Twin-Therm®

Roof & Wall Cladding System

Building Products

www.cabuildingproducts.co.uk

Argos
Darlington
Twin-Therm® system in Colorcoat HPS200 Ultra®, Hamlet from Tata Steel.

If only everything in life was as reliable as... Twin-Therm®

Twin-Therm® is a site assembled roof and wall cladding system, and has proved itself to be a consistently reliable building envelope system since 1995. When finally installed the system is fully walkable and provides a tested Non-Fragile assembly, guaranteed U-values to **0.14W/m^{2}K**, air permeability tested as low as **1.03 m^3/hr/m^2** and up to a **40 year** full system guarantee.

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Matrix Inside

Simplicity

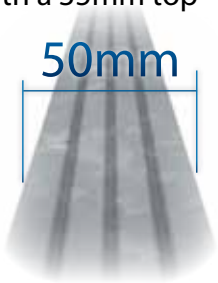
The beauty of Twin-Therm® is in its simplicity.

The system's design and installation method allows for the insulation to be installed continuously, minimising thermal bridging. The sealed liner panel acts as the vapour control layer, so there is no need to install a separate vapour control layer or breather membrane unless a Class 5 humidity construction is required.

The Matrix Spacer System

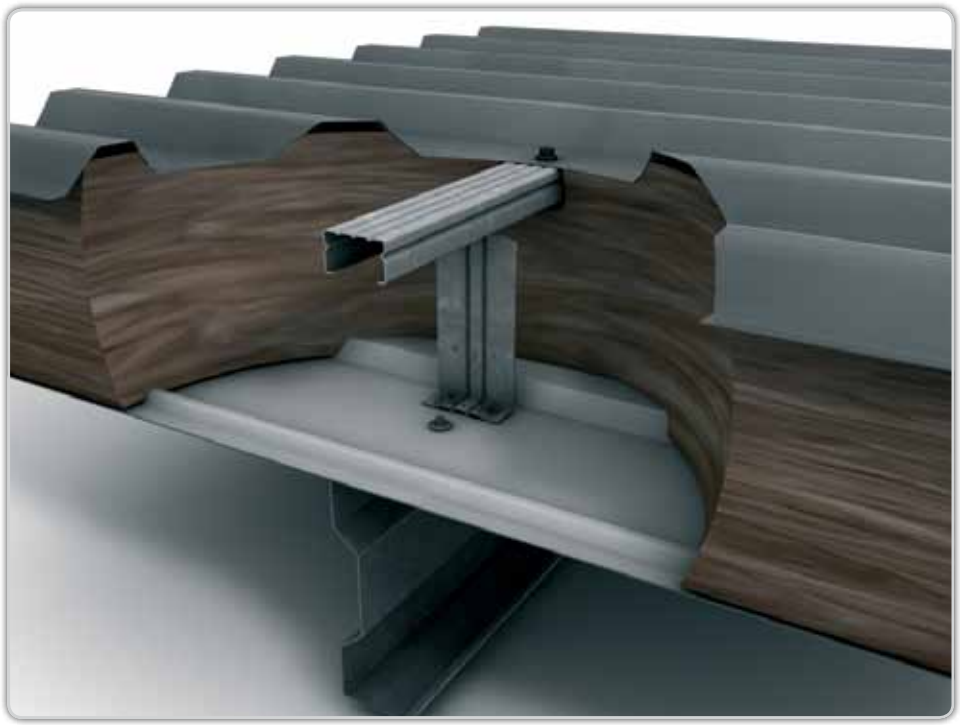
Introduced in 2010, the latest spacer system allows for deeper insulation and flexibility in design. All of the values with the original spacer have been maintained and the comprehensive testing regime at CERAM proved the structural value of Matrix.

Structural performance was one key aspect of the Matrix Spacer System. Practicality was also a key issue. The original Therma-bar started life with a 35mm top flange but due to many requests from installers this was increased to 50mm allowing them to virtually eliminate the number of misdrills that had been occurring. **The Matrix Bar has a 50mm top flange.**



Twin Therm® has allowed the ability to install the insulation below the bar without the need for cutting and tucking. This feature has been retained and the ability to install the brackets at typical 1200mm centres using 1200mm wide Man Made Mineral Fibre (MMMF) insulation makes this feature simple to apply.

