THERMOSASH

PW1000 Unitised

HIGH PERFORMANCE CURTAINWALL





Thermosash Commercial Ltd

158 Central Park Drive, Henderson Auckland 0610, New Zealand

www.thermosash.co.nz



Who We Are

Over 50 years of dedication.

Half a century of engineering milestones, and we're just getting started.

Our journey commenced in 1973, in Auckland, New Zealand. Under the leadership of our founder, Mr. Laurie Hayes, we rapidly built our reputation. By 1990, we had become New Zealand's largest commercial window and curtainwall designer, manufacturer, and contracting company.

Our Expertise

Our core discipline revolves around the design and delivery of specific engineered prefabricated façades. It's in these complex undertakings that Thermosash truly excels.

Trusted by Industry Leaders

Over the years, we've collaborated with distinguished clients, including the University of Auckland, Precinct Properties, Kiwi Property, Newcrest, AUT, University of Canterbury, Victoria University, and Auckland and Wellington International Airports, among others. Their continued trust in us is a testament to the expertise we infuse into every facet of our specific design façade solutions.

Pushing Boundaries in Façade Engineering

At Thermosash, we thrive on pushing the boundaries of what's possible in façade engineering. We don't just meet the standards, we often exceed them. Our team of experts are constantly seeking new ways to elevate building envelope solutions.

Total Clad Solution

In response to New Zealand's seismic considerations and advancements in maintenance-free materials, we've focused on lightweight, fully integrated aluminium/glass and intergrated non vision panel cladding systems. This approach reduces structural dead-loads and provides flexibility for architects, façade consultants, and contractors, simplifying construction processes.

Proudly New Zealand-Owned and Operated

As a 100% New Zealand-owned and operated company, Thermosash has played a pivotal role in turning architectural concepts into buildings that enrich our cities. Our commitment to innovation and expertise drives us to provide world-class building envelope solutions in New Zealand and abroad.

A Part of the Thermosash Group

We are proud members of the Thermosash Group of Companies, which includes Thermosash Service & Maintenance, Woods Glass, and WEC Engineering & Testing. This collective strength allows us to offer comprehensive solutions.

Our State-of-the-Art Facility

Our main manufacturing unit, situated in Henderson, Auckland, boasts one of the most modern and technologically advanced operations in Australasia. Equipped with state-of-the-art automated machinery, this facility is the heart of our operations.

Quality Assurance and Compliance

Our commitment to delivering high-performance, quality unitised façade products extends to our comprehensive inspection and testing plan. This plan is a detailed roadmap that guides our efforts to ensure that every unit meets industry standards and your project's specific requirements.

Capacity and Engineering

Our vast manufacturing capacity, cutting-edge technology, and in-house engineering enable us to tackle multiple projects concurrently while maintaining precision and quality. Our engineers assess each design for structural integrity and compliance, ensuring high quality output at every step.



Our Unitised Facades offer the benefits of local off-site fabrication, modern construction techniques, and near limitless design possibilities...

bringing your boldest architectural visions to life whilst delivering practical benefits such as speed of installation, reduced risk, just-intime site delivery, and single point warranty.

Shape the future of urban design and aesthetics with a high performance Thermosash Unitised Facade solution. We have five decades of building envelope experience to bring to your table.

Our Aluminium is green to the core.

Thermosash is partnered with a NZ-owned extruder providing the lowest embodied carbon aluminium readily available in New Zealand*. The combination of high recycled content and low carbon virgin material forms the high quality extrusion that Thermosash uses.

*Achieving Toitū Carbonreduce certification which far out performs the global average. (Independent audits to stringent European standard PAS 2050 are regularly undertaken, please contact us for the most up to date carbonreduce CO2e/kg of aluminium figures).

Thermosash recycles 100% of all metal waste products produced during manufacturing operations.

