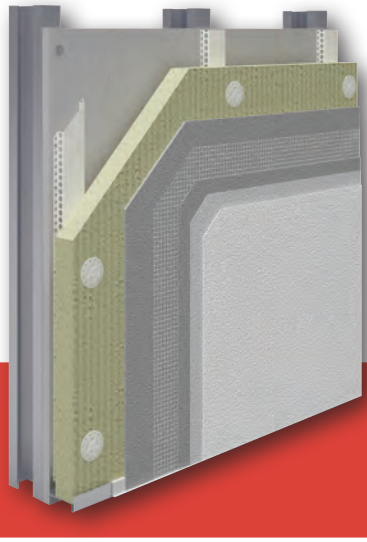
Cavity Barriers

Wetherby Cavity Systems require cavity barriers at certain locations to compartmentalise the system in the event of a fire. Wetherby intumescent strips are installed to the sheathing board and 'activate' when exposed to heat, closing off the cavity and preventing fire spread.

Intumescent strips may be required at floor levels, party walls and around openings, subject to a project's specific requirements.







Fire Case Studies

Ferrier Point, Canning Town

Ferrier Point, a high rise building in Canning Town was completely refurbished with Wetherby's Stone Wool and Thin Coat Render external wall insulation system following failed fire safety checks.

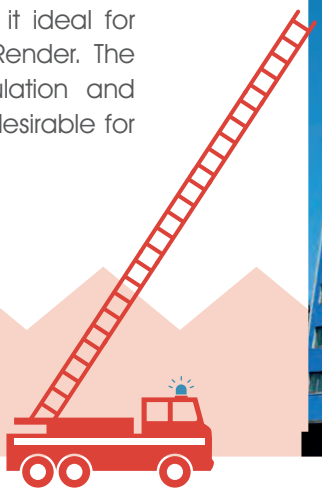
The 23-storey block required the installation of a new external wall insulation system after the previous system which used aluminium composite material (ACM) cladding, failed Government safety checks. Therefore, the decision was made to remove the cladding and replace the system with a safe and suitable material.

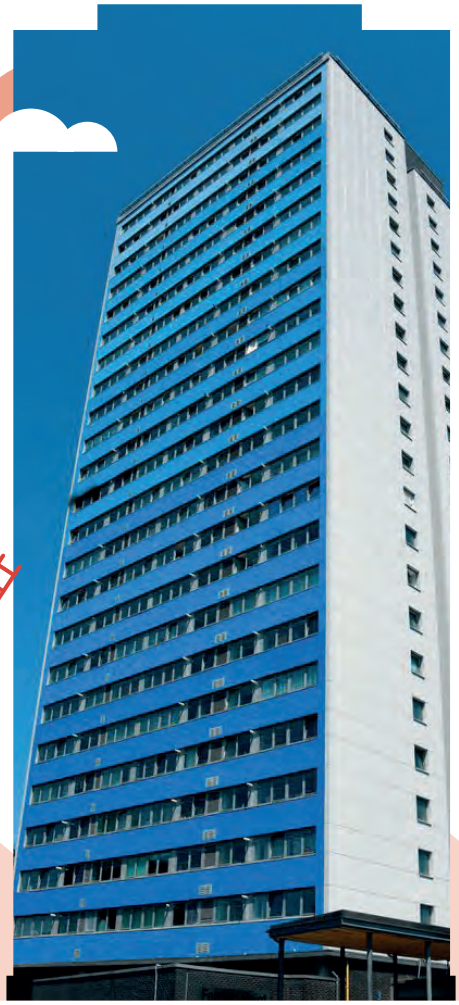
The Wetherby BBA approved EWI system was specified since it would not only transform the external appearance of the high rise building with endless attractive colour and design options available, but more importantly provide a safe and thoroughly tested system suitable for a building such as Ferrier Point, and to Newham council's requirements.