Matrix Spacer System






Twin-Therm® Roof - CA LT 17 1000S liner			
U-value	*Bracket*	*Cavity*	*Insulation*
0.25 W/m²k	MSS-180	180 mm	TQ180 mm
0.20 W/m²k	MSS-220	220 mm	TQ220 mm
0.18 W/m²k	MSS-240	240 mm	TQ240 mm
0.15 W/m²k	MSS-280	280 mm	TQ280 mm

Download our interactive brochure to see what the Matrix Spacer System can do for you, visit: www.cagroup.ltd.uk/matrix

Twin-Therm® Roof - CA 32 1000RL liner			
U-value	*Bracket*	*Cavity*	*Insulation*
0.25 W/m²k	MSS-180	180 mm	TQ180 mm
0.20 W/m²k	MSS-220	220 mm	TQ220 mm
0.18 W/m²k	MSS-260	260 mm	TQ260 mm
0.15 W/m²k	MSS-300	300 mm	TQ300 mm

Truth behind the façade
Behind the aluminium panels of the Arc at Bury St Edmunds are Twin-Therm® walls

Flexibility

Twin-Therm® offers developers, specifiers and architects a cost effective roof and wall solution with a high degree of flexibility enabling the building designer to choose a profile that caters for their architectural need. Twin-Therm® is available in a number of trapezoidal, shadowline, arc and sinusoidal wall profiles, helping you take on any number of complex aesthetical design challenges. The Twin-Therm® system is available in the full range of pre-finished steel products including Colorcoat HPS200 Ultra® and Colorcoat Prisma® from Tata Steel (formerly Corus).

ProLogis Park
Kettering
Twin-Therm® system in Colorcoat HPS200 Ultra®, Goosewing Grey from Tata Steel.

Speed of Installation

Programme is critical. Reducing the site programme saves money. The ability to supply profiled sheets packed sequentially enables the roofing contractor to save an immense amount of time, reduces damage and improves efficiency.

The ability to line the building out using lightweight materials eliminates manual handling risks, creates a watertight, air tight platform that allows the main contractor to begin their internal work such as floor slab at the earliest opportunity. No cranes are required to lift panels into final position and this ensures that air tightness levels are significantly better than anything else available. The challenges faced by building designers and the construction teams to meet the aspirations of the latest changes in Part L are simplified by extremely low air leakage performance.

Practicality of Installation

The Twin-Therm® system is simple to install. No heavy individual components, eliminating risks of manual handling, both on the ground and at height. With many roofing products and components being well in excess of 20kg/m^2 the architect and building owner both have a responsibility for this issue. The Twin-Therm® liner panel is installed quickly and simply due to its low weight and provides a watertight and airtight barrier. The CA LT 17 1000S 0.4mm thick steel liner panel is classed as Non-Fragile (in accordance with ACR[M]001: 2005 'Tert for Non-Fragility of Profiled Sheeted Roofing Assemblies' third edition) but not walkable. In most applications this is the ideal solution as the thickness provides extreme flexibility to pick up where the secondary steel has settled. The CA 32 1000RL 0.7mm thick steel liner panel is both Non-Fragile and walkable. These two solutions in comparison to the ever increasing thicker sandwich panel options, which due to their rigidity are unable to pick up on the settled steel, provide superior air permeability results.

The insulation can be installed below the spacer, avoiding the need to cut and tuck, reducing the risk of any gaps in the insulation itself.

Right: BBC Media City under construction with Twin-Therm® as the backing to the Rainscreen. Combined the system achived 0.17m^3/hour/m^2 at 600 Pascals when tested.
Far Right: Completed Elevation

Media City
Manchester
For our case study on this project please visit our website

Royal Mail
Northampton
Twin-Therm® system in Colorcoat HPS200 Ultra®, Goosewing Grey from Tata Steel.

Structural Performance

Tested at CERAM the architect and structural engineers can have total confidence in the independent tested data available. Tested not only as a standalone system, but also as a complete roof cladding system validated by the BBA as a part of the Agrément Certification.