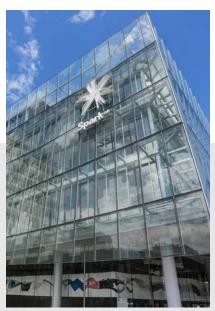
We exclusively use local powder coaters who have stringent chemical handling processes and reuse or responsibly dispose of all waste powder.



University of Auckland SCIENCE CENTRE (BUILDING 302)



Brandon House FEATHERSTONE ST. WELLINGTON



Spark HO CHRISTCHURCH

UNITISED CURTAINWALL

PW1000

The Thermosash PW1000 is a four sided structurally glazed curtainwall suite designed for highrise or lowrise applications where the project has large spans or large panes of glass requiring higher strength systems and improved average thermal performance (U-value). One of the advantages of this system is that it is flush glazed - utilising a mullion and transom system internally to hold the glass or other elements, whilst the surface is generally free from any visible aluminium structural elements, which reduces ongoing maintenance and increases durability.

The suite has been extensively used and proven in New Zealand and our export markets since 1985. Thermosash custom designs all suites to suit individual projects to maximise the efficiencies within the suite and often to accommodate added elements or unique building structures, large inter-storey building movements or floor heights - important for IL3/IL4 buildings. Our suites are extensively tested in our IANZ Accredited testing laboratory.



PRODUCT SUITE OPTIONS

UNITISED HIGH PERFORMANCE - NON THERMALLY BROKEN

PW1000

Mullion sizes: 75mm / 100mm / 150mm / 200mm

Thermosash has the ability, where necessary, to structurally supplement the sections when the suite is exposed to high floor to floor spans or high wind zones, thus potentially reducing the need for additional primary or secondary structure to be provided by the Main Contractor.

UNITISED HIGH PERFORMANCE - THERMALLY BROKEN

PW1000-TB160

Mullion size: 160mm

TPW1000-TB200

Mullion size: 200mm.

The thermally broken suites provide improved U Value performance by reducing transmittance of heat load and heat loss, and exceed industry codes for minimal air leakage. The suites also have integrated on-vision spandrel insulation.

UNITISED HIGH PERFORMANCE - THERMALLY IMPROVED

PW1000-TI160

Mullion size: 160mm

PRODUCT SPECIFICATION

MASTERSPEC

We recommend using Masterspec 4211TS Commercial Windows when specifying Thermosash PW1000 Unitised Curtainwall.

PRODUCT CAPABILITIES

MAXIMUM SPANNING ABILITY

The spanning ability will vary depending on the structural system and environmental loads (e.g. wind). Thermosash specifically engineers the best suite options to meet project requirements. Our suites are recognized as having the largest spanning systems on the market due to our specific engineering capability and the customised nature of the work we complete

INTEGRATED ELEMENTS

- A large variety of materials can be integrated into a unitised panel, including:
 - different glass types
 - metals
 - terracotta tiles
 - large format porcelain
 - glass reinforced concrete (GRC)
- brackets to receive externally mounted fins, louvres, Venetians, custom feature elements, or building signage
- The PW1000 can accommodate opening sashes suitable for highrise installations

UNITISED SYSTEMS CAPABILITIES INCLUDE

- Curtainwall systems
- Secondary Acoustic Glazing
- Thermal Systems
- Twin Skin Systems
- Seismic Systems
- Acoustic Systems

CAD DOWNLOADS

PW1000 CAD downloads are available from our website:

https://www.thermosash.co.nz/downloads-resources/cad-downloads/ curtainwall-downloads/unitised-high-performance/pw1000downloads/

PW1000-TB160 CAD downloads are available from our website:

https://www.thermosash.co.nz/downloads-resources/cad-downloads/ curtainwall-downloads/unitised-thermal-high-performance/pw1000tb-160mm-unitised-thermal-break-downloads/

PW1000-TB200 REVIT & CAD downloads are available from our website.

https://www.thermosash.co.nz/downloads-resources/cad-downloads/ curtainwall-downloads/unitised-thermal-high-performance/pw1000tb-200mm-unitised-thermal-break-downloads/



