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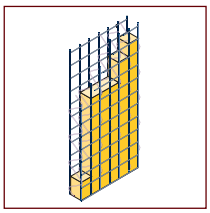
**Structherm | Structural Cladding**

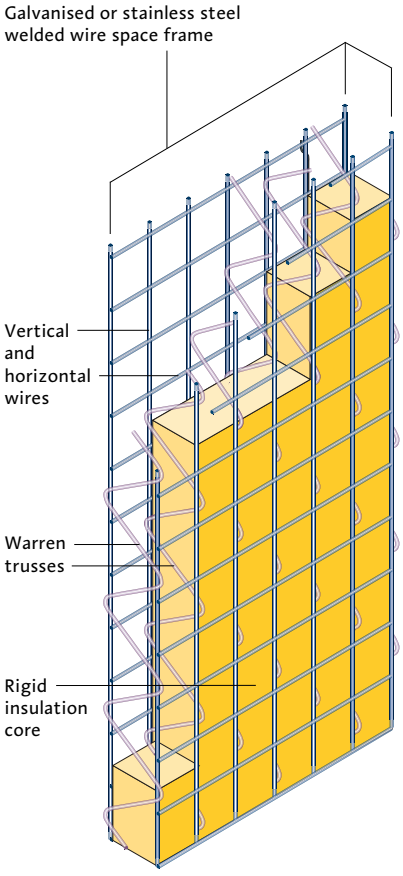
# OVERVIEW OF THE STRUCTURAL INSULATED CLADDING SYSTEM

Structherm BUILDING SYSTEMS

The Structherm Structural Insulated Cladding System is based on the performance of a unique, two-way spanning, lightweight prefabricated panel component with a rigid insulation core (the Structural Insulated Cladding Panel), and a substantial rendered layer. The system provides rigid, insulating, and structurally continuous envelopes around entire structures or parts of structures. The wide range of rendered finishes available, offers the designer unlimited aesthetic variations.

**STRUCTURAL CLADDING**






The Structural Insulated Cladding Panel

## Cladding solutions – refurbishment

In the refurbishment sector, Structherm is thoroughly familiar with the problems likely to be encountered in a variety of ageing structures.

The Structural Cladding System is a very cost effective method of extending the life of a structure. In the refurbishment of dwellings, remedial work in nearly all situations, is carried out whilst people remain in the buildings. Whether used as overcladding or as re-cladding, the system provides a method of refurbishment sympathetic to the original constructional system and offers viable alternatives to demolition.

## Cladding solutions – new build

When used in the new-build sector, the Structural Cladding System offers a number of advantages over traditional brick and block walling, such as overall thickness and weight, and considerably faster installation.

The system offers structural continuity, high thermal performance and large spanning capabilities of up to 4m, without secondary support.

By introducing secondary support members, buildings with larger bay sizes in excess of 6m can be clad.

Also refer to the Thru-Wall datasheets.

## Fabrication of the panels

The construction of each panel is based on a core of rigid insulation set within a galvanised or stainless steel welded wire space frame composed of a series of warren trusses interconnected by vertical and horizontal wires. The panels are immensely strong, rigid and lightweight (standard 2450 x 1200 x 75mm, 100mm, 125m and 150mm panels can be easily handled by one man), and are designed as two-way spanning, high tensile components that may be installed vertically or horizontally.

The panels can also be bent to large radius curves. Consult Structherm on the formation methods to be adopted.

## AREAS OF APPLICATION

**THE SYSTEM IS USED EXTENSIVELY FOR:**

1. Full external re-cladding to replace defective or inefficient cladding.
2. Full external overcladding to upgrade defective but basically serviceable cladding (improving structural safety and thermal continuity).
3. Re-configuration of building facades to reduce or enlarge glazed areas (modifying solar gain, heat loss and glare).
4. Balcony and walkway enclosure (converting external space into usable internal floor area).
5. Parapet creation and extension (improving safety at roof level and altering.
6. Services enclosure (protecting services infrastructure and improving maintenance).
7. New, large area enclosures.