BBA BRITISH BOARD OF AGRÉMENT
CERTIFICATE No 07/4428


Matrix Spacer System undergoing testing at CERAM

Furthermore, all of CA Building Products profiles are CE marked and confirm the thickness specified, in accordance with BS EN 14782:2006. The problems associated with under tolerance steel are not an issue for CA Building Products.

CA Building Products

Air Permeability

Air Permeability, has been widely identified as the major source of heat loss from a building's interior. Heat loss not only contributes to higher building running costs but also increases unnecessary CO_2 emissions, due to the additional heating load required to replace it.

The critical element to achieve good air tightness is the flexibility of the cladding system in accommodating variances in steelwork tolerances.

Inadequately designed or poorly installed steelwork can deflect under its own weight or under the weight of the gutters and the cladding system connected to it. It is vital when considering a building's design to take into account the air tightness performance of the cladding system and its ability to accommodate a degree of flexibility. Reducing air permeability is a major factor in demonstrating compliance with the latest changes to Part L.

Without doubt poor air tightness will equal Part L failure. Good air permeability aids in delivering EPC ratings in Band A, providing high asset values and strong yields.

Part L 2010 states a minimum $10.0m^3/hr/m^2$ at 50Pa. The NCM (National Calculation Methodology) advises a minimum of $5.0m^3/hr/m^2$ at 50Pa but as we are finding out anything above $2.5m^3/hr/m^2$ is at risk of under performing.

Acoustic Performance Durability

Generally built up systems cut and tuck the insulation at the spacer bar allowing sound to be transmitted easily at and around the gaps. With this type of construction, typically a SRI weighted sound reduction (R_w) of approximately 32dB can be expected. Soft insulation such as Therma-quilt used in the CABP roof and wall cladding systems acts to dampen airborne vibration. Foam filled sandwich panels on the other hand perform differently. They allow sound to bridge through the construction. This is a serious weakness, which results in a typical sound reduction index of around 26-28dB.

Fixings also act as transmitters of sound and systems requiring fasteners from outside to inside perform badly.

CA Building Products have spent considerable time laboratory testing Twin-Therm® roof and wall cladding systems, with various constructions depths to establish a reasonable range of acoustic performance criteria to work with specifiers, clients, etc and acoustic consultants. For example the weight sound reduction (R_w) performance for Twin-Therm® roof and wall cladding in the table to the right.

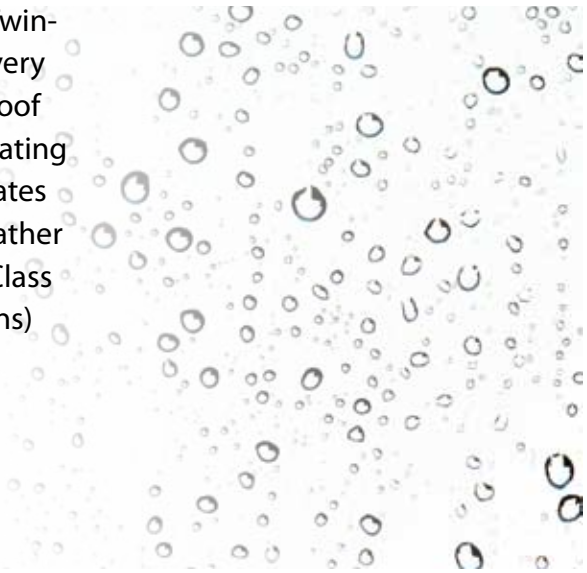
Standard Twin-Therm® 0.25 Roof System
42dB (CA LT 17 1000S x 0.4mm steel liner)
44dB (CA 32 1000RL x 0.7mm steel liner)
Standard Twin-Therm® 0.20 Roof System
46dB (CA 32 1000RL x 0.7mm steel liner)

For further information on different systems contact CA Group Technical Department.

Condensation Risk

The liner panel provides an extremely efficient air barrier. This greatly reduces the transfer of heat from inside to out and to further support the durability of the systems Therma-quilt insulation has every fibre coated with silicone to ensure that any moisture in the cavity is not absorbed but shed to the liner where it is either dissipated or taken out into the gutter.

With over 15 million m^2 of Twin-Therm® installed there are very few reported issues of the roof itself causing problems. Coating the fibres with silicone negates the need for a separate breather paper (except in humidity Class 5 (BS 5250:2002) applications) i.e. swimming pools.