PRODUCT PERFORMANCE

KEY DESIGN FEATURES

- unitised panels are factory prefabricated and glazed.
- specifically engineered to accommodate the environmental conditions and design constraints of the project:
 - . accommodates building movements both vertical and horizontal (seismic).
 - . accommodates differential rates of thermal expansion and contraction.
 - connection details to accommodate construction tolerances.
- structural member strengths comply with Code or project specification.
- glass design and its integration with the glazing system to ensure glass warranties are complied with.
- rainscreen pressure equalisation all internal cavities are designed to have no pressure differential between the outside face and the inside face and any internal cavity. This allows any water that penetrates the rainscreen to drain and ventilate
- non-vision rainscreen system areas the rainscreen acts as a primary water-stop, the second rear airseal and cavity acts as a backup to collect and drain away water that manages to penetrate the primary barrier, with an integral structural backpan.
- sizing of modules is generally only limited by the project design requirements, economic considerations, transport and site crane installation limitations

PERFORMANCE TESTING

Thermosash owns and operates the largest facade testing facility in New Zealand where we test our systems and custom designed suites to ensure compliance with the below codes or project specific requirements.

Independently laboratory tested to IANZ (International Accreditation New Zealand)

B1/VM1 AS/NZS1170

Structural Design Actions

B2/AS1 Durability [based on in-service history]

F2 NZS4223

Glazing in Buildings

E2 NZS/AS4284:2008

Water / Air Pressure/ Air Leakage - exceeds minimum

requirements

THERMAL PERFORMANCE

The final performance of the curtainwall suite is subject to many variables, from size of individual panels, glass performance, introduction of transoms and integrated solar shading (where bracketing may cause a cold link passage) and spandrel depth (insulation).

Thermally Broken Suites: Polyamide

The polyamide thermal break is integrated into the aluminium framing to minimise thermal bridging, which is the transfer of heat through conductive materials. Polyamide is a low-conductivity material that significantly reduces heat flow, improving the facade's thermal performance and reducing energy consumption.

Our team of designers and engineers are able to review your project and advise around the best suite solution for your project's thermal performance requirements. Please contact us to discuss further.

AIRTIGHTNESS PERFORMANCE

The Thermosash PW1000 TB facade system was independently tested to the AS/NZS 4284 standard for air infiltration. The system achieved

an air leakage rate of less than $0.2 \text{ L/m}^2 \cdot \text{s}$ at a 150 Pa pressure differential (near zero), which is substantially better than the standard requirement of $1.6 \text{ L/m}^2 \cdot \text{s}$ set by AS/NZS 4284.

A lower air leakage rate means significantly less uncontrolled air movement through the building envelope. This reduces the loss of conditioned air, minimises drafts, and prevents the ingress of moisture-laden air leading to lower building energy consumption and reduced operational costs.

WATERTIGHNESS PERFORMANCE

Independently tested to AS/NZS 4284 standard for water penetration resistance. The system successfully withstood cyclic water test pressures of up to 2000Pa without any water penetration, significantly exceeding typical industry requirements.

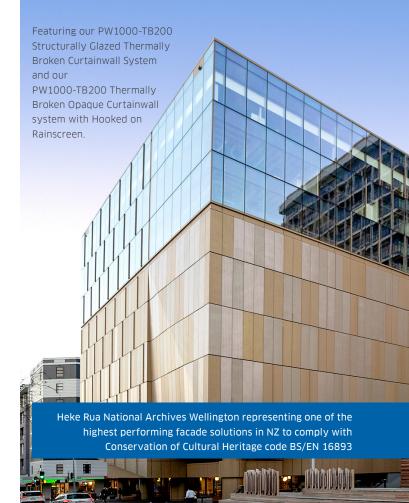
The facade's ability to withstand extreme weather events provides long-term protection for the building's contents while reducing maintenance requirements and potential remediation costs associated with water damage.