**BUILDING SECTORS INCLUDE:**

1. Housing refurbishment – low and high rise.
2. Schools, colleges and universities.
3. Office and commercial buildings.

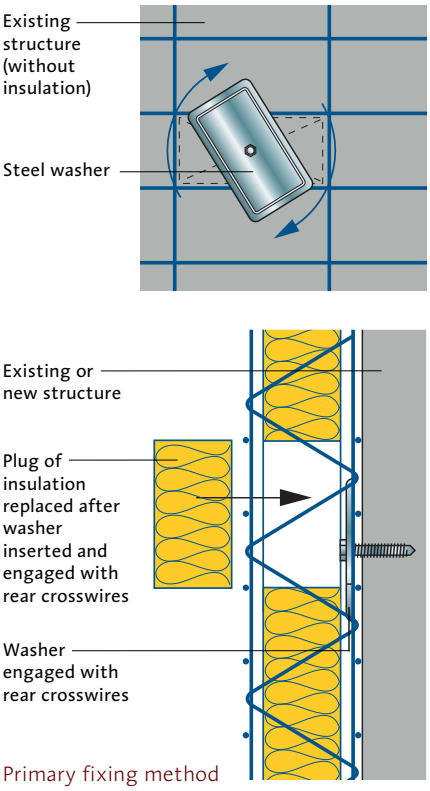
# Structherm | Structural Cladding

**There are many ways of fixing the Structural Insulated Cladding Panels. The following texts and diagrams show some of these methods.**

## Method of fixing the panels direct to a building structure

The Structural Insulated Cladding Panels use a primary fixing technique where each panel is fixed to the building structure from the rear of the panel and behind the insulation. The structural fixings, as a result, are fully embedded in the structure and therefore not subjected to short cantilever forces and the increased risk of shear failure. Because the fixings are remote from the panel surface, they will not induce stresses in the rendered finish.

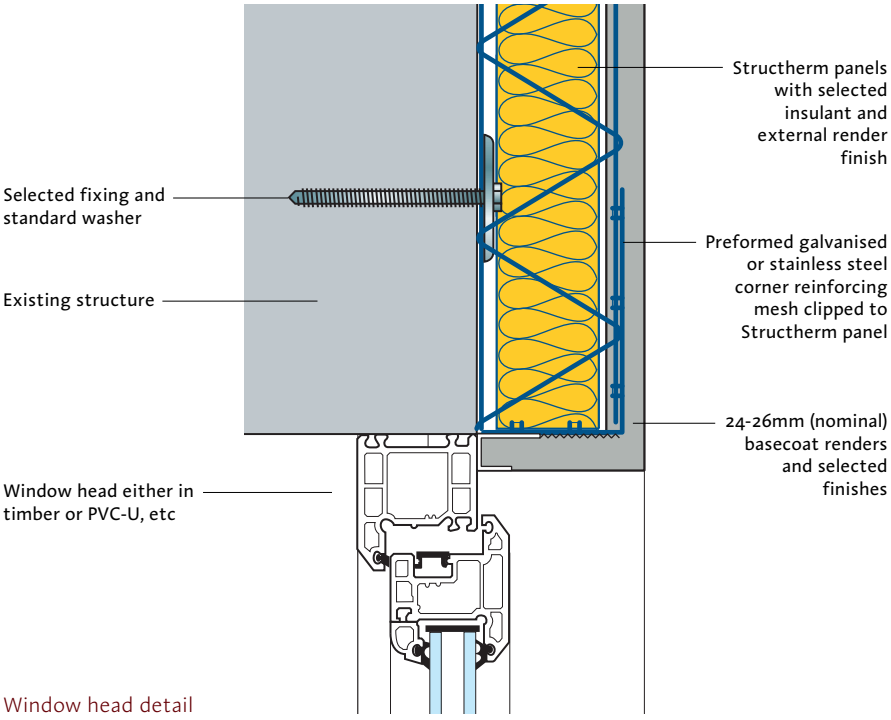
The panels are offered up to the required position and small plugs of insulant are removed from the panel at the fixing points. Each fixing, complete with its large rectangular washer, is inserted into the hole and fixed to the existing structure. The washer is engaged across the horizontal and vertical crosswires at the rear of each panel. After this fixing procedure is complete, the plugs of insulant are replaced.