CA Systems are Future Proof

If we are to offer meaningful 40 year guarantees for systems they have to be meaningful in their durability. Twin-Therm® is supported by a number of reputable, recognised third party organisations such as the LCPB and Warrington Fire. Many people have BBA Agrément certification for individual components but Twin-Therm® is supported by a BBA Agrément certification for the entire system.

Princess Yachts
Plymouth
The world's first Confidex Sustain® CarbonNeutral building envelope using Colorcoat HPS200 Ultra®

Guarantees That Warrant Your Attention

We know that when choosing a cladding system, confidence in its lifespan is a major factor. Unlike most suppliers of twin skin cladding, CA Group offer full system guarantees for up to 40 years on Twin-Therm®. The CA guarantee covers the manufacture and design of the whole system including all components supplied by CA Group, such as, screws, sealants, insulation, spacers, etc. This delivery is offered alongside the Tata Steel Confidex® Guarantee when specified using Colorcoat HPS200 Ultra® and Colorcoat Prisma® for peace of mind for up to 40 years.

Thermal Insulation

All Therma-quilt glass fibre insulation supplied as part of the Twin-Therm® roof and wall cladding system has every fibre coated with silicone to prevent moisture retention, is CE Marked, complies with the Lambda $_{90/90}$ whilst achieving zero ODP and zero GWP.
Glass fibre and rock fibre insulation trap air and it is this action which delivers the thermal performance. Air can move in, air can move out but the thermal performance cannot change unlike other insulations that trap gasses in the structure of the insulation which over time may leach, reducing the thermal performance during the life of the building or equally as bad keeping these gasses within the structure of the insulation, causing major disposal issues at the end of the life of the building. Another reason why Twin Therm® is future proof.

Distribution Centre
Thurrock

Fire - The Burning Issue

For years this debate has raged and recently the market has recognised that using man made mineral fibre is the only logical solution to providing a truly non-combustible solution.

Twin-Therm® has been tested by Loss Prevention Certification Board to LPS1181 and the insulation in its own right to BS 476 and is classified as non-combustible, delivering confidence to all and in particular to the tenant that in the event of a fire the insulation in their roof and wall will not contribute to the fire load. Many clients today are insisting that the roof, wall and internal gutters are all insulated in this manner to eliminate this critical risk.

Many wall cladding systems sold in the UK claim that they can protect a building from fire, but the majority of buildings are far from safe. Twin-Therm®, on the other hand, is made from non-combustible materials.

A standard Twin-Therm® wall provides 60 minutes structural integrity achieving LPS1181 EXT-B. This has been independently confirmed by Exova *warringtonfire*.

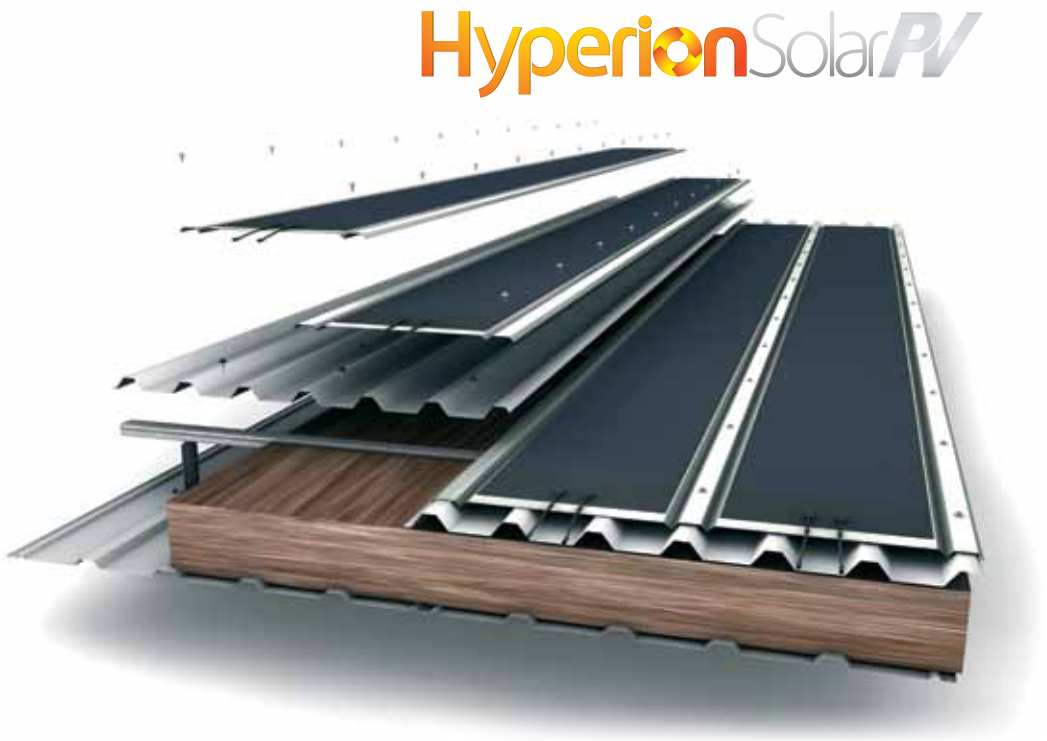
CA Building Products also offers dedicated FireWall solutions, the Twin-Therm® FW15 and FW30, which provides 240 minutes structural integrity & 15 minutes insulation (LPS1181 EXT-A15) / 30 minutes insulation (LPS1181 EXT-A30) respectively.