GLASS PERFORMANCE

It is important to note that the aluminium section alone does not provide the thermal performance often expected. Glass specification is a significant contributor to the overall mechanical performance requirement of a building. The larger the glass pane the better performing the panel will be on average. Thermosash has access to suppliers of low carbon high performance glazing and can deliver an integrate solution.

BUILDING CODE PERFORMANCE

Thermosash engineers to the specific design and performance requirements of each individual project in accordance with the relevant codes - see table on page 8.



ENGINEERING & FABRICATION

CUSTOM ENGINEERED SOLUTIONS

Thermosash design and detail the facade solution to meet the project demand for seismic risk, wind loads, climate zones, corrosion zones and building importance levels as well as aesthetics, unique site constraints and budgetary requirements. We have extensive experience in integrating our systems and products to deliver a total facade solution.

PRESSURE EQUALISED DESIGN

The weathering design of these curtainwall suites follows recognised international curtainwall design principles - rainscreen pressure equalisation and system drainage - which requires primary and secondary weathering.

All internal cavities of the system are designed to be pressure equalised (i.e. no pressure differential between the outside face and any internal cavity). This feature allows the water which penetrates the rainscreen to drain and maintain ventilation. The rear air seal is critical to the system's weathering performance as air infiltration acts as the medium which transports water through to the building's interior, i.e. it is the prime cause of any leakage.

Non-vision rainscreen areas act as a primary water-stop, the second airseal and cavity acts as a backup to collect and drain away any water that manages to penetrate the primary rainscreen barrier, with an integral structural backpan.

UNITISED PREFABRICATION

Our systems are precision prefabricated and glazed as unitised panels and elements at our manufacturing facilities in Auckland, Wellington and Christchurch. Products are stored and transported for just-in-time site delivery. - reducing on-site clutter.



INTENDED USE

CLASSIFICATION

- Clause A1 Building Use Classification:
- Housing, Communal residential, Communal non-residential, Commercial and Industrial
- Clause A3 Building Importance Levels from 1-5

BUILDING TYPE

- High-rise
- Mid-rise
- Low-rise
- Specific design

CONDITIONS OF USE

The PW1000 suite must be installed by an approved Thermosash installer. The architect, engineer or specifier must confirm all of the project requirements prior to fabrication, including but not limited to climate conditions, glass (mechanical, aesthetic, acoustic) selections, structural differential movement reports, performance requirements for glass and acoustics, surface finishes and hardware.

MATERIALS

MATERIAL COMPOSITION

Each project will have specific engineered and designed component solutions, fabricated in New Zealand and provided as a complete custom system, which incorporates common materials such as:

Aluminium, Steel, Glass, Structural Silicone, Gaskets, Neoprene Rubber, Nylon, Molybdenum Disulfide, and PVB Polyvinal Butyral.

MATERIAL GRADE

Alloy designation to comply with AS/NZS 1866. Extruded for anodising or powder coating. Aluminium extrusions from 6060 grade and with a Temper T6 alloy.

FINISH

Polyester powdercoat - both standard and special colours available. (Polyester powder organic coating in accordance with WGANZ PQAS and AS 3715, and AAMA 2604).

Anodised - all anodised colours available - commercial grade 20 Micron finish recommended

PVF2 Fluorocarbon finishes - available on request

FIXINGS

Fixings and fastenings exposed to the weather are type 316 or 304 stainless steel typically but other suitable fixings back to structure may be designed for specific project requirements complying with AS/NZS 4680.

Fixing gauge and length in accordance with Thermosash PS1 Design Producer Statement.

MAINTENANCE REQUIREMENTS

A maintenance manual is provided on completion of a project for all the elements integrated within a project. Compliance to a maintenance schedule is essential to maintaining the quality of the installed product over time. Using Thermosash-approved facade maintenance contractor/personnel ensures the highest standards are met.