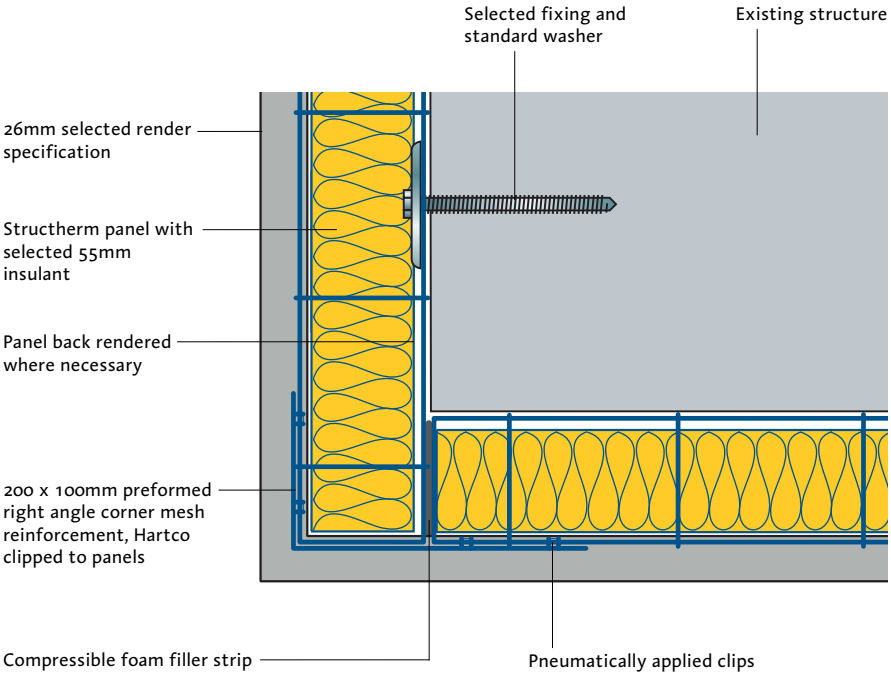

Primary fixing method

## Typical panel fixing details

The Structural Insulated Cladding Panels can easily accommodate openings in existing walls and changes in wall direction. Illustrated below is a typical window head detail and external corner detail.




Window head detail




External corner detail

## Method of fixing for the overcladding of existing panels

When the Structural Insulated Cladding Panels are used as overcladding, secondary fixings may be used to anchor into existing cladding panels as a means of providing additional restraint, provided that the condition of the panels is suitable. The secondary fixings, however, do not contribute to the performance of the Structural Insulated Cladding Panels because they are designed to span from column to column or beam to beam and transmit all imposed wind loads into the primary fixings.