Twin-Therm® FW

PV or not PV?

We all know the future lies in green technology, but we appreciate that not everyone is ready for it yet. One of the benefits of Twin-Therm® is that it's PV ready when you are.

HyperionSolar PV panels can be secured directly to the Twin-Therm® external sheet and connected up in the usual manner. With both Twin-Therm® and River-Therm® systems the PV's can be retrofitted to an existing building, helping you meet new and upcoming government legislation.



When is a roof not a roof?

... when it's a mini power station!

Using HyperionSolar PV in conjunction with the Twin-Therm® roof system gives you the ability to not only reduce your building's energy costs but helps to generate a profit.

Below are some important notes to remember about using PV's:

1 ***Due to the weight*** of most PV's the structure should be checked to ensure it can take the proposed additional weight. HyperionSolar PV only adds circa 7.**5kg/m²**.

2 ***Mounting PV's on frames is extremely risky*** as the PV's themselves act as sails and could end up in fields around the building. Generally to overcome this PV's are either connected back through to the structure or are ballasted adding significant weight to the roof. **HyperionSolar PV does not require mounting frames.**

3 ***PV's generate heat*** and installed on a roof they are exposed to high temperatures. Ventilation is required to ensure they work at their designated operational temperature. Bonding PV's to the roof itself is not the best idea. **HyperionSolar PV eliminates this requirement as it is attached to its own metal tray.**

Putting Southern Elevations To Work

The Twin-Therm® system provides the perfect mounting solution for both photovoltaics on the roof, but also for renewables such as the SolarWall® Transpired Solar Collector (TSC) system on the elevations. The SolarWall® system is an innovative solar air heating system that utilises solar radiation to deliver naturally warmed fresh air into buildings. With no moving parts, minimal energy running costs and minimal CO_2 emissions, SolarWall® provides a truly renewable heat energy source with payback periods of as low as 3 years for new build and within 7 years for refurbishment projects.

The principle of SolarWall® is simple; installed as an additional skin to a building's southerly facing elevation, the system consists of a pre-finished, profiled steel sheet with thousands of tiny perforations uniformly spaced across the full face of the collector.

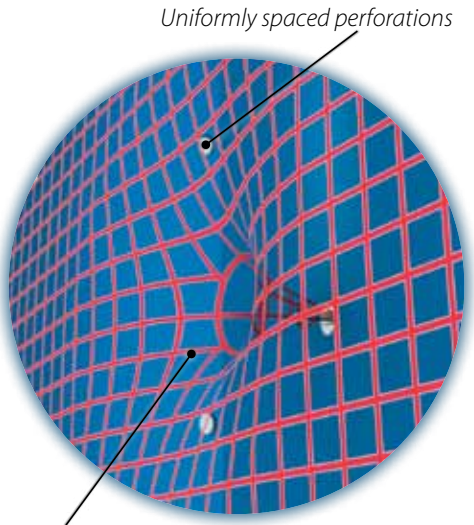
As solar radiation strikes the surface of the SolarWall® and is absorbed, solar heat conducts to the thermal boundary layer of air which lines the outer surface of the panel. This heated boundary layer of air is then drawn through the perforations into an air cavity which is created between the SolarWall® and the original elevation behind.
From the air cavity, the fresh, solar heated air can then be fed directly into the building as ventilation air, or ducted into a HVAC unit, where it can be used as a pre-heater for the building's main heating system.

