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WEATHERPRO®-PLUS
FIBRE CEMENT FAÇADE MATERIALS

ECOBUILDS

ZenPlus

SELF-VENTILATING FAÇADE

Design & Installation Manual

SOBEN INTERNATIONAL
High Performance Building Boards & Solutions for Sustainable Construction

Building With Confidence

A new benchmark for eco-friendly autoclaved cellulose fibre reinforced silicate matrix boards

Few versatile performance building boards offer both architectural envelope and strong technical specification as credible as the Soben International premium product range of eco-friendly autoclaved cellulose fibre reinforced silicate matrix boards. The line includes: fire protection calcium silicate boards, weather resistant fibre-cement boards and prefabricated panels. Since its establishment, Soben International has been a pre-eminent developer and manufacturer of high quality eco-friendly silicate matrix board solutions and has set a new benchmark for comparable products made in Asia.

With extensive product research and testing, our areas of expertise are sophisticated building solutions that tackle fire protection, multi-purpose constructions, façades and claddings where aesthetic finish and quality are of paramount importance.

Soben International high performance boards have been fully tested and certified by first class accredited laboratories and third party certification bodies to testify our commitment to performance, delivery of quality, and health and safety.

STRIVING FOR QUALITY PRODUCTS & PROFESSIONAL EXCELLENCE

FIRE-SAFE

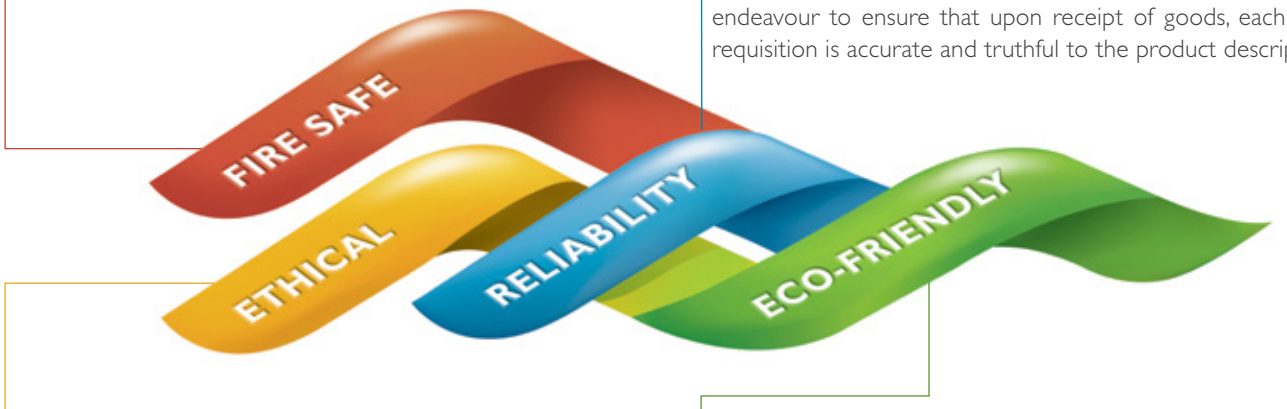
Soben International Boards are prime protectants against fire damage. The range's high levels of fire resistance has been thoroughly tested and certified by official European laboratories.

RELIABILITY

The Soben International team is dedicated to retaining an excellent Client Services department to ensure your needs are adhered to quickly and effectively.

Quality Control and Quality Assurance programmes are in place in all Soben International divisions to guarantee that all orders of our fully tested products and solutions follow their ISO 9001, 14001 and CE Mark standards.

Soben International's customer service team is tasked with the primary goal of providing punctual delivery of shipments and endeavour to ensure that upon receipt of goods, each client's requisition is accurate and truthful to the product description.



ETHICAL

Soben International places great onus on the preservation of good practice and professional conduct at all stages of the supply chain. This is upheld from the manufacturing process to the delivery of goods and throughout all communication with stakeholders and clientele.

ECO-FRIENDLY

Standing at the forefront of environmental innovation, Soben International is committed to sustaining and developing a commendable CSR record. Our solutions for eco building and sustainable development projects have all been certified by the appropriate Green Label authorities.

DISCLAIMER

Please ensure that you have the latest version of this publication by checking that the publication date corresponds with the downloadable version from our website www.sobenboard.com. In case of doubt, please contact your local Soben International representative.

All information contained in this brochure is, to the best of our knowledge, correct at the time of printing. Soben International shall be under no liability whatsoever any loss or damages which may arise as a result of the failure to adhere to such recommendations in all aspects. Nothings in these Conditions, nor any compendiums, brochures, instructions, method statements or other documents or designs issued by or on behalf of Soben International shall create or to be deemed to create any obligation.

Soben International has a policy of continuous improvement and reserves the right to change specifications, designs of products and systems at any time without prior notice. Local authority must be consulted for compliance with local building regulations.

REGISTERED TRADE MARK

WeatherPro® is the registered trade name for the product of Soben International

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WEATHERPRO®-PLUS CLADDING
ZenPlus Self-ventilating Façade System

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WEATHERRPRO® FIBRE CEMENT CLADDING

Soben International has been a pre-eminent developer and manufacturer of high quality eco-friendly silicate matrix solutions for Façades, Eco-builds and Passive Fire Protections for buildings. WeatherPro® is the registered trade mark for our sophisticated fibre cement cladding board products. With state-of-heart technology in fibre cement production makes WeatherPro® cladding board products having inborn robust characters of resistance to extreme weather that conforms Category A of EN 12467 among AS 2908.2 Type A and ASTM C 1185. The Category A durability tests ensure the installed fibre cement facade is able to endure hot, high moisture and severe frost environments. WeatherPro® cladding board products are good at fire resistance. They are non-combustible in compliance with Euro class A1 of EN 13501-1, BS 476: Part 4 and AS/NZS 3837. For further details, please contact Soben International Sales Team.

ZENPLUS FAÇADE BOARD

Eco-friendly ZenPlus façade board demonstrates the inherent merits of WeatherPro® fibre cement cladding board. Natural colour hue from inside to out is consistent within ZenPlus compressed through coloured fibre cement façade board inspiring a sense of peace and natural touch. The natural subtle fibre cement matrix variations remain visible. The façade board comes with "RAW" or "LINES" stylish finish and is treated with a transparent hydrophobic coating which prevents of intaking excessive moisture. It also reduces dirt and dust retained on the façade surface resulting in low-maintenance.