## Method of mesh fixing for structural continuity

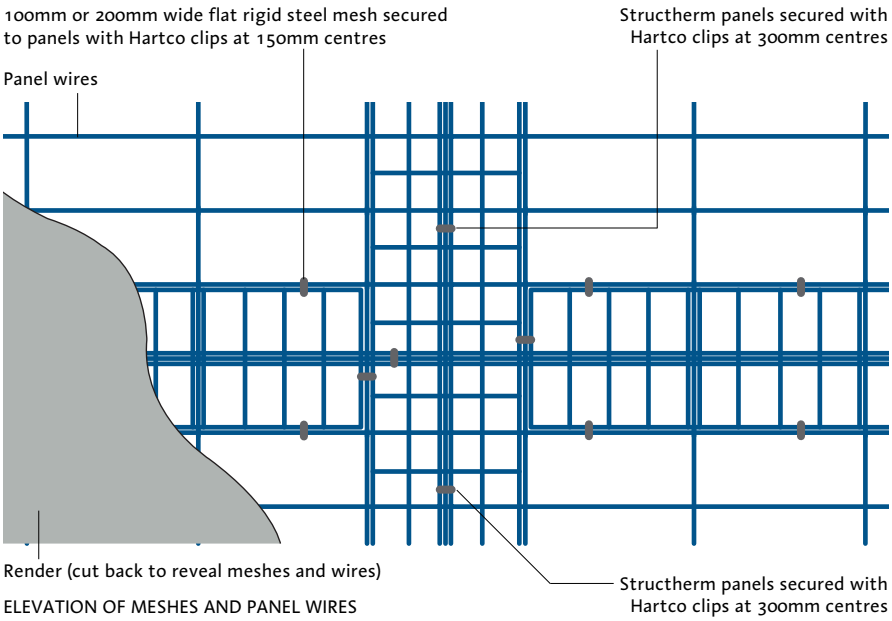
Adjacent Structural Insulated Cladding Panels are also connected to each other with cover mesh sections secured by pneumatically-applied clips providing structural continuity across the whole of the wall area. In addition, rigid angle meshes are applied vertically at corners and also around window and door reveals. These rigid angle meshes dispense with the need for exposed beads and, once rendered, ensure an unbroken, monolithic envelope to the building is achieved.

Consult Structherm's technical department for advice on the recommended proprietary fixings for a particular substrate.

## Method of finishing the panels

The panels are rendered insitu with a 24mm total thickness of fibre reinforced base coat and the client's choice of finishing coat. The panels are finished at the base with an epoxy powder coated, galvanised or stainless steel bellcast base trim, fixed back to the original substrate.

For render application principals and procedures, and the range of finishes available, refer to the Datasheet 'Renders and Finishes'.




Mesh fixing method for panel joint reinforcement

# Structherm | Structural Cladding

Certificate No: FM 84513

## Integrated design

The performance of windows, doors and roofs are considered in conjunction with the performance of the Structural Cladding System. This integrated design approach ensures that optimum environmental, structural and fire safety conditions are maintained throughout the life of the building.

With the use of Structherm's wide range of rendered finishes, the aesthetic appearance of the building is considered to be equally important in the integrated design approach. This concern for appearance extends to:

1. An early involvement in the facade design of new-build projects.
2. The re-use, upgrading or replacement of windows, doors, roof finishes and other components in refurbishment projects.

Extensive tests have also been carried out on the Structural Insulated Cladding Panels as part of the BBA accreditation to determine such characteristics as:

1. impact resistance.
2. resistance to the freeze/thaw cycle.
3. water permeability.
4. moisture resistance.
5. Racking capacity.
6. Flexural capacity.

System-built housing before refurbishment

System-built housing after refurbishment

## The Structherm service

Structherm offers a professional and thoroughly integrated service for clients and members of project teams at each stage of the building process, from initial concept through to completion.

Design and feasibility proposals, fully supported by highly skilled staff, form an essential part of the technical service, which includes:

1. **A detailed analysis of the structure to determine the optimum method for fixing the cladding panels back to the building, in terms of structural stability and cost.**
2. **CAD software dedicated to the generation of efficient cladding panel layouts and the correct choice of insulation and render systems.**
3. **Full specifications provided for the chosen application.**
4. **Risk assessments.**
5. **Structural calculations including detailed wind analysis are provided as submissions for building control approval.**
6. **Thermal calculations provided as submissions for building control approval.**
7. **Project cost plans.**

Architects are encouraged to make extensive use of the CAD service to improve the flow of information between drawings and specification.

A design service is offered for the replacement of elements such as doors, windows, canopies, and the conversion of flat to pitched roofs. In all cases, these changes are made to improve security, weather resistance and appearance.

A thorough assessment is made of the technical considerations involved in the conversion of redundant buildings to new uses, such as old industrial storage space into residential apartments.

## QUALITY ASSURANCE

Every project has an individual quality assurance procedure, supported by:

1. BS EN ISO 9001: 2000.
2. Professional indemnity insurance.
3. Product guarantee insurance.
4. A close working partnership with Approved Installation Contractors.

**For more information about Structherm products, please contact us or visit our website:**

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