It is recommended by almost all material suppliers that building washing should occur every 3-6 months to prevent staining to glass and prevent environmental pollutants from corroding metals and to maintain the material warranties.

WARRANTY

The standard warranty is 10 years from the date of practical completion for these products. This covers workmanship and weather tightness, providing the subcontract includes fabrication, installation and glazing of all components.

All warranties are subject to service and maintenance requirements.

SUSTAINABILITY

SUSTAINABLE MANUFACTURING

Thermosash manufactures all system components in New Zealand, and primarily source materials where available from the New Zealand market. Our precision machinery ensures optimised material usage with 100% of all metal waste products recycled in the factory, saving on-site waste. We recycle 100% uncontaminated soft plastics, timber, cardboard, paper and 99.5% commercial float glass and IGUs.

LOW CARBON ALUMINIUM EXTRUSIONS

Thermosash DecarbALTM delivers a super low sustainable embodied carbon footprint per kilogram of aluminium. At the heart of Thermosash's sustainability journey is a partnership with a local New Zealand owned remelt facility producing extrusions with 80% recycled content and low carbon virgin material. Our aluminium supplier is audited annually, for up to date carbon figures please contact us.

LOW CARBON GLASS

Thermosash's commitment to sustainability also extends to our glass selection. With access to worldwide low-carbon glass suppliers, we ensure that our projects benefit from environmentally friendly and high performance glazing options, further reducing the carbon footprint

FACADE OPTIMISATION STRATEGIES

To achieve optimised high performance outcomes we offer our clients the option of a Project Sustainability Analysis that covers different aspects of the full sustainability cycle. When specifying our facade systems, clients can engage us to implement one or several of our Facade Optimisation Strategies to achieve their project sustainability goals. To gain the most from our strategies, talk to us early on in the design phase of your project.

Our Thermosash Sustainability Team can assess and provide analysis reports on embodied and operational carbon engineering optimisation and costs, energy and comfort optimisation and costs, as well as assistance with Green Star credits - these strategies help to guide material selection, shape a more efficient design and provide clarity on ROI payback periods.

REDUCTION OF OPERATIONAL EMISSIONS

Through a full measurement and target reductions audit undertaken by Toitū Envirocare, Thermosash Commercial Ltd achieved Carbonreduce Certification. This provides a baseline for subsequent emission reduction targets going forwards. Please contact us for up to date certification figures.

BENEFITS

Thermosash is a New Zealand based business and has been engineering and manufacturing specific design facade solutions across the country since 1973. We deliver solutions using our trusted and proven systems, offering increased value in terms of;

- 50 years of experience and expertise in the facade solutions industry in New Zealand
- ongoing trust within the industry
- high performance solutions
- durability of systems and longevity of product lifespan
- totally integrated service with ECI /ECE engineering, producer statement generation, full shop drawings, manufacture and installation.
- · design and detail to accommodate seismic loads and inter-storey differential movement, as well as wind loads
- Risk mitigation through one provider construction methodology and one warranty.

UNITISED SYSTEM ADVANTAGES

- Off-site fabrication and glazing
- Quality assurance controlled within a factory environment
- Speeds up site installation process due to modular construction enclosing buildings rapidly and reducing onsite programme time
- Reduces on-site delays related to inclement weather fabrication can continue even if site falls behind Unitised panels can be stored on completed floors in loading crates ready for installation
- Dramatically reduces scaffold and crane requirements
- · Specifically engineered to accommodate environmental conditions and design constraints of the project
- Can incorporate a variety of cladding materials and integrated elements

COST SAVINGS

- Reduced number of junctions with other trades if Thermosash engineers, manufactures and installs the building envelope elements such
 as curtainwall, glazed and non-vision unitised panels, rainscreen, skylights, mechanical air louvres, solar shading and integrated elements,
 architectural metal folding, canopies, balustrades, flashings etc.
- · Reduced number of council inspections during construction and possible delays, saving on compliance costs
- Specifically designed and engineered facade solutions that offer high performance and durability which contribute to cost savings on energy and maintenance over the lifespan of the building.