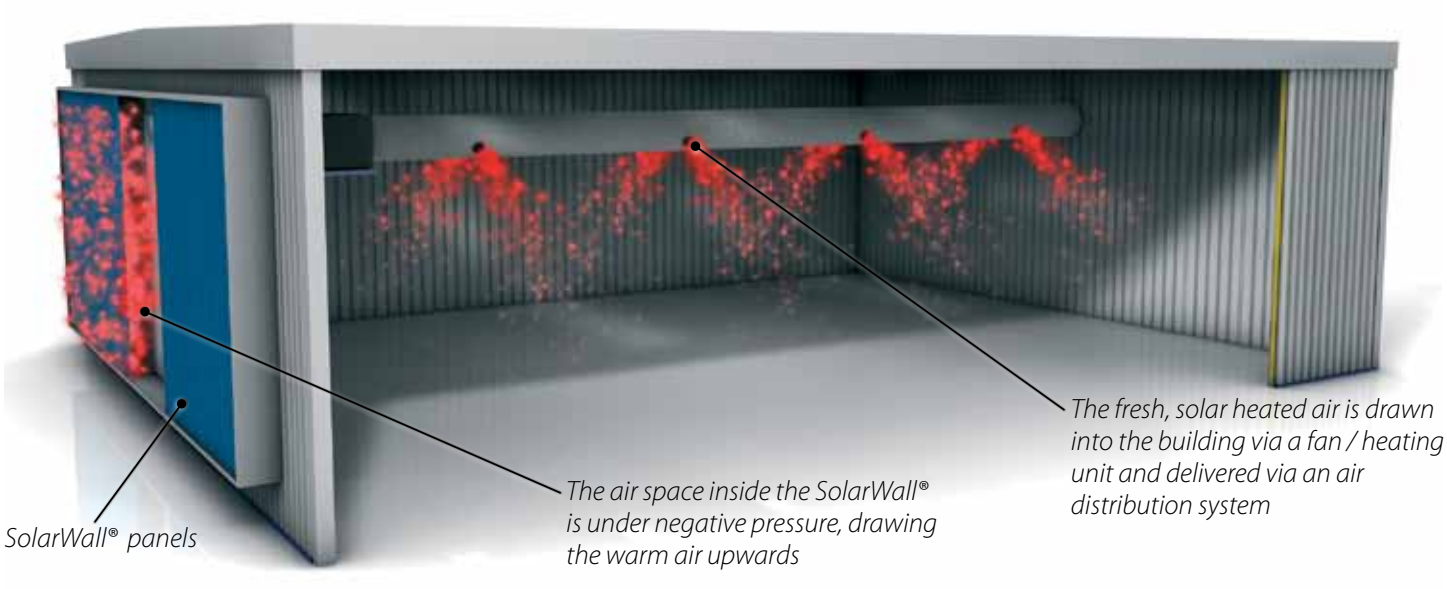
By introducing fresh, solar heated air into the building, the SolarWall® system can help to effectively eliminate internal negative pressure situations and heat stratification problems that can be associated with modern air tight constructions.

The SolarWall® TSC has been independently tested monitored, and proven by BSRIA to provide heating cost savings of 50% and an independently thermally modelled report by Battle McCarthy proved SolarWall® can provide up to 20% of a building's total energy requirement.

SolarWall® is recognised globally as a renewable energy technology and is included in iSBEM v4 and above.

On the surface of the SolarWall® Panel





Honest Environmental Credentials

CA Group, take responsibility for the environment seriously without any gimmicks or tokenism. All materials within the Twin-Therm® system are fully recyclable to enable low 'cradle to cradle' carbon footprint, with a net commercial benefit on scrap values at end of life. The Therma-quilt non-combustible insulation is supplied with zero Global Warming Potential and zero Ozone Depletion Potential that never utilises CFC's, HCFC's or VOC's in the production process. The system has a minimal environmental impact when being transported to site due to the amount of profiled material which can be transported in each load, this also reduces fuel costs.