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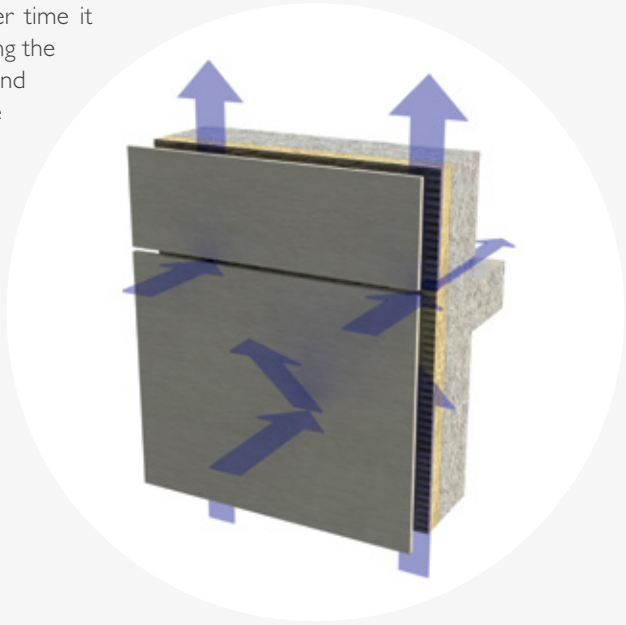
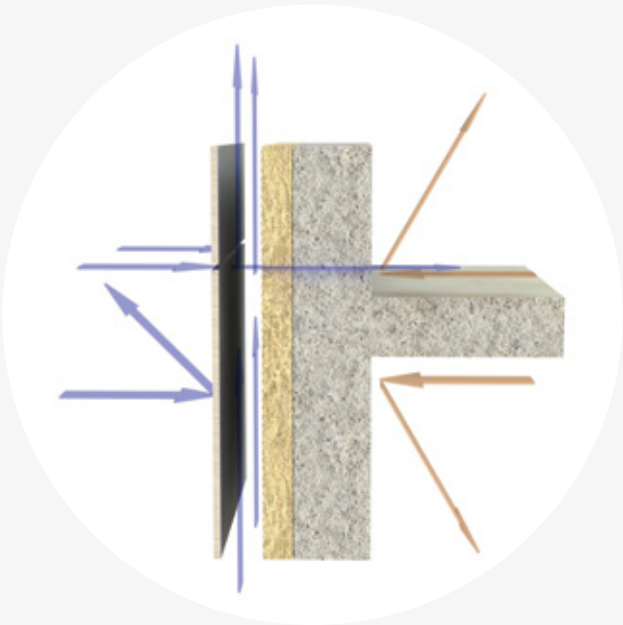
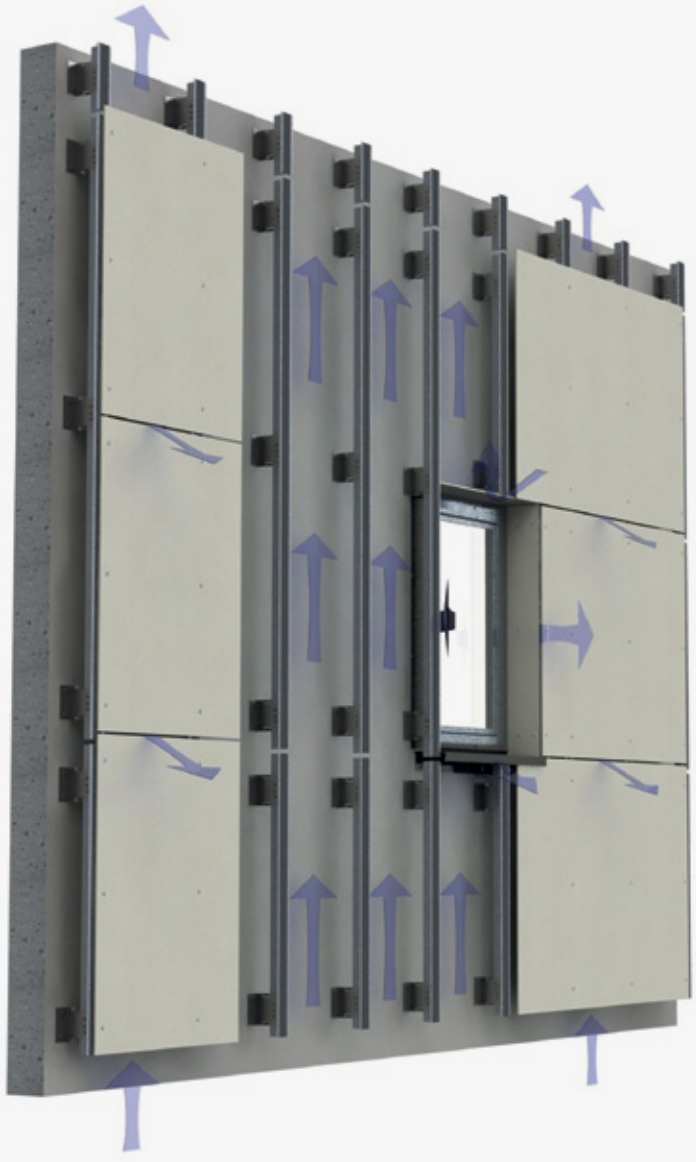
BENEFITS

ZENPLUS SELF-VENTILATING FAÇADE SYSTEM (RAIN SCREEN)

A self-ventilating façade brings forth economic importance and good weather insulation to old and new buildings. It helps to improve energy saving of the building and entails comfort space for occupants. A ventilated façade system behind creates a cavity (air gap) allowing free air movement through the system that minimises temperature variations and condensation in the external wall throughout the year. In the winter time it keeps the building warm and the cold air is prevented from outside affecting the building. In summer the ventilated façade has a cooling effect. Sunlight and heat are reflected away from the building. In the rain season. The façade board as a rain screen shields the external wall from direct rain. Rainwater penetration through the open board joints may occur. Nevertheless, the ventilated cavity eliminates the remainder of rainwater and moisture by natural drainage and evaporation through the open board joints and vents at the bottom and the top. This enables effective free air flow in the cavity and keep the external wall surface dry.







PRINCIPLE OF HUMIDITY AND TEMPERATURE CONTROL BY THE VENTILATED FAÇADE SYSTEM

GENERAL SPECIFICATION

CONSIDERATIONS FOR INSTALLING ZENPLUS SELF-VENTILATING FAÇADE

A self-ventilating façade system as an outer skin is installed at a building to defend hostile weather every day. A number of crucial criteria for a proper installation should be considered so as to maintain longevity of the system, safety of occupants and the public.

Supporting Construction	ZenPlus façade boards are mounted on a framework support system which should be fastened to loadbearing structures in compliance with the local building standards and code of practice.
Framework	Most popular frameworks for façade installation at high rise buildings make use of extruded high strength aluminum profiles because of high workability and ease of application. There are many good proprietary extruded aluminum framework systems available in the market. Besides, cold form steel sections and structural grade timber battens are commonly used in some countries. Whichever kind of framework is applied for supporting ZenPlus façade boards, the support should comply with local standards and must be designed by local qualified professional engineers.
Wind Load	Wind loads are subject to change due to building height and topography of building site location. A façade system should be able to resist wind loads in compliance with local standards and must be designed by local qualified professional engineers.
Thermal Insulation	Thermal Insulation barrier may be fitted into the ZenPlus self-ventilating façade system if needed. Fire resistance performance of various insulation materials may be of great different. It is recommended that stone wool thermal insulation is applied. The stone wool must be non-combustible to BS 476: Part 4 or equivalent; for instance, European Classification A1 of EN 13501-1.
Fire Resistance	Non-combustible façade board material helps to prevent fire spread from building inside to building exterior and subsequent to adjoined buildings. ZenPlus façade board is specially made for fire resistance in compliance with BS 476: Part 4, Euro Class A1 of EN 13501-1 and Building Code of Australia.
Weather Resistance	Fibre cement façade boards should be able to tolerate severe weather changes over time. The European Standard EN 12467: Classification of fibre cement sheet - "Category A" has been developed for serviceability and durability purposes. These standard tests affirm reliability of a good fibre cement board suitably applied in the weather of heat, high moisture and severe frost. Strictly following these criteria, uncompromising quality of ZenPlus façade fosters itself be able to serve in any kinds of weather. The board also conforms durability standard of AS/NZS 2908.2 and ASTM C1185.
Façade Movement	Sunlight heat, cold, snow or humid weather would result façade boards with invisible thermal or hygroscopic movement. Allowance for board movement is crucially keeping longevity of the façade system. Installing ZenPlus façade board system should be strictly followed to the instructions of this technical manual, relevant product documents and local building codes of practice.
Acoustic Insulation	A building with ZenPlus façade system that will enhance sound insulation of the building. Please contact Soben International for further information.
Building Wrap	Building wrap acts as a water-resistive barrier for the exterior wall envelop. It blocks liquid water from entering the wall assembly, allows water vapour to escape from the wall cavity, and seals the building to reduce air infiltration. If an existing external brick wall cannot be acted as a water-resistive barrier, a building wrap should be applied on the brick wall prior to cladding installation.

