



SOLTHERM 75

**Innovative and Approved
External Wall Insulation System**

Technical Overview



THE SOLTHERM 75 EWI SYSTEM

United Kingdom weather conditions provide an unwelcoming environment for all façade systems. Many systems are not robust enough to resist the aging effects of such punishing conditions and become dilapidated and degraded in both appearance and structure over a relatively short period of time. To combat this, Soltherm have utilised unique and innovative products, in conjunction with clever design. Developing an industry leading, A2 fire rated, external wall insulation (EWI) system that achieves approved 75-year durability credentials. This has been demonstrated effectively through extensive testing to replicate the harsh environments the system can expect when installed in the real world.

The Innovation

Products/Components

- Soltherm Cross-knot Fixing – Due to the nature of mineral wool insulation, self-delamination and fixing pull through failure are significant risks in high wind load scenarios. The Soltherm Cross-knot fixings unique patented design increases the systems resistance to high winds, e.g. on building edges, parapets, etc, and is also easier to install than other mineral wool fixing solutions on the market. The fixing has a stainless-steel central pin to provide the required longevity.
- Soltherm Clamping Ring – An innovative fixing solution that prevent delamination between base coat and mineral wool, providing a much-improved system performance at window

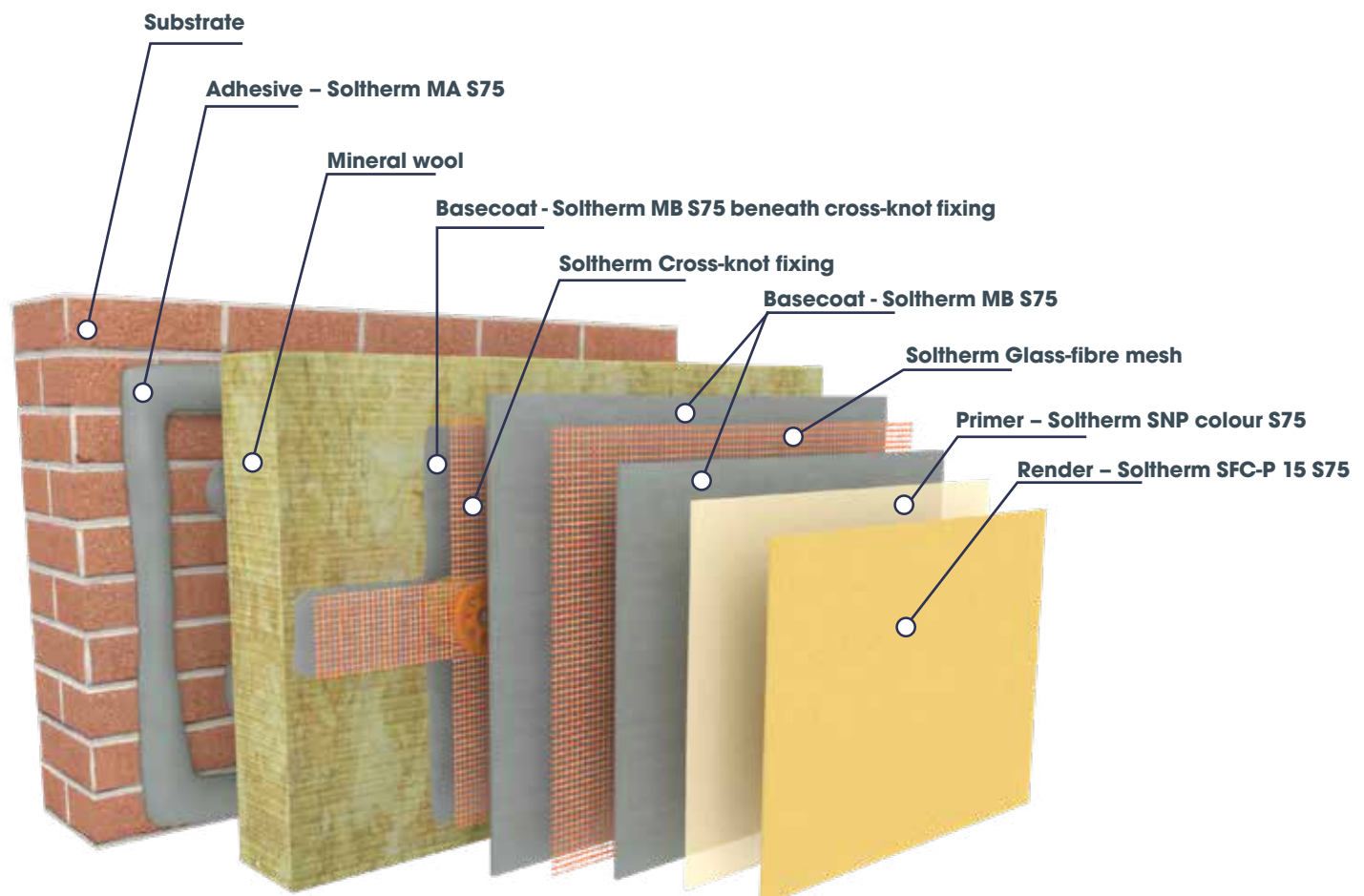
interfaces, external corners and parapets.