The sustainable credentials of Twin-Therm® has been assessed as part of Tata Steel Confidex Sustain® when using Colorcoat Prisma® and Colorcoat HPS200 Ultra®. In addition to guaranteeing the performance of the pre-finished steel for up to 40 years, with no maintenance and inspection required to maintain its validity, Confidex Sustain®, provides a cradle to cradle CarbonNeutral building envelope.

Sustainability By Design

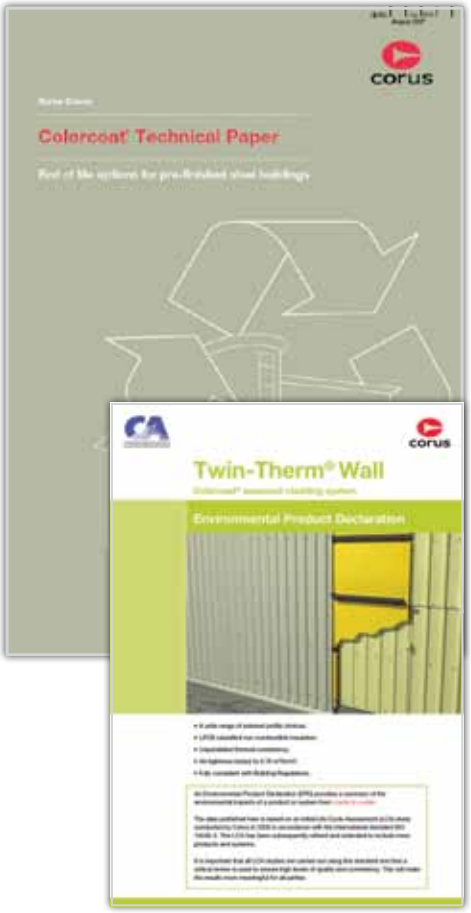
End of Life

Transportation has to consider not only delivery requirements at the beginning of a project but also at disposal.

It is at this stage as legislation has toughened that building running costs are recognised as punitive. The majority of systems supplied by CA Group are either reused ie. farm buildings etc, or sent back to the steel mill for recycling, the residue ie. insulation and fixings can either be reused as cavity wall insulation or sent to landfill at minimal cost.

A study by Tata Steel recognised the need to consider the disposability of early generation CFC blown foam filled panels. They have to be removed carefully from the building, cut into manageable sizes and shipped to the nearest refrigeration recycling facility for safe disposal and capture of potentially hazardous blowing agents. The end result is; costs to remove the panels from the building, costs to cut to size, costs to transport to the recycling centre and costs of the recycling centre itself. As pension funds and building owners begin to feel this pain and the impact it has on their return on investment they will begin to find a solution to these financial burdens.

CA Group understand the implications of the entire process from 'cradle to cradle' through production of Environmental Product Declarations (EPDs available as part of its assessment for Tata Steel Confidex Sustain®).



Twin-Therm® - Quick Reference

System Depths: Roofs

	System Depth	U-value
Minimum	80mm	0.60 W/m²k
Maximum	300mm	0.14 W/m²k

System Depths: Walls

	System Depth	U-value
Minimum	80mm	0.52 W/m²k
Maximum	300mm	0.14 W/m²k

Certification

- BBA Agrément certification (07/4428)
- Loss Prevention Certification Board (LPCB) rated systems LPS 1181, EXT-B roof and wall systems, EXT-A15 and EXT-A30 Firewall systems.
- Loss Prevention Certification Board (LPCB) certified non-combustible Therma-quilt insulation.
- Manufactured to BS EN ISO 9001.
- CE Marked Profiles.

Colours & Materials

The Twin-Therm® system profiled sheets are manufactured using Colorcoat® products from Tata Steel. Specify the Twin-Therm® system in Colorcoat HPS200 Ultra® for ultimate corrosion resistance and cut edge protection and a Confidex® Guarantee for up to 40 years, or Colorcoat Prisma® for a combination of durability and aesthetic appeal with time less style backed by a 30 year Confidex® Guarantee.