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BUILDING CODE	DEMONSTRATION OF COMPLIANCE
B1 STRUCTURE	COMPLIANCE BY B1/VM1 Compliance with B1 is shown by way of engineering calculations and/or testing, and reports are attached to the compliance pathway submission.
B2 DURABILITY	 ACCEPTABLE SOLUTIONS B2/AS1 There are no Acceptable Solutions available for aluminium and steel, and protection is provided through surface treatment in accordance with: AS/NZS 2312:2014 - Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings. AAMA 2605-05 - Voluntary specification, performance requirements and test procedures for superior performing organic coatings on aluminium extrusions and panels. AS 37155:2002 - Metal finishing thermoset powder coatings for architectural applications of aluminium and aluminium alloys. AS 1231:2000 - Aluminium and aluminium alloys - anodic oxidation coatings. WANZ - Specification for powder coatings on architectural aluminium products. SNZ TS 3404:2018 - Durability requirements for steel structures and components COMPLIANCE BY B2/VM1 All elements of the Thermosash product/system are specified by Thermosash to (with only normal maintenance) satisfy the performance requirements of the Building Code for 5 years (Surface Finish), 15 years (System), 50 years (Fixings/Connections) as appropriate. Generally, all elements are designed from aluminium. Where engineering requirements demand stronger materials stainless steel (304 or 316 as appropriate), or steel (coated to SNZ TS 3404:2018) will be used.
C3 FIRE affecting areas beyond the source	COMPLIANCE IF APPLICABLE
E2 EXTERNAL MOISTURE	COMPLIANCE BY E2 ALTERNATIVE SOLUTIONS Compliance of E2 Alternative solution testing to AS/NZS4284 and good practice detailing as shown by way of testing, and test results are attached to every compliance pathway submission. Any complex/high-risk details that arise will be checked specifically for weather tightness by our in-house Producer Statement Author following best practice design principles, making use of pressure-equalised drained cavities and specialist expertise and experience. If required by the Client's Peer Reviewer, Thermosash can complete QA/QC site water testing in accordance with the following: AAMA 501.2 test - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems (for fixed elements).
F2 HAZARDOUS MATERIALS	COMPLIANCE BY F2/AS1 NZS4223.3 There are no hazardous materials except glass within our systems. Compliance with F2 Hazardous Materials for glass is shown by compliance with NZS4223.3 or specific design (occasionally terracotta tiles or porcelain stone may be integrated).
F4 SAFETY FROM FALLING	COMPLIANCE BY NZ/AS 1170.1 Thermosash follows the safety in design intent on the architectural drawings and designs the doors/ windows/curtainwall/ balustrading for C3 barrier loads where protecting a fall greater than 1 m (NZS/ AS 1170.1 Table 3.3). Thermosash's responsibility is limited to the door/window/curtainwall.and balustrading - where integrated into our package.
G4 VENTILATIONS	COMPLIANCE IF APPLICABLE
G7 NATURAL LIGHT	COMPLIANCE IF APPLICABLE
H1 ENERGY EFFICIENCY	COMPLIANCE IF APPLICABLE

NOTE: THIS BROCHURE CONTAINS A SUMMARISED VERSION OF BUILDING PRODUCT INFORMATION REQUIREMENTS (BPIR) CLASS 2 DISCLOSURE INFORMATION - OUR COMPREHENSIVE DOCUMENTS CAN BE DOWNLOADED FROM:

HTTPS://WWW.THERMOSASH.CO.NZ/DOWNLOADS-RESOURCES/BPIR-DOCUMENTS/

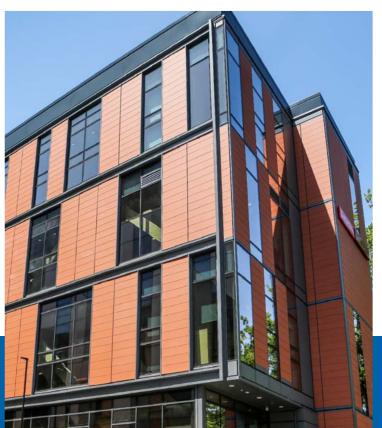




Tākina Wellington Convention and Exhibition Centre is a sustainable 5-Green Star building featuring Thermosash PW1000 Unitised curtainwall comprising of 1000 individual panels made up of 1500 pieces of SEFAR* glass.