The EWI system used comprised of A1 non-combustible Stone Wool Insulation. Stone Wool Insulation is a consistent density, high strength, rock mineral wool slab with a water-repellent additive specifically designed for use in external wall insulation systems. Thermal performance can be maximised whilst also ensuring it has increased long term compressive strength capabilities and high impact resistance making it ideal for use behind our Silicone 1.5mm 'K' Render. The fire-resistant capabilities of the Insulation and the system as a whole made this a desirable for the project.

Unfortunately, a few months after completion, Ferrier Point High Rise experienced a flat fire on the 12th floor. Due to the excellent fire performance of the system the fire was well contained with no spread to any other part of the building.

Following on from this the high rise required little remedial works and left tenants/homeowners feeling safe in their homes knowing they have a robust facade system to protect them and their homes.





Gascoyne Estate, Hackney

Gascoyne Estate, Hackney is home to four 10-storey tower blocks managed by Hackney Homes in east London.

These blocks were constructed in the 1960's but failed to meet fire safety standards, therefore, in 2013, Wetherby Building Systems transformed the blocks with an External Wall Insulation system comprising of 100mm stone wool insulation complete with Wetherby's Brick Slips to the ground floor and Wetherby Thin Coat Render to the remaining floors.

Sometime after completion, Gascoyne Estate was subject to a flat fire and as you can see from the photos taken at the time, the fire was contained with no spread. After inspection into the insulation, this also confirmed there was no additional spread within the building.

This is a great example of the excellent fire resistant properties available in Wetherby's EWI System. Reports also noted that the brick slips and render showed no signs of cracking meaning minimal remedial works were required.

Lincoln Court, Newton Heath

Lincoln Court, Newton Heath is a 14 storey tower block situated in Manchester and as part of an upgrade to the building's facade, it also underwent a major restoration of its external wall insulation system after not meeting current fire safety standards. Wetherby Building Systems were appointed to provide a suitable and safe system for the project.

After the works were completed, the high rise building experienced a flat fire which broke out on the 8th floor resulting in the building being evacuated. Photos were taken at the time of the incident and show how the fire was contained within the building causing no further spread. After close inspection it showed the systems superior fire resistant properties safely contained the fire which also meant there was minimal damage to the exterior façade.

Wind Load Performance Information

The EWI industry has come under much scrutiny surrounding wind loads and the design aspects of EWI systems. The Grenfell Towers report highlighted a particularly high profile EWI failure in Scotland which resulted in the insulation and render falling from a high rise building.

This led to EWI certificate holders being assessed by the BBA to ensure they understood wind loading and were able to design an EWI system to resist the wind loads on a high-rise project.

Wetherby value the importance of high rise specifications and as a result were only one of three out of the 38 certificate holders assessed to provide acceptable information to show the design of our EWI systems comply.

Designing the System and Fixing Pattern

1. A wind load calculation to BS EN 1991-1-4 must be completed by a suitably qualified and experienced structural engineer to provide maximum wind load figures for a building in kN/m2. This will provide info on the zones of the building where the highest pressures will be applied. A safety factor is applied to this figure to provide a design wind load value.
2. On site pull out tests will provide test data to ETAG014 for the building providing information on the loads the fixings will resist with a large safety factor incorporated.
3. Data is taken for the insulations pull through values, figures showing how much force is required to pull an insulation board over a fixing head. Again a large safety factor is applied to these figures.
4. Wetherby will confirm the fixing pattern for each individual project or scheme ensuring the fixing pull out and pull through values per m^2 are higher than the maximum wind loads provided in the BS EN 1991 – 1 – 4 calculation.

Insulation Bedding Adhesive

On high rise masonry buildings, Wetherby specify a full coat of bedding adhesive behind the insulation before mechanical fixings are installed.

The bedding adhesive is not taken into consideration when analysing wind load calculations and can often provide wind load resistance values higher than the mechanical fixings.

Bedding adhesive provides an extremely good bond and is simply specified as a Wetherby belt and braces approach to high rise installation, ensuring a safe and extremely secure mechanically and adhesively fixed system.

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