System Guarantees

Twin-Therm® System Guarantees		
12 Years	**25 Years**	**40 Years**

Acoustic Performance

Standard Twin-Therm® 0.25 Roof System	Standard Twin-Therm® 0.20 Roof System
42dB (CA LT 17 1000S x 0.4mm steel liner) **44dB** (CA 32 1000RL x 0.7mm steel liner)	**46dB** (CA 32 1000RL x 0.7mm steel liner)

CA Building Products have undergone extensive testing for various acoustic requirements. Please contact our technical department for information specific to your requirements

FireWall Options

TwinTherm	FW15	FW30
60 minutes integrity only **(LPCB EXT-B)**	240 minutes integrity & 15 minutes insulation **(LPCB EXT-A15)**	240 minutes integrity & 30 minutes insulation **(LPCB EXT-A30)**

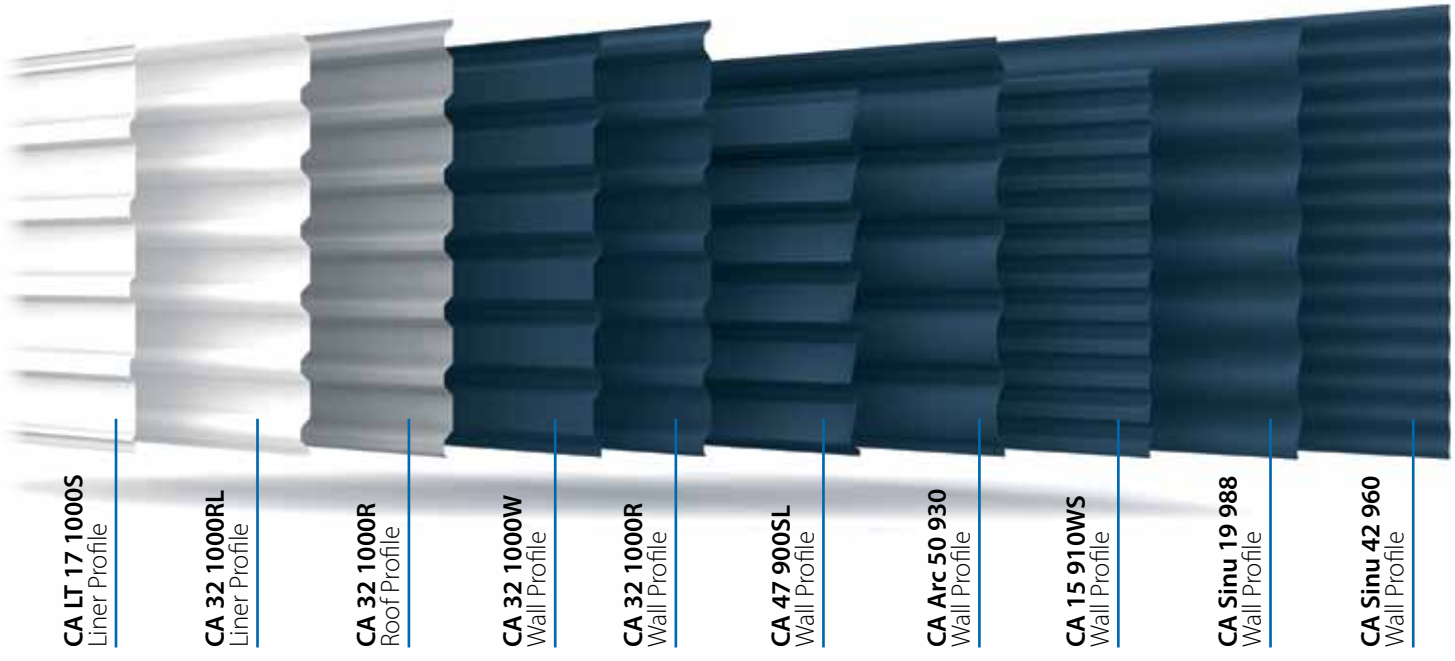
Renewables

The Twin-Therm® system has been designed to incorporate the addition of renewable technologies such as SolarWall® on the elevations and HyperionSolar PV on the roof.

SolarWall

HyperionSolarPV

Profiles



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Phone: 01388 83 42 42
Email: info@cagroup.ltd.uk
Website: www.cabuildingproducts.co.uk