- Stainless Steel Profiles & Beads – To prevent corrosion and ensure the system performs as required, only stainless-steel beads and profiles are specified where they are exposed to the environment and where feasible.

Materials

- Soltherm MA S75 – A polymer modified, fast setting, insulation adhesive designed to bond mineral wool to masonry surfaces. Specifically engineered for the Soltherm 75 system to provide improved adhesion and extended durability.
- Soltherm MB S75 – Basecoat render formulated to adhere the Soltherm Cross-knot Fixing and Soltherm Glass-fibre mesh to surface of the mineral wool boards. The basecoat has been formulated utilising innovative polymer technology, allowing it to be extremely vapour permeable and hydrophobic.
- Soltherm SNP Colour S75 -An innovative tinted basecoat primer, employing industry leading technology, allowing it to penetrate deep into the basecoat. This aids the adhesion of the finish coat and ultimately improves the systems durability.
- Soltherm SFC-P 15 S75 – An industry leading, high performance, textured silicone finishing render. It behaves like a hydro-intelligent membrane, providing unrivalled weather resistance and breathability. To ensure it stands up to the test of time, the finish also has superior UV radiation resistance and enhanced algae and fungal growth prevention technology.

FIGURE 1. COMPOSITION OF SOLTHERM 75



PROVING 75 YEAR DURABILITY

To demonstrate the systems 75 years durability, Soltherm adopted, and expanded, well established hygrothermal and accelerated age testing techniques. These testing methods are designed to expose the EWI system to the most extreme conditions, thermally shocking the system whilst also being saturated repeatedly for long periods of time.

Heat & Cold Rain Cycles - The testing rig is exposed to extremely high temperatures before being sprayed with a significantly lower temperature water. This is repeated numerous times to reflect real life exposure. Designed to replicate the extremities that would be experienced in the most severe summer conditions.

Heat & Cold Cycles - The same test rig is then exposed again to extremely high temperatures and then thermally shocked with temperatures well below zero. Both the temperatures are higher and lower respectively than can ever be expected within the UK. The test is again repeated numerous times ensuring the system experiences massive thermal shock.

After a scientifically calculated number of cycles has been implemented on the EWI system, an observation test is conducted on the entire wall to identify if there are any changes in the performance characteristics. These include blistering, detachment, loss of adhesion, the formation of cracks, etc.

In addition to the observation test, numerous physical tests are conducted on the wall which have specific pass or fail requirements in accordance with the European Assessment Document (EAD). The test results establish critical characteristics:

- Water Absorption
- Impact Resistance
- Tensile Adhesion Strength



FIGURE 2. CLIMATIC CHAMBER



Furthermore, Soltherm employed third party expert consultants who prescribed a supplementary Statistical Regression Analysis. This is designed to intelligently interpret the results and predict the system degradation of key performance characteristics over a 75 year period.

After conducting all the above specified tests on the test walls, the results confirmed the unique 75-year durability of the system. There were several key parameters which significantly exceeded the characteristics of systems currently available in the UK. The system's ability to manage moisture, demonstrating exceptionally low water absorption and a high level of water tightness, ensures the exceptional, prolonged functionality in all UK seasonal weather conditions.

SOLTHERM 75 FIXING TECHNOLOGY

Soltherm Clamping Ring

The Soltherm Clamping Ring is utilised in high wind loaded detailing locations such as windows, doors, external corners and parapets.

