CPD
Fibre cement cladding

WHAT YOU'LL LEARN
- WHERE FIBRE CEMENT CLADDING CAN BE USED
- THE ROLE IT PLAYS IN MEETING BUILDING REGULATIONS
- HOW IT CAN BE FIXED TO THE BUILDING

FIBRE CEMENT CLADDING GIVES BUILDINGS A HEALTHY OUTLOOK

Fibre cement's appearance and durability is establishing it as a versatile building envelope material, says Marley Eternity's **Ian Barclay**

UNIVERSITY CAMPUS SUFFOLK
Situated on the Ipswich quayside, the Waterfront Building was the first phase of the Ipswich Education Quarter redevelopment. A collaboration between the universities of Essex and East Anglia, the 10,500m² building operates as a Centre for Applied Sustainability and has strict policies in place with regard to the recycling of waste and energy efficiency. The building achieved a BREEAM 'excellent' sustainability rating.

The designers used Marley Eternit's Natura panels in various colours as a decorative rainscreen cladding. This type of cladding panel was chosen because of its aesthetic appearance, created by using a subtly tinted, semi-translucent coating that allows the texture of the fibre cement to show through.

Fibre cement is providing cladding solutions for a range of new-build projects, including commercial, residential and healthcare developments. Its practical and durable qualities, coupled with its striking visual appearance, are also helping to modernise existing buildings and create contemporary new landscapes.

Since it was first developed in the early 1900s, fibre cement has been used as both a decorative and protective material. The material is now gaining popularity as an alternative to masonry, timber, glass, PVCu and virtually all other forms of cladding.

Fibre cement is made from a mixture of Portland cement, organic fibres, fillers and water. A variety of cladding products made from fibre cement are available, each offering different qualities to suit the needs of a specific project. Boards are available in a range of sizes and colours. Some boards, such as Marley Eternit's Natura Pro, have through coloured-cores and offer a smooth, pure surface with subtly textured colours.

The strength and moisture-resistant qualities of fibre cement, plus the availability of large panel sizes of up to 3,100 x 1,250mm in thicknesses from 8mm to 12mm, make it an ideal rainscreen cladding material.

Choosing the right cladding option

Traditionally, cladding material choice is regarded as one of the most important elements in construction projects because it is such a visual part of the overall building. However, as well as its aesthetic properties, fibre cement can also meet the thermal, acoustic and maintenance criteria that specifiers now require from cladding.

Fibre cement cladding can play an integral role in meeting Building Regulations, for instance, Part C – 'Site preparation and moisture resistance' – which encompasses the weather resistance and watertightness requirements of a building. This often results in buildings being constructed using the rainscreen principle, which ensures that the outer shell remains weatherproof and the structure remains dry.

The rainscreen principle is not new. For centuries, Norwegians built their homes using back-ventilated claddings with closed and open joints. Gradually, on buildings with timber claddings, closed joints were adopted, and openings at both the top and the bottom of the cladding allowed for drainage and evaporation of any penetrating rainwater.

The first decorative rainscreen cladding systems, dating from the 1950s, featured open joints that were baffled to provide resist-

WESTON COLLEGE

This university campus development in Weston-super-Mare made use of two types of fibre cement cladding. Marley Eternit's Textura product was specified because the designers were looking for a highly glazed, granular surface that allowed rainwater to 'pearl' across the face of the sheet, reducing the possibility of staining.

Cedral Weatherboarding was used on other elements as the brief from Weston College was to create a flat panel facade to give an impression of modernity. Initially, timber weatherboarding had been specified for the school, but following a value engineering process and consideration of maintenance requirements, it was decided to change to fibre cement cladding because of the material's low maintenance and durability.

JOHN MADEJSKI ACADEMY

Wilkinson Eyre, architect for this academy in Reading, Berkshire, specified Marley Eternit's Natura Plus fibre cement cladding to provide a decorative rainscreen system. The cladding was used on the exterior and upper levels of three rectangular administration blocks as well as the academy's heart, an unheated ETFE covered street.

The project architect explains: 'We specified fibre cement cladding because it provided a practical, durable and adaptable design solution for both the external and internal cladding requirements.'

Fibre cement panels, such as Natura Plus, are preferred by many contractors because they can be cut on site, which helps during installation.

ance to water penetration. With the energy-saving measures required today, rear ventilated cladding systems are gaining increasing economic importance for old and new buildings alike.

Openings for ventilation should be provided at the base and top of the cladding area, and the base and top of any interruptions, for example windows or ring beams. These openings should be protected by mesh or purpose-built closures to prevent birds, vermin or insects from entering. Inlet and outlet gaps should be provided according to the following minimum:

- up to five storeys – 10mm thick;
- five to 15 storeys – 15mm thick;
- above 15 storeys – 20mm thick.

A clear minimum cavity of 30mm should be provided behind the cladding panels so that any moisture penetrating the various joints in the main cladding screen can be effectively removed by drainage. This uninterrupted ventilation path, which runs the full height of the cladding, is shown in this typical vertical section (right).