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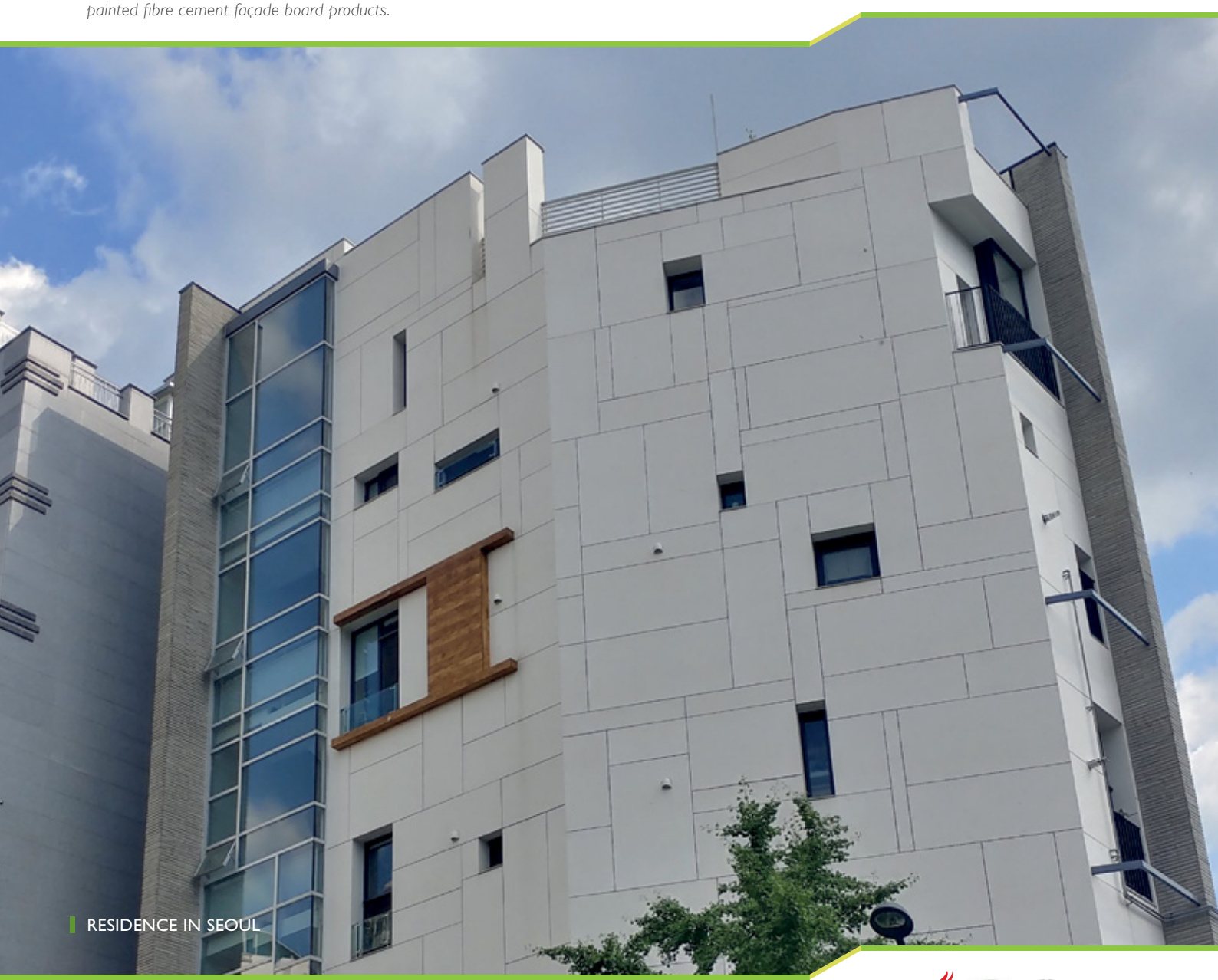
GENERAL SPECIFICATION

Fastener	Screws or blind rivet fasteners for fixing ZenPlus facade boards should be rust resistance. Use of stainless steel type fastener is highly recommended for rust resistance.
Steel Anchor	Fixing framework support system to the loadbearing structure should use all-steel expansion type anchor and always follow manufacturer's instructions.
Installation	Poor workmanship or improper installation of a façade system might result higher cost of maintenance and risk of the life of facade. Delivery of a quality built not only rely on professional design by experienced façade engineers, but also significantly play an important role by the installer. An experienced façade contractor could help the façade finished better rather installed by an unprofessional installer who may result inferior workmanship, un-necessary reinstatement or delay of project delivery.

Remark: The installation methods exhibited in this manual are applicable to all WeatherPro®-PLUS painted fibre cement façade board products.



RESIDENCE IN SEOUL

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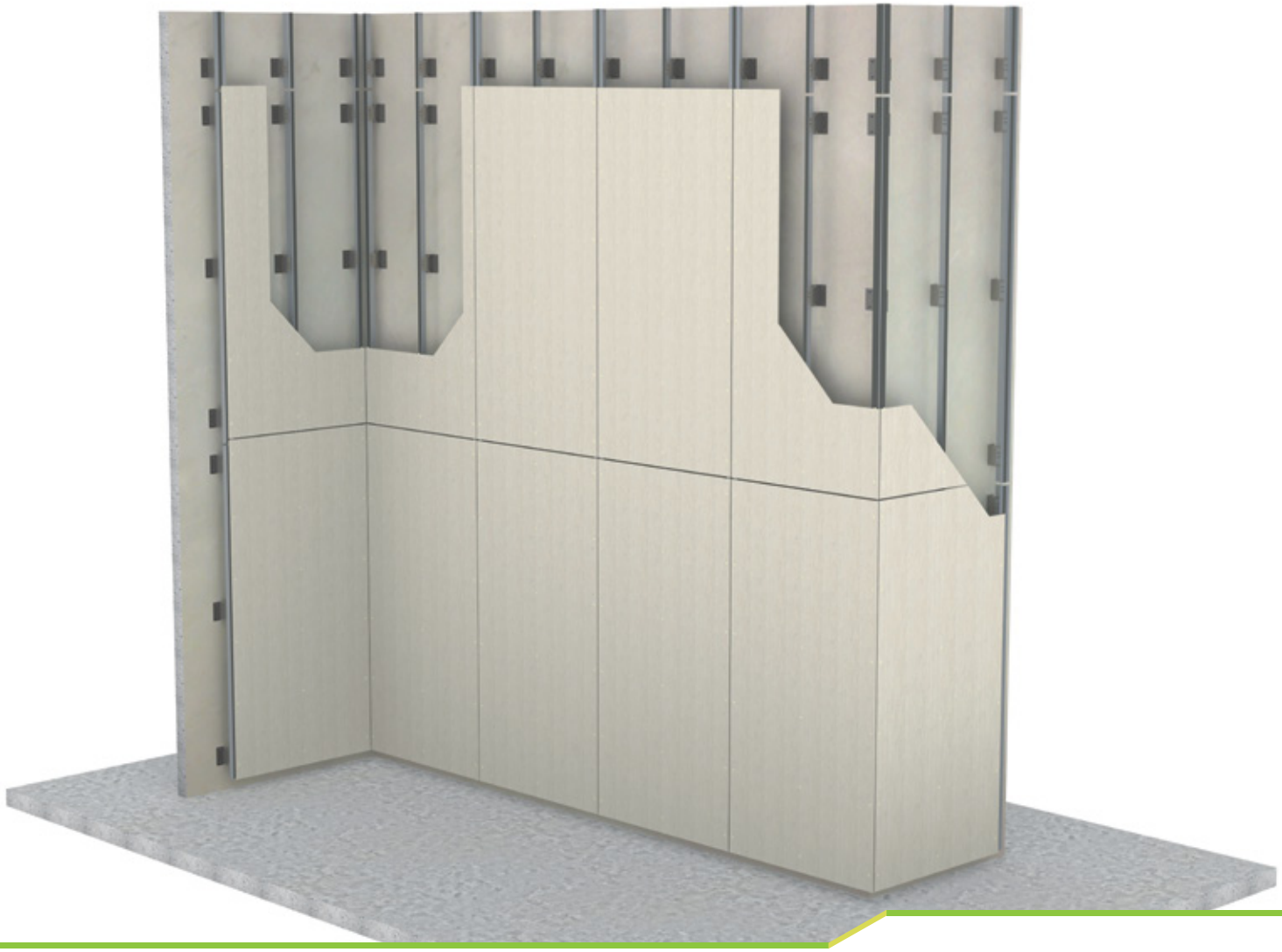
FRAMEWORK SUPPORT

FRAMEWORK SUPPORT (SUBSTRUCTURE)

ZenPlus façade board can be mounted on many different types of framework support system which made of either aluminum or cold formed steel, also structural grade timber for villas or low-rise constructions. Soben International does not recommend specific framework system as there are many supplies and types of good framework support systems available in each market. It is important to select the framework which should be suitably supporting fibre cement façade boards. Please consult the support system suppliers for advice and ensure the performance of applied system technically in compliance with country specific codes of practice and regulations. Wind load calculations for the framework supporting the ZenPlus façade boards should be considered and carried out by local qualified professional engineers.