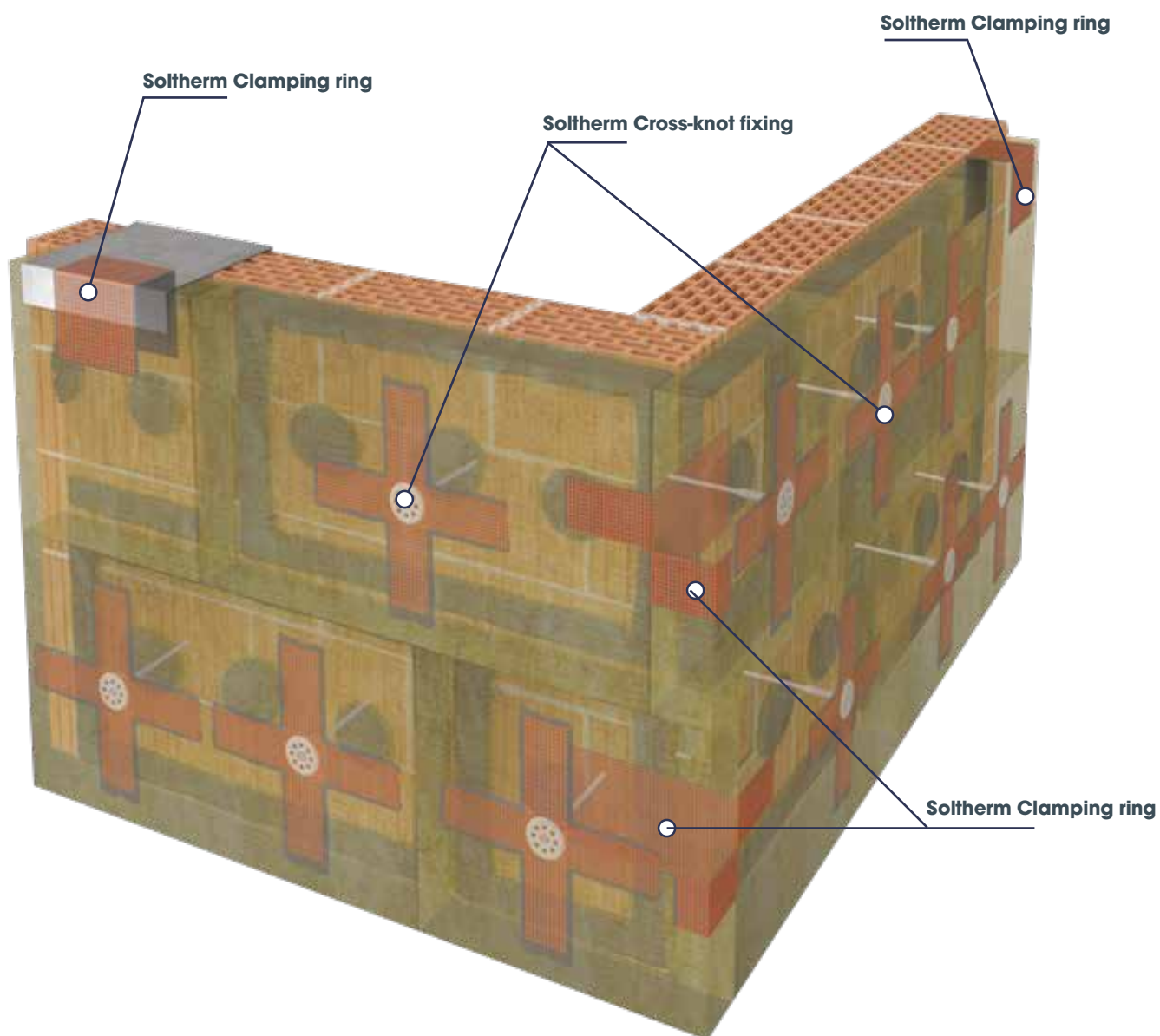
The clamping rings provide a much stronger solution than standard fixings, preventing delamination and shear deformation leading to incomparable crack resistance.

Combined, the Soltherm Cross-knot Fixing and the Soltherm Clamping Ring fixing provide significantly higher levels of safety and contribute to the system's ability to perform effectively for over 75 years. Additionally, both technologies improve the system's ability to perform in the event of a fire, restraining render detachment, preventing the danger that may be attributed to more conventional systems found on the market.

Soltherm Cross-knot Fixing

The Soltherm Cross-knot Fixings unique design means that it can achieve industry leading pull through resistances when used in conjunction with mineral wool insulation. Fixing pull through and tensile adhesion strength of the renders tends to be the primary modes of failure when designing conventional mineral wool EWI systems. The Soltherm Cross-knot fixing significantly manages these possible modes of failure, allowing the Soltherm 75 EWI System to demonstrate industry leading wind load resistance through innovation.