Te Ao Nui (IL4) Building in Palmerston North - PW1000 integrated with solar shading, and cladding (plank / folded sheet metal / fixed rainscreen systems)



 ${\tt UOC\ Beatrice\ Tinsley\ Building\ -\ PW1000\ integrated\ with\ terracotta\ tiles}$



Paragon Apartments, CHCH - PW1000 integrated with large format porcelain



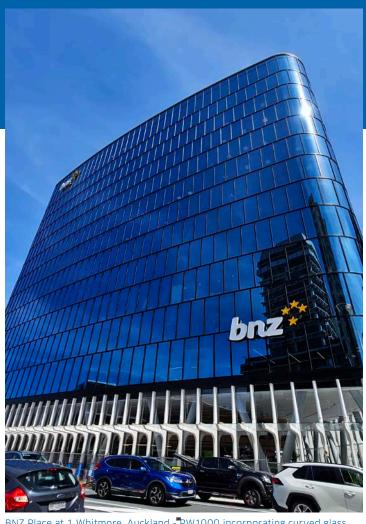
Cordis Hotel, Auckland - PW1000 Unitised Structurally Glazed Curtainwall



Project Hauata offices for ACC, Hamilton - PW1000 with integrated vertical box louvre fins, and horizontal solar shade louvres.



Taranaki Base Hospital (NEWB) - PW1000 Unitised Curtainwall and integrated Aluminium Plank cladding with a variety of different profiles.



BNZ Place at 1 Whitmore, Auckland - PW1000 incorporating curved glass



CAB Apartments, Auckland - PW1000 integrated with vents and louvres.



UOO Dental School, Walsh Building - PW1000 replicating the pattern and colour of the original 1960s design to maintain the connection to the iconic past facade.



 ${\sf FMG} \ {\sf Building} \ {\sf situated} \ {\sf at} \ {\sf Christchurch} \ {\sf Airport} \ {\sf -PW1000} \ {\sf integrated} \ {\sf with} \ {\sf custom} \ {\sf feature} \ {\sf fins}.$

THERMOSASH CURTAINWALL PRODUCT RANGE

THERMOSASH SYSTEM	UNITISED	COMMERCIAL	HIGHRISE	LOWRISE	THERMAL BROKEN	THERMAL	SEISMIC OPTIONAL	ACOUSTIC OPTIONAL	TWINSKIN OPTIONAL	SECONDARY GLAZING / JOCKEY SASH OPTIONAL
UNITISED										
PW1000	•	•	•	•		•	•	•	•	•
PW1000 - TB200	•	•	•	•	•		•	•	•	•
PW1000 - TB160	•	•	•	•	•		•	•	•	•
PW800	•	•	•	•			•	•	•	•
PW600	•	•	•	•			•	•	•	•
PW400	•	•	•	•			•	•	•	•
PW400 - TB160	•	•	•	•	•		•	•	•	•
PW100	•	•		•			•	•	•	•
PW80	•	•		•			•	•	•	•
PW60	•	•		•			•	•	•	•
PW40	•	•		•			•	•	•	•
DELTA	•	•	•	•			•	•		•
DELTA - TB50	•	•	•	•	•		•	•		•
STICKWALL										
CW800		•		•		•	•	•	•	•
CW600		•		•		•	•	•	•	•
CW400		•		•		•	•	•	•	•
CW40		•		•		•	•	•	•	•

OUR BRANCHES

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Thermosash are members of:



