



Associação Nacional dos Industriais de Prefabricação em Betão

CIRCULAR N.º 021/2010

Assunto: **Consulta PRODUTORES DE PAINÉIS - Apresentação de sistema de conectores**

Caros Associados produtores de painéis,

A ANIPB foi consultada pela empresa **Construction Systems Marketing Ltd.** de Bensheim (Alemanha) que quer introduzir no mercado português o **sistema de conectores THERMOMASS**, o qual é utilizado em painéis com isolamento térmico no interior. Este sistema de conectores é utilizado desde 1980 em diversos países da Europa e por todo o mundo. A vantagem é obterem um **painel livre de pontes térmicas**. O Sistema THERMOMASS foi utilizado em edifícios nos Estados Unidos para obtenção do certificado Green-Build.

Para tal, esta empresa estará nas instalações da ANIPB no dia 25 de Fevereiro às 14.30h para fazer uma apresentação aos nossos associados deste produto.

Caso estejam interessados em participar neste encontro agradecemos a confirmação da vossa presença até dia **18 de Fevereiro**.

Para informações adicionais, poderão entrar em contacto com a associação e/ou consultar o site www.thermomass.de.

Com os melhores cumprimentos,

A Secretária Técnica

(Ana Luísa Soares Pereira)

Lisboa, 05 de Fevereiro de 2010



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What is THERMOMASS®?

The THERMOMASS-System comprises of two components, namely the Fiber Composite THERMOMASS-Connectors and an EPS or XPS-Insulation.

French Building Permit-Nr.: 1/99-750

German Building Permit: Z-21.8-1878

United Kingdom: Uniclass: L344:N352 & EPIC: C241:46 & CI/SFB (21) Xf2 (M2)

Using the THERMOMASS Building Insulation System, a concrete wall can be insulated in a single operation, while maintaining over 99% of the insulation's R-value.



How do the connectors hold the wall together?

The notches in the flexible, high-strength connectors develop a keying action within the concrete wythes.

The pullout strengths of the embedded connectors are far greater than the forces experienced in normal loading conditions.



Cold Storage



Applications

All types of Temperature Controlled Buildings, e.g. Airports, Hospitals, Schools, Prisons, Industrial Production Halls, Cold Stores, Supermarkets and Residential Housing Projects.



What types of concrete finishes are possible?

It is up to the capabilities of your local wall producers. The THERMOMASS Building Insulation System can be used with any type of forming system, with or without form liners. Finishes can include natural concrete, paint, skim coat plaster, sandblasted, concrete exposed aggregate, colored concrete, thin brick or most forms of concrete treatment. Other materials may be secured to the wall with concrete anchors.

Advantages

THERMOMASS saves 50% or more on Labor Cost during the installation of the insulation and connecting the two concrete layers!

Production of bigger Panels, with fewer joints is possible

No Thermal Bridges, due to uninterrupted layer of insulation

No Cracking, due to the same coefficient of expansion as concrete.

Why use a fiber composite instead of steel?

The fiber composite rod used in the THERMOMASS Building Insulation System has a thermal conductivity of 0.469 W•mm/h•m²•K. This compares to values of 40.68 W•mm/h•m²•K for stainless steel and 81.59 W•mm/h•m²•K for mild steel, and 2.79 W•mm/h•m²•K for concrete, respectively. Therefore, THERMOMASS fiber composite connectors eliminate the material components that would otherwise create a thermal bridge.



A Thermography through an insulated sandwich panel with THERMOMASS

How does THERMOMASS differ from other insulated concrete wall systems?

The design of the system enhances the "purchased" R-value by eliminating thermal bridges otherwise created by highly conductive wythe ties and solid-thru concrete sections.



Thermography through a panel with traditional steel ties



What about other design considerations?

There is no limit to the design possibilities when casting a panel in a form. Reveals, rustication, embossed logos and dimples in the finish are just a few examples.



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Will solid concrete edges affect the panel?

Solid concrete edges will cause thermal bridges as discussed above. Perhaps more importantly, however, they will restrict the exterior face from moving independently of the interior face in response to temperature changes. This will create stresses within the exterior face resulting in non-structural cracking and may cause panel bowing.



What covers the exposed insulation at openings?

Window and doorjamb can be used to cover the insulation wherever possible. They should be attached to one (usually the interior) wythe of the panel. The other joint should be sealed with caulk to allow for movement. Other options are available through our technical department for specific conditions.



Who engineers the panels?

The connector system spacing is pre-engineered by Composite

Technologies Corporation. The structural capacity of the panel or structural wythe thickness should be determined by the project structural engineer.



Is the THERMOMASS system structurally proven?

THERMOMASS has proven itself in the laboratory and in the field. Construction Technology Laboratories (CTL) of Skokie, Illinois, performed flexural load tests on the basic wall configuration in 1984. Since then, years of successful application as well as additional structural and fire testing at CTL, Iowa State University, the University of Kaiserslautern, Stork Twin City Testing Corporation, and Southwest Research Institute have verified the outstanding structural capabilities of the THERMOMASS Building Insulation System.



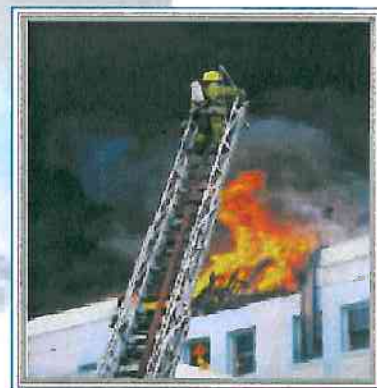
Ü – German Third Party Control Emblem

How do the connectors perform in fire?

A test performed at a leading fire testing agency in the United States subjected a panel constructed with THERMOMASS fiber composite connectors to 1900 °C (2000 °F) temperatures for 4 hours with no degradation. The temperature, measured on the surface of the wall opposite the fire, rose only 20.8 °C (37.6 °F) during the testing period. The standard for passing the test was a temperature rise of 121 °C (250 °F).

The THERMOMASS Building Insulation System actually improved the overall fire resistance of the wall versus a solid cast concrete wall.

In separate tests, THERMOMASS connectors installed in only 75 mm (3 in) of concrete were exposed to a standard time-temperature profile while subjected to high tensile loads. Even under these extreme conditions, the connectors withstood over one hour of fire exposure!



What are the applications of the THERMOMASS Building Insulation System?

Poured-In-Place - site cast, vertically formed

Precast - plant cast, horizontally formed

Prestressed - plant cast, including hollow core and double tees, horizontally formed

Tilt-Up - site cast, horizontally formed

Modular Precast - site or plant cast, 4 or 5-sided monolithic modules, vertically formed

Contact us for more information about THERMOMASS:

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