FIGURE 3. CLAMPING RING AND CROSS KNOT FIXING



MAINTENANCE

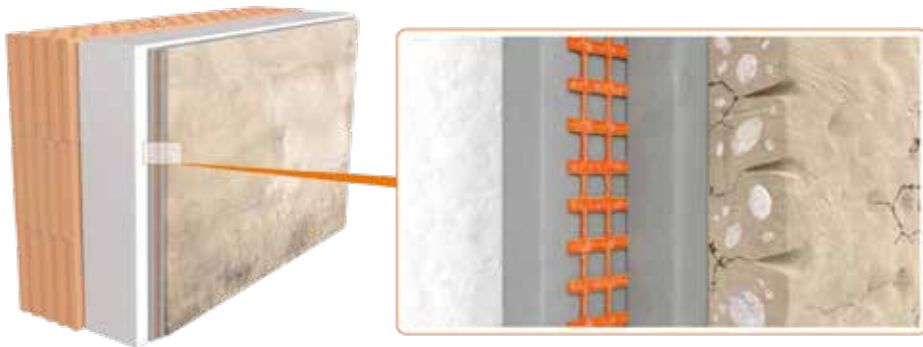
A key component to the effectiveness of the Soltherm 75 EWI System is its ability to withstand tough maintenance programs. The system has been designed with maintenance in mind, it can easily withstand high pressure washing. This is due to the best in class level of durability offered by the basecoats and finishes. This

makes the system suitable for deep cleaning, aiding to the maintenance of an attractive facade.

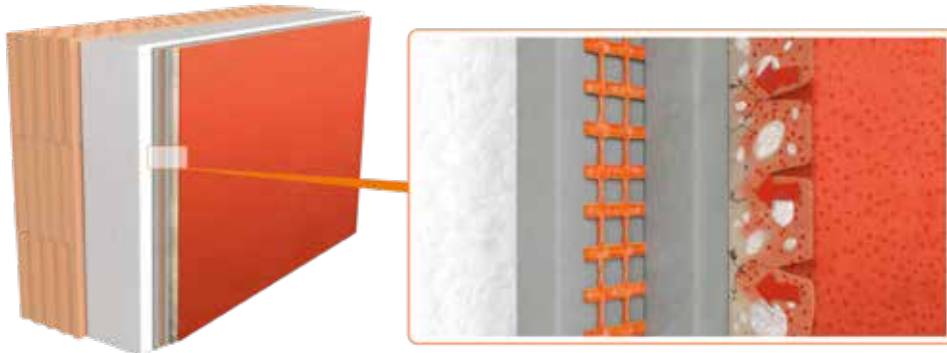
A package of maintenance repair products utilising Deep Protection Technology are available. The Deep Protection Technology provides an increased resistance to organic growth which doubles the protection provided by the antimicrobial coating.

FIGURE 4. DEEP PROTECTION

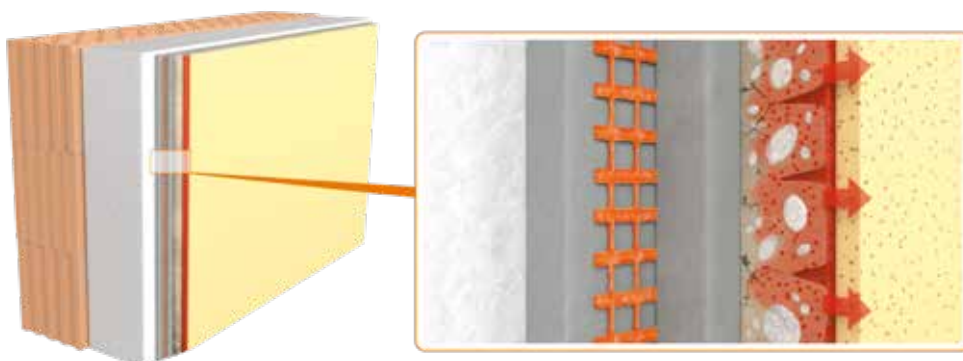
1. Existing render in need of renovation



2. Apply specially formulated primer SOLTHERM SNP eco shield containing innovative eco-shield biocides



3. The biocides slowly migrate and disperse to the surface over a prolonged period, offering sustained algae and mould growth protection





THE SOLTHERM 75 EWI SYSTEM

Designed with Quality and Value in Mind

The Soltherm 75 EWI System has been designed in such a way as to provide the end user with a high level of quality and value, surpassing the standards currently set by the industry;

- Approved for over 75 years effective life
- Industry leading weather resistant technology
- Innovative fixing technology which offers superior wind load resistance, prevents delamination and shear deformation
- Excellent moisture management, preventing water absorption and failure due to freeze-thaw
- Perfectly suited to the UK's environmental conditions
- Totally breathable, preventing interstitial condensation and the associated issues related
- High impact resistance, providing prolonged durability demonstrated through stringent testing
- Unrivalled resistance to fungal, algae and mould growth
- Maintainable due to its durability, the system can sustain periodic pressure washing, incurring no damage to the façade
- Maintenance technology package that assists the system to stay vibrant and attractive, even in acts of vandalism

The Soltherm 75 EWI System has set the standard for all EWI systems. Designed with durability as a paramount requirement, the system outstrips the technical performance parameters of the competition.