ALUMINIUM FRAMEWORK

Most common aluminum support frameworks are designed with Tee "T" and Angle "L" profiles which vertically supporting the fibre cement façade boards. When installing ZenPlus façade boards on the aluminum support, use blind rivets to fasten the boards to the profiles. Soben International recommends the profiles as follows:

- Aluminum profiles ≥ 1.8mm thick
- Flange width of T profile ≥ 100mm
- Flange width of L profile ≥ 40mm
- Profiles' length in 3050mm matching the maximum length of ZenPlus façade board

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FRAMEWORK SUPPORT

TIMBER FRAMEWORK

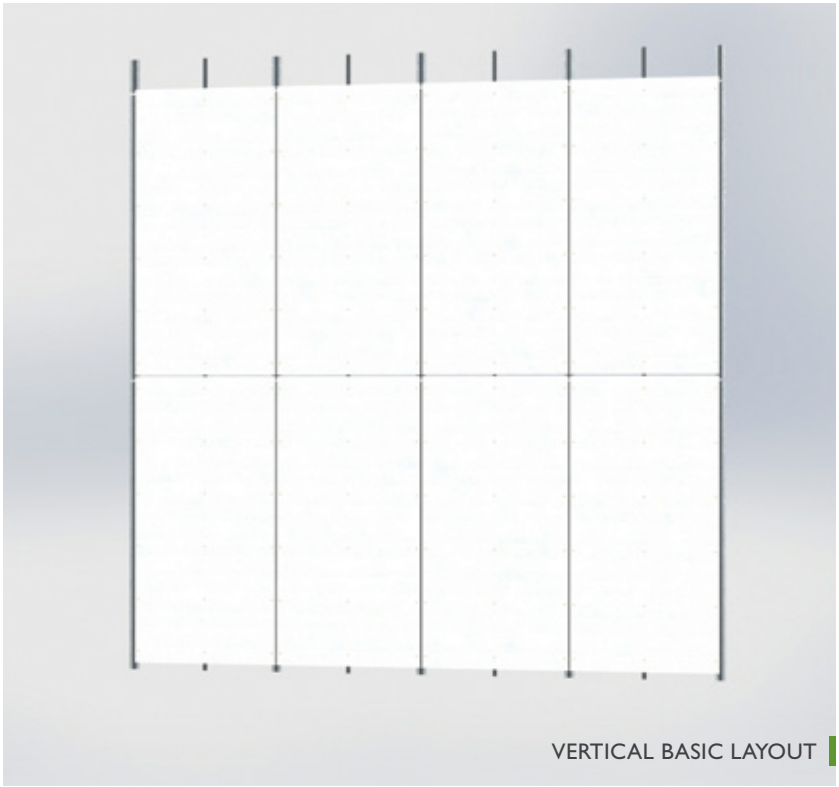
Timber support systems are more simply and suitably for low-rise constructions and timber structures. When installing ZenPlus façade boards on the timber support, use wood screws to fasten boards to the timber battens. The timber should be primed for waterproofing that avoid rotten and deformation. Soben International recommends timber battens made of quality structural grade timber as follows:

- Battens in planed finish with minimum 27mm thick
- Timber class of AS/NZS 2878, BS 5268, EN 14081 or NBC
- Kiln-dried lumber with moisture content maximum 20%
- Timber batten's length in maximum 3050mm
  (further details refer to Installation on Timber Framework of this technical manual)

FAÇADE LAYOUT

ZENPLUS FAÇADE LAYOUT

ZenPlus façade offers architects and designers wide freedom layout design from basic single colour arrangement to selected multi-colour patterning or even extraordinary engraved patterns on the facade boards. These aesthetic layout designs may include regular or uneven shapes of façade boards. However, economics would play a significant part when designing. Standard full-sized ZenPlus boards' dimensions are 1220mm wide by 2440mm or 3050mm long. The most economic material usage from standard façade boards is to be given higher priority. Making use of appropriate sizes of cut boards or non-cut full-sized boards would reduce cut wastes.



VERTICAL BASIC LAYOUT

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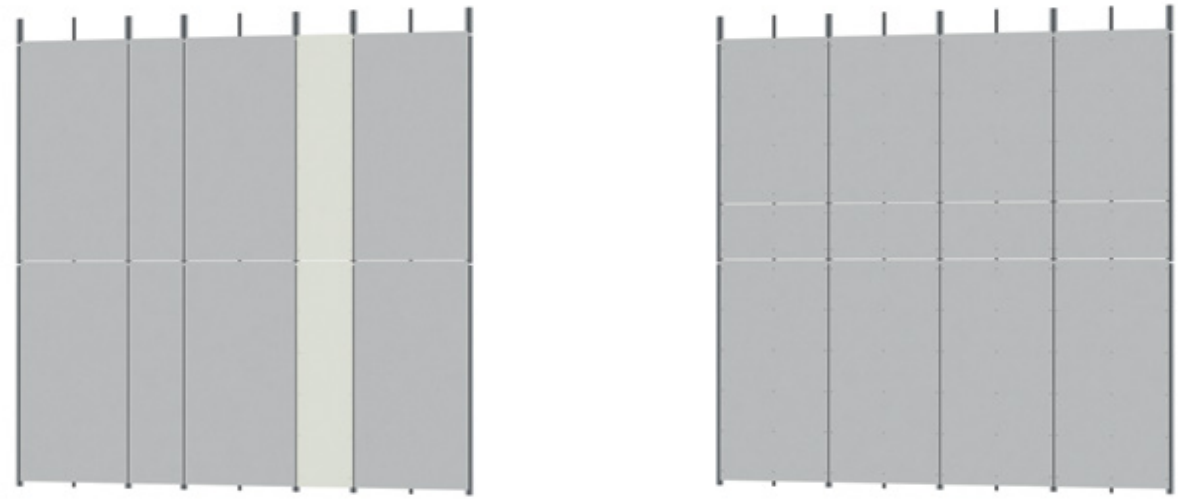
FAÇADE LAYOUT

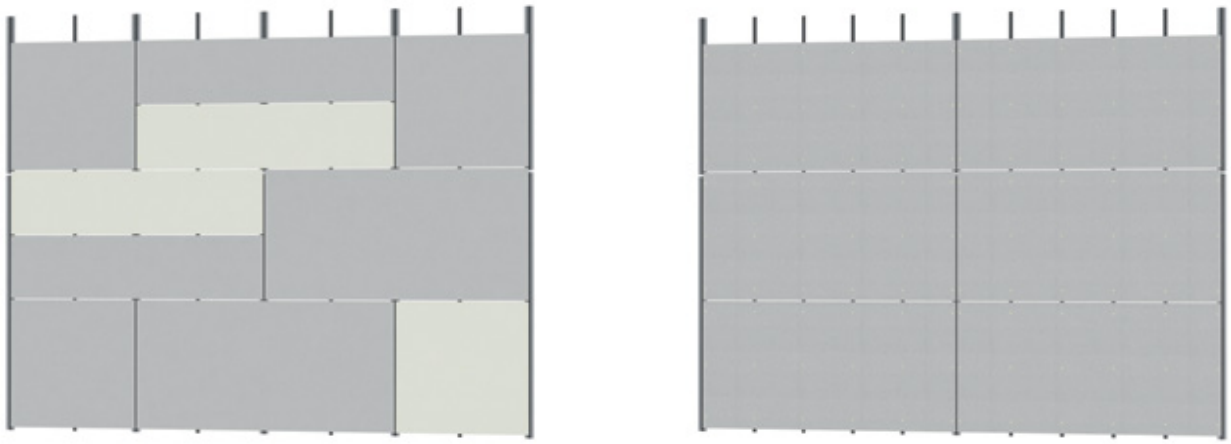
ZENPLUS FAÇADE LAYOUT

Framework grid distances at 300, 400 or 600 mm are usually adopted to suit the standard width and length of ZenPlus boards. To maximise the usage of standard-sized boards, it is recommended that façade layout using cut boards their sizes in width are 400, 600, 800 or 1200 mm and in length are 400, 600, 800 or 1200 mm for all standard boards, in addition 1500 or 3000 for 3050 mm long standard boards.