The role of regulations

Part L of the Building Regulations – 'Conservation of fuel and power' – is also focused on sustainability and improving the energy efficiency of buildings to help reduce carbon emissions. When suitable insulation is fitted in combination with a fibre cement facade, rainscreen cladding systems provide a thermally efficient building envelope.

The main variables to consider under Part L include:

- external envelope U-values for walls, roofs and floors;
- thermal bridging details;
- ventilation strategy for ensuring fresh air;
- airtightness.

Cladding has a vital role to play in ensuring compliance with this regulation. The well-documented 80% carbon reduction target by 2050 means that public sector buildings, such as new-build schools, must be built to a minimum BREEAM 'very good' rating. To achieve this rating, the building must be energy efficient, and as walls are one of the crucial elements affecting this, specifying fibre cement cladding in conjunction with insulation can ensure that the building meets the requirements of the legislation.

As legislation becomes more stringent, every element of a building's construction needs to be factored in at the design stage. As fibre cement is thermally efficient, fire resistant and an effective rainscreen cladding system, as well as being highly aesthetic and easy to fit, it is successfully meeting the needs of both contractors and clients.

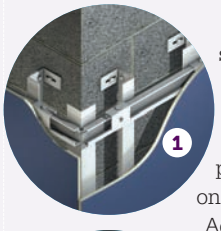
Panel fixings

The fixing method chosen can have a fundamental effect on the final appearance of the building. A secret fix method (1) will result in a sheer, smooth facade unobstructed by fixings. The SikaTack bonding method (2) uses structural adhesives to fix both internal and external cladding panels to a support framework and will bond to either timber or aluminium. The system uses a combination of double-sided tape and continuous beads of adhesive to fix the panels.

CLADDING HAS A VITAL ROLE TO PLAY IN ENSURING COMPLIANCE WITH PART L

Alternatively, there are mechanical secret fix systems available for use with Marley Eternit's Natura Pro, Natura Plus, Textura and Pictura fibre cement panels. Hangers are fixed to the rear of the 12mm thick cladding panels, which then hook onto horizontal rails, which in turn are fixed to vertical rails.

'Visible fixing' systems using screws and rivets provide an appearance somewhere between secret fix and edge retention. The smooth facade of the cladding will be punctuated by the heads of the rivets or screws, although, in practice, these low-profile fixings are virtually unnoticeable. The cladding rails, such as the Omega and Zed range (3), are made from aluminium as an alternative to timber, particularly where there is a requirement for non-combustible frameworks. They can be fixed directly to a concrete, brick or block wall, and a variety of panels can then be rivet-fixed to them.



Other visible fixing systems are available, including Marley Eternit's Ventisol, which can be adjusted to allow a true plane to be achieved easily on a new facade.

Additionally, fixing methods can be combined to create interesting detail. For example, a minimal amount of mechanical fixing can be combined with structural adhesive bonding.

Design for wind loading

The standard method in BS 6399-2 'Loading for buildings – code of practice for wind loads' – should be used to determine the basic wind speed of the site, which is then used to calculate the effective wind speed and dynamic wind pressure on the envelope, by applying a series of factors to account for terrain, topography, building height and length.

Once the wind forces on the structure have been determined, the spacing of the profiles and brackets can be calculated. Marley Eternit's Ventisol aluminium frame fixing system has been wind tested by the Building Research Establishment (BRE). **cm**

Ian Barclay is technical manager at Marley Eternit

CPD TEST PAPER

FIBRE CEMENT CLADDING

You've read the module, now complete the questionnaire (below). Fill in the form then photocopy and fax the page to the course administrators on 020 7560 4014. Complete the test online at www.construction-manager.co.uk/cpdjune09 or scan the completed questionnaire and email to cm.cpd@ubm.com. This address can also be used for all CPD-related queries. Tick one box only. Closing date is Friday 3 July.

1. The minimum recommended cavity behind cladding panels is:
- ☐ 10mm
- ☐ 20mm
- ☐ 30mm
- ☐ 40mm

2. Wind loads are dealt under which standard:
- ☐ BS 6399-2
- ☐ BS 6399-3
- ☐ BS 6148
- ☐ The European Wind Loading Code

3. The rainscreen principle was pioneered in:
- ☐ Sweden
- ☐ Denmark
- ☐ Norway
- ☐ Germany

4. Which of the following is not considered under Part L of the Building Regulations:
- ☐ External envelope U-values for walls, roofs and floors
- ☐ Airtightness
- ☐ Thermal bridging details
- ☐ The cladding fixing method

5. Public sector buildings must be built to a minimum BREEAM rating of:
- ☐ Very good
- ☐ Excellent
- ☐ Good
- ☐ Outstanding

PLEASE USE BLOCK CAPITALS (clarity is vital)

Name .....

Firm or practice name .....

Address .....

..... Post code .....

Telephone .....

Fax .....

Email .....

Unique reference code .....
(this number will be allocated upon your submission and should be quoted thereafter)

I require a new CPD passport ☐

Under which of the following job descriptions would you describe yourself (tick one box only):

☐ Project manager ☐ Site manager ☐ Architectural technologist
☐ Quantity surveyor ☐ Foreman ☐ Building surveyor

Other (please state): .....

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