LAYOUT IN VERTICAL ORIENTATION



LAYOUT IN HORIZTONAL ORIENTATION



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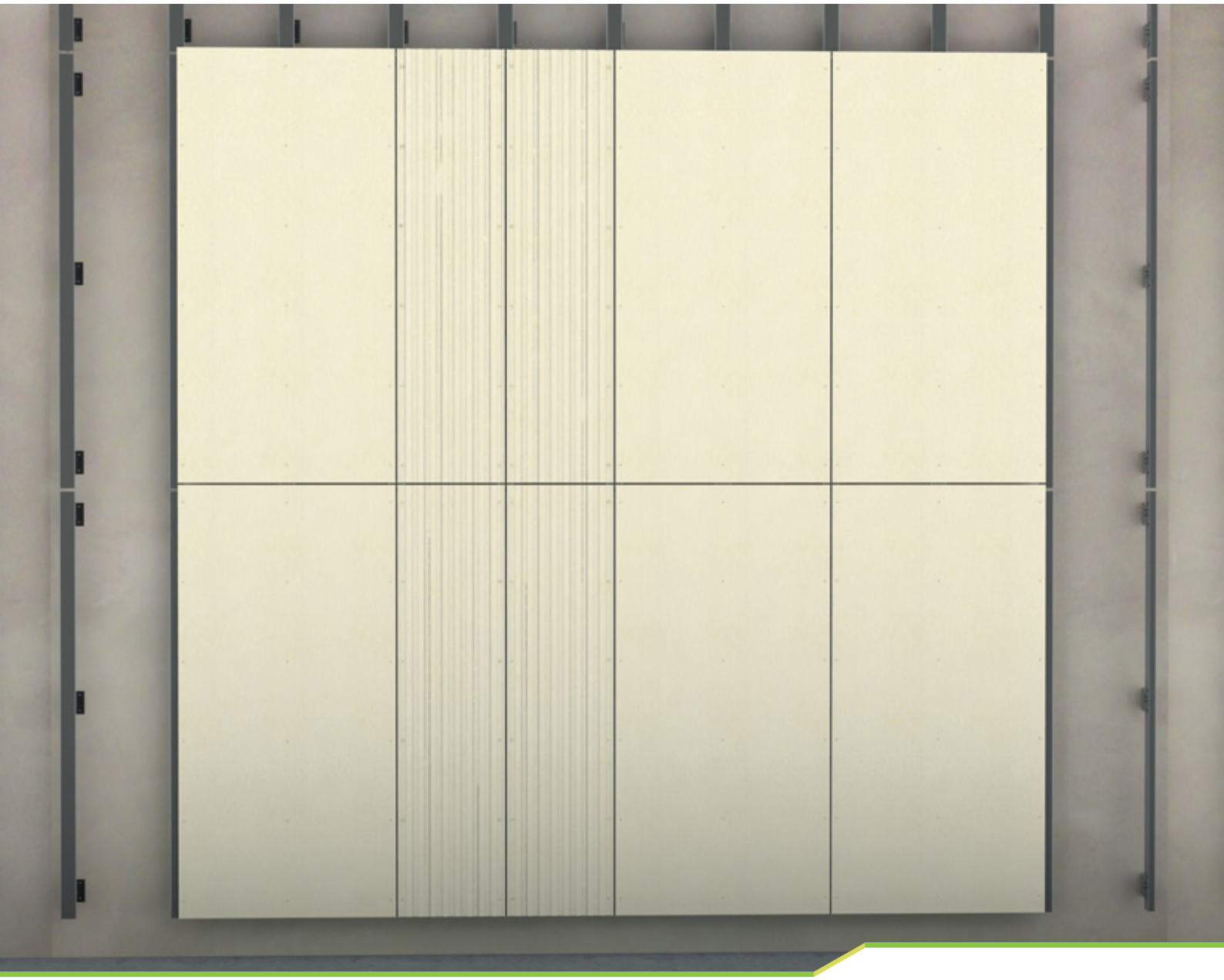
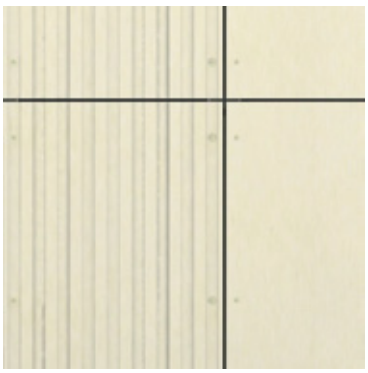
FAÇADE LAYOUT

LAYOUT WITH ENGRAVED ZENPLUS FAÇADE BOARDS





Transforming unlimited designs with engraved ZenPlus façade board, strips, geometrical shapes or any pictures can be precisely engraved on the boards by CNC routing.

Note: The engraved board should be 12mm thick at least. Plese consult Soben International for details.

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ZenPlus Self-ventilating Façade System

FAÇADE LAYOUT

NEW GOVERNMENT BUILDINGS BUILT WITH ZENPLUS FAÇADE AT SEJONG NATIONAL AGENCY FOR ADMINISTRATIVE CITY, KOREA

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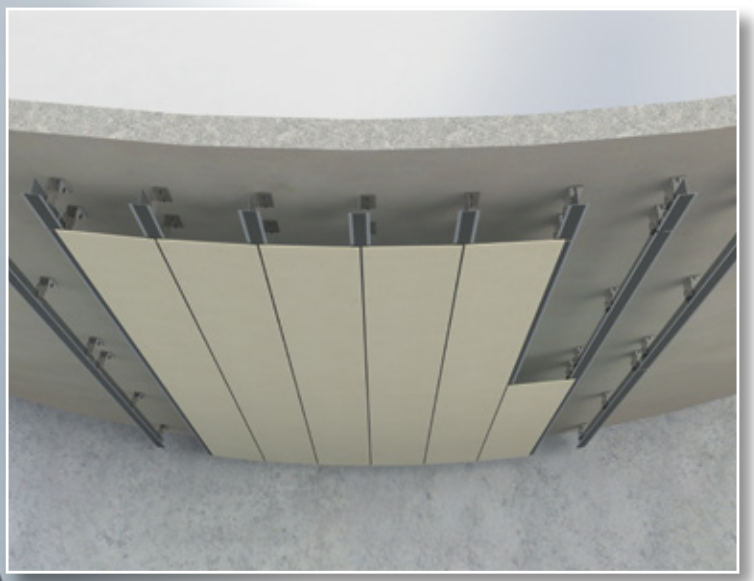
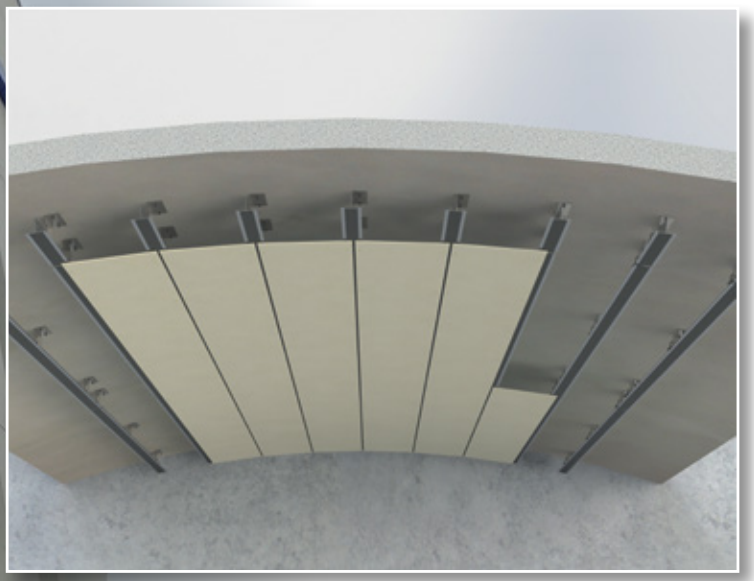
FAÇADE LAYOUT

CURVED CONSTRUCTIONS

By using narrow boards form curved façade layouts.





CAFETERIA, INCHEON

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SYSTEM STABILTY

STABILITY OF FAÇADE SYSTEM

Stability of a ZenPlus façade system relies on a loadbearing framework substructure holding the facade boards. Wind load on the façade is the key factor to determine the framework which aluminum profile/ timber batten grid distance. Intensive of wind force on buildings by country may vary due to geographical location and height of a building. Therefore, façade wind load calculations for the required framework support, fastening and safety factors must be followed to the country's wind code and other relevant building standards such as fire safety and thermal insulation. These should be executed by local qualified engineers to ensure all compliances.

Typically, profile/batten grids are at equal spacing adopted on the length of board for horizontal board orientation or the width of board for vertical board orientation. The grid spacing is up to maximum 618mm centres, but it can be reduced as determined by the wind calculation. Closer grid distance supports higher wind load resistance of façade boards. Vice versus, it will decrease.

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ZenPlus façade boards are fastened to the supporting grids by rivet or screw fasteners. The fastener distance in the board is at nominal 450mm centres, but may be various from 300mm to maximum 570mm centres subject to the maximum allowable wind pressure on the façade system.

CAFE DELALUZ, SEOUL

ZENPLUS FAÇADES APPLIED AS CEILING OR SOFFIT

ZenPlus façade boards are ideal for use as ceilings or soffits for both exterior and interior applications. The maximum ceiling channel or timber batten support distance should not exceed 400mm centres and fasteners are spaced at maximum 400mm centres.

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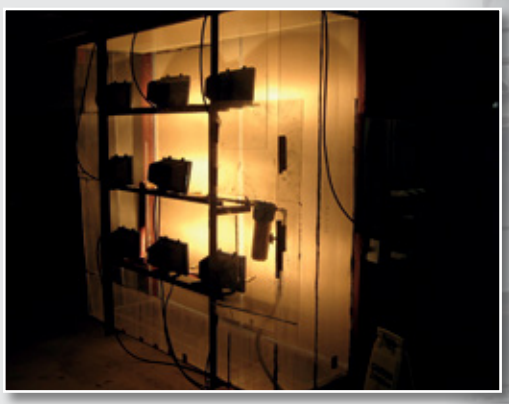
SYSTEM STABILTY

It is essential for a ZenPlus façade system designed fully compliance with the local building code of practice and standards. At project level, wind load testing and façade board testing with regard to the stability of façade system may be requested by some individual countries.



ZENPLUS UNDERGOING A HEAT-RAIN DURABILITY TEST

The ZenPlus rain screen façade system mounting at the wind chamber for a wind load test according to ASTM E330.

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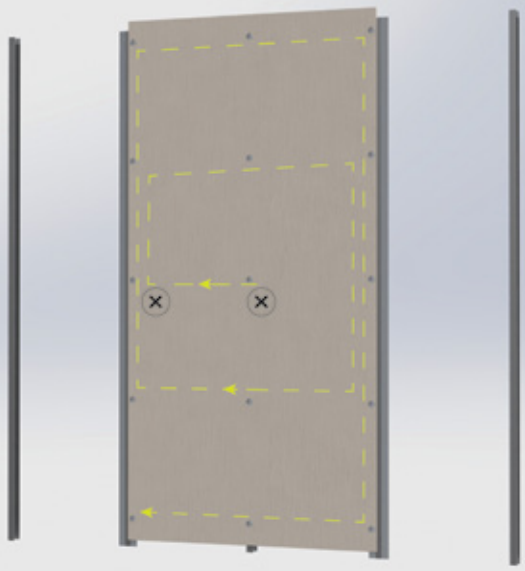
MOVEMENT OF FAÇADE BOARD

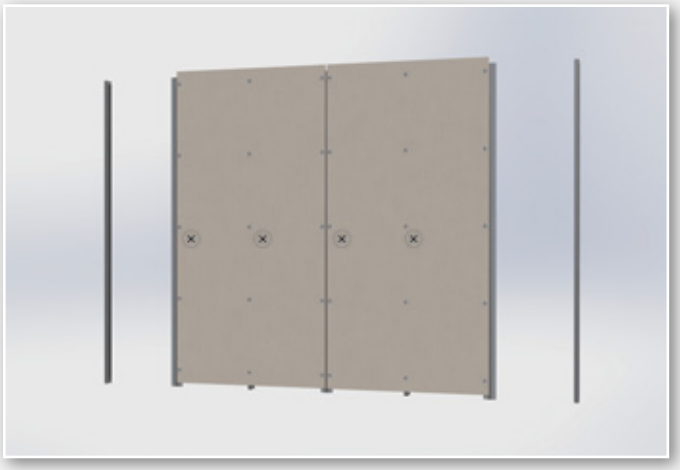
MOVEMENT OF FAÇADE BOARD

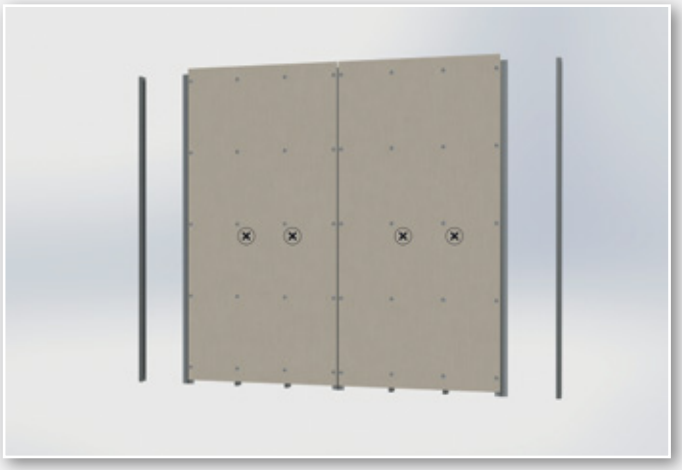
ZenPlus façade boards mounting onto a substructure will expand or contract due to weather and temperature changes. It is necessary to allow board movement by means of applying fixed and gliding fixation points at fasteners' position. Each board should have two fixed points which positions are horizontally adjoined together as close to the board centre as possible. The rest of fasteners are gliding points.

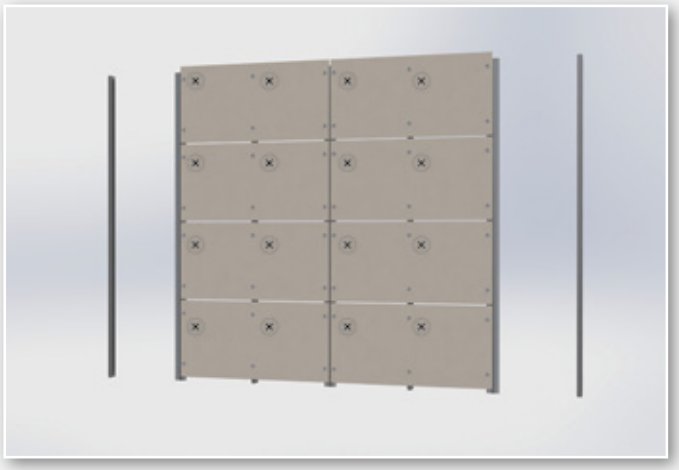
To allow the board movement properly, the ZenPlus board must be installed with correct fastening sequence. As the drawing shown that always fasten from the fixed point at the central part toward to edges of the board.

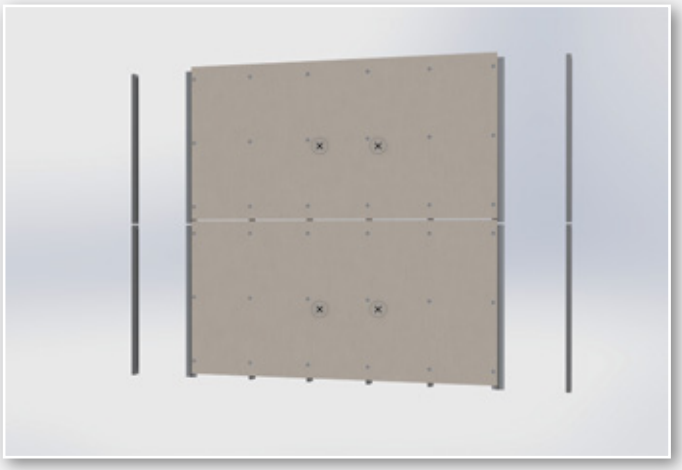


FIXED POINT ⊗









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MOVEMENT OF FAÇADE BOARD

WATER REPELLANT

ZenPlus fibre cement façade boards have been treated to hydrophobisation. The hydrophobic agents penetrate deep into the pores and chemically bond to the substrate of fibre cement. The hydrophobised boards repel rain water that help to avoid excessive moisture absorption so as wet movement of board is reduced. If boards are cut for the façade layout, all the cut board edges must be painted with two coats of hydrophobic agent and completely dry at least 48 hours before installation. Please contact Soben International for details.

The installed ZenPlus facade requires low-maintenance. Dust and dirt on the treated façade board surface can be easily washed away in the rain. If grease on the board surface, use water and mild cleaning agent to remove it. Though fibre cement material is mild chemically inert, improper handling of ZenPlus board may cause damage of the hydrophobic coating on the board that will degrade its water repellant function. The following invasive treatments on ZenPlus board should be avoided.

- Do not rub or sand the board surface with steel wire brush/ sand paper.
- Do not use alcohol or solvent cleaner to remove grease on the board.

Where the damaged hydrophobic board surface requires reinstatement, the board should be clean and dry before applying hydrophobic agent.

SIMPLY APPLY HYDROPHOBIC AGENT WITH A SPONGE BRUSH ON THE CUT EDGES

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INSTALLATION ON ALUMINUM FRAMEWORK

TYPICAL ALUMINUM FRAMEWORK SUB-STRUCTURE

ZENPLUS FIBRE CEMENT FAÇADE ON ALUMINUM FRAMEWORK

1. ZenPlus façade board
2. T profile with wider flange at board joint support
3. L profile at intermediate support up to maximum 618 centres
4. Wall mount brackets
   - Fixed to loadbearing building structures with minimum M8 steel anchors
   - Fixed to aluminum profiles with minimum M5.5 self-tapping screws
5. Rivet fastener Ø 4.8mm large flange head (Ø 16mm) with unpainted or painted colour head, made of aluminum AlMg3.5 or stainless steel, fitted with circular sleeves for movements
6. Flat EPDM self-adhesive foam tape, optional*
7. Non-combustible mineral stone wool thermal insulation layer in the cavity, optional
8. Loadbearing building structure

* The metal framework in silver or grey colour is prominent especially installed with dark coloured façade boards. This would be an undesired highlight from an aesthetic point of view. To eliminate this effect, apply black coloured EPDM foam or UV façade tape on the framework's profiles. Alternatively, dark colour coated metal profiles can be used.

When ZenPLus boards are fastened with "Long Double Sleeve" method, EPDM foam should be applied. More details refer to "Fixing Points at ZenPlus Façade Boards" of this manual.

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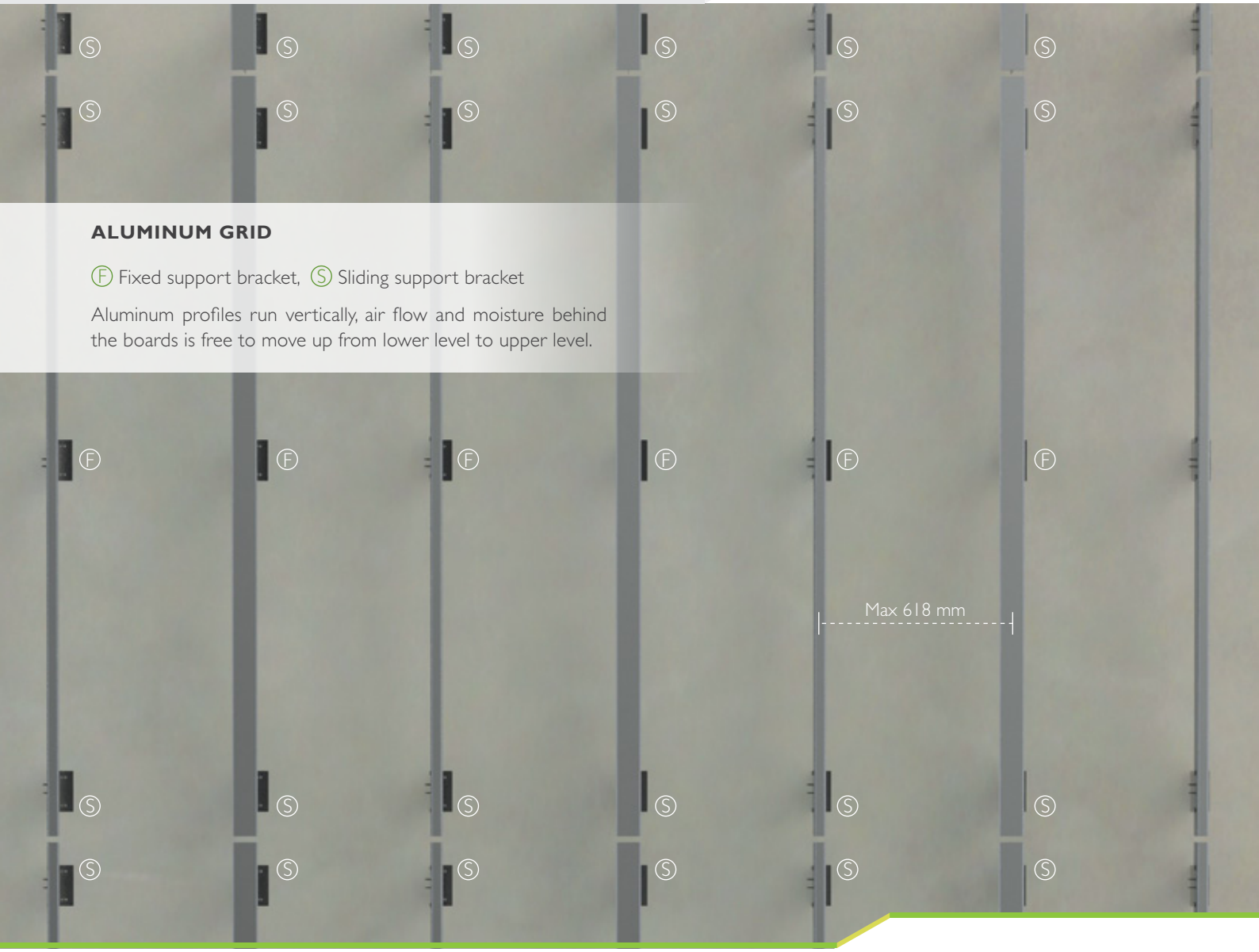
INSTALLATION ON ALUMINUM FRAMEWORK



ALUMINUM GRID

Ⓕ Fixed support bracket, Ⓢ Sliding support bracket

Aluminum profiles run vertically, air flow and moisture behind the boards is free to move up from lower level to upper level.

FASTENERS FOR ALUMINUM FRAMEWORK

FIXING PROFILES TO BRACKETS

- Minimum M5.5 x 35mm self-tapping screw, or
- Installing the proprietary framework system as the manufacturer's instruction

FIXING BRACKETS TO LOADBEARING BUILDING STRUCTURES

- Minimum M8 x 65mm wedge anchor or expansion type steel anchor for concrete structures, subject to wind calculation

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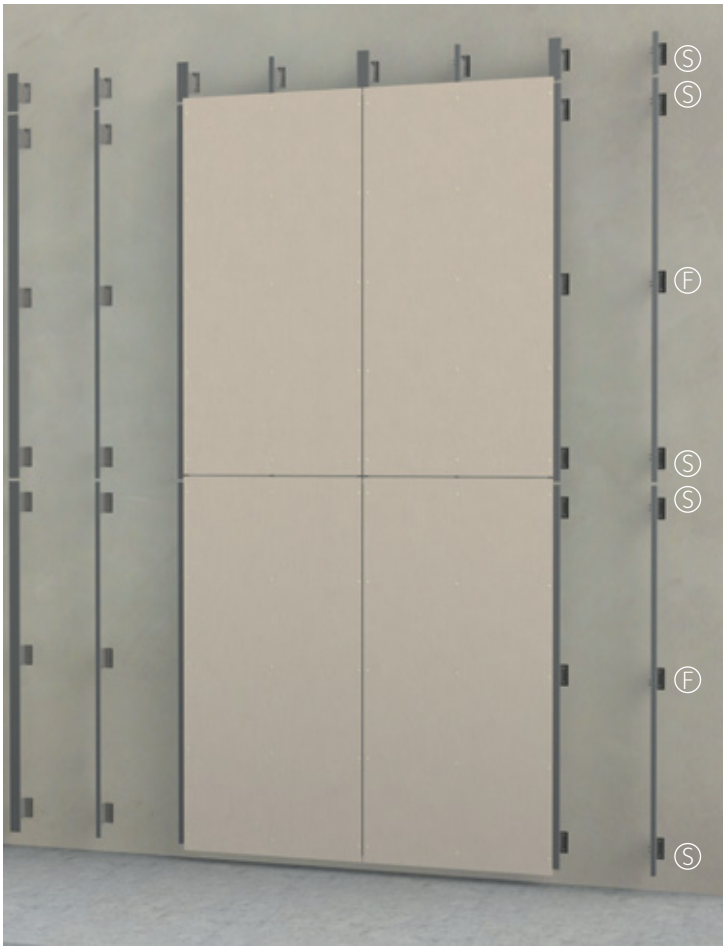
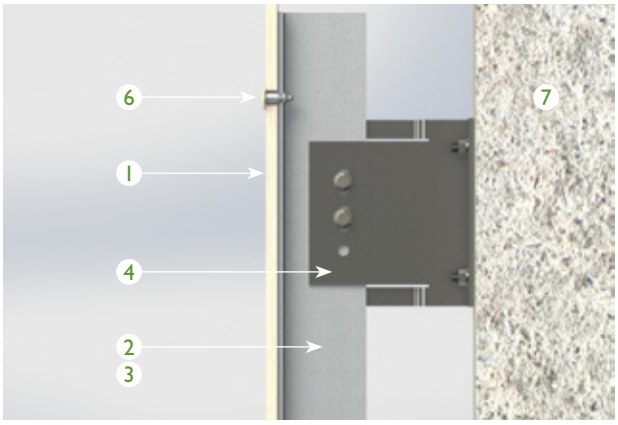
INSTALLATION ON ALUMINUM FRAMEWORK

MOVEMENT OF ALUMINUM PROFILES

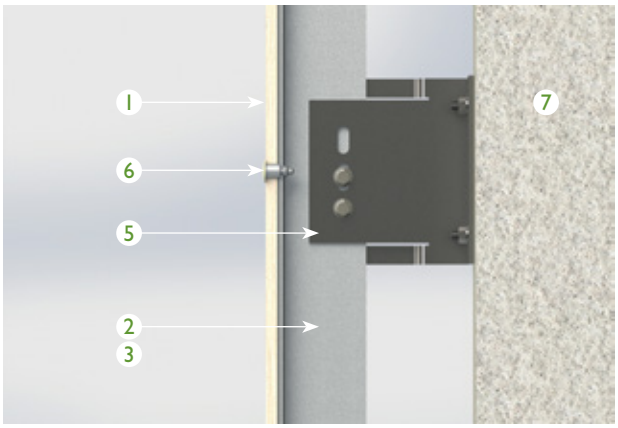
Since the aluminum profile will expand or contract according to climatic and temperature change, bracket supports holding the T or L profile should allow thermal movement of the profile. Typically, a vertical profile is supported by three brackets which are fastened to a building structure. The fixed support bracket Ⓕ should be positioned as close to the centre of the profile, the sliding support brackets Ⓢ at two ends of the profile should allow the profile moving up and down as the aluminum expansion or contraction. If a short profile is supported by two brackets, the fixed support bracket Ⓕ should be provided at the top, so the profile can move from the top downward. A movement joint gap minimum 15mm between the upper and lower profiles should be allowed.



TYPICAL "T & L" PROFILE FRAMEWORK



SLIDING SUPPORT Ⓢ



FIXED SUPPORT Ⓕ

FAÇADE SYSTEM

1. ZenPlus façade boards
2. T profile at board joint supports
3. L profile at intermediate supports
4. Brackets for sliding support Ⓢ
5. Brackets for fixed support Ⓕ
6. Rivet & sleeves
7. Building structure of wall, beam or column

WEATHERPRO®-PLUS CLADDING
ZenPlus Self-ventilating Façade System

INSTALLATION ON ALUMINUM FRAMEWORK

ZENPLUS FAÇADE BOARDS ON ALUMINUM FRAMEWORK

1. Maximum ZenPlus board size at 1220 x 3050mm
2. Maximum aluminum profile support distance at 618mm centres*
3. Rivet at nominal 450mm centres (ranging from minimum 300 to maximum 570mm centres subject to wind calculation)*
4. Building wrap
5. Mineral wool insulation is optional. It may be required in some countries for compulsory energy saving. The mineral wool should be firmly installed on the backed wall with insulation pins.
6. Insulation Pin

* Spacing for profile support distance and fasteners are subject to wind load calculation.

INSULATION PIN

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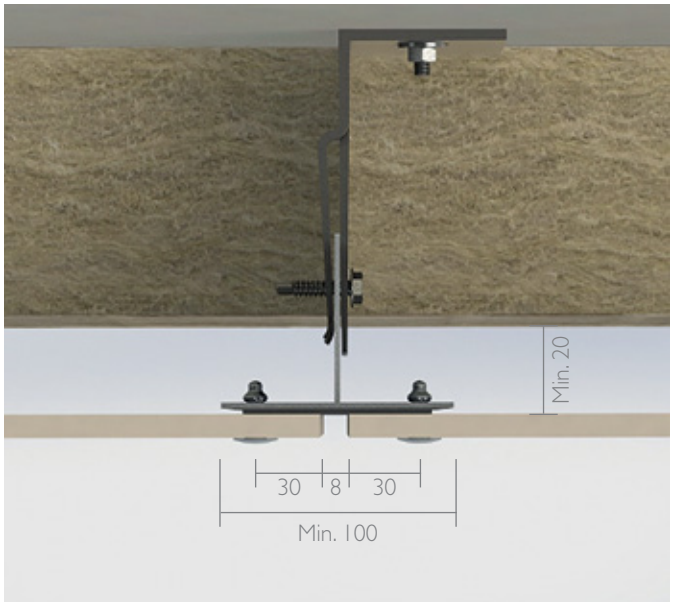
INSTALLATION ON ALUMINUM FRAMEWORK

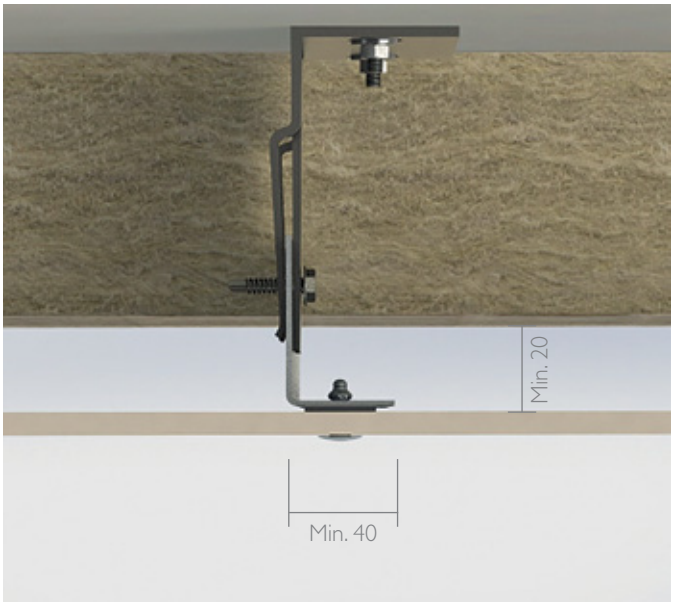
FASTENING FAÇADE BOARDS ON ALUMINUM

Installation of ZenPlus facade boards on aluminum with correct blind rivet fastening is essential. It ensures that the installed boards are able to accommodate movement without damage. The edge distances for rivets should not be lesser than the specified as below.

T PROFILE AT BOARD JOINT SUPPORT



L PROFILE AT INTERMEDIATE SUPPORT



RIVETS AT BOARD CORNERS

EDGE DISTANCES

The minimum edge distance for drilled holes in aluminum profiles should have minimum 10mm from the edge.

The allowable edge distances from the board edges to the rivet centre should be respected.

- At the board corners, horizontal 30-100mm & vertical 70-120mm
- Open board joint width ≥ 8mm & ≤ 15mm
- Ventilation cavity behind facade boards ≥ 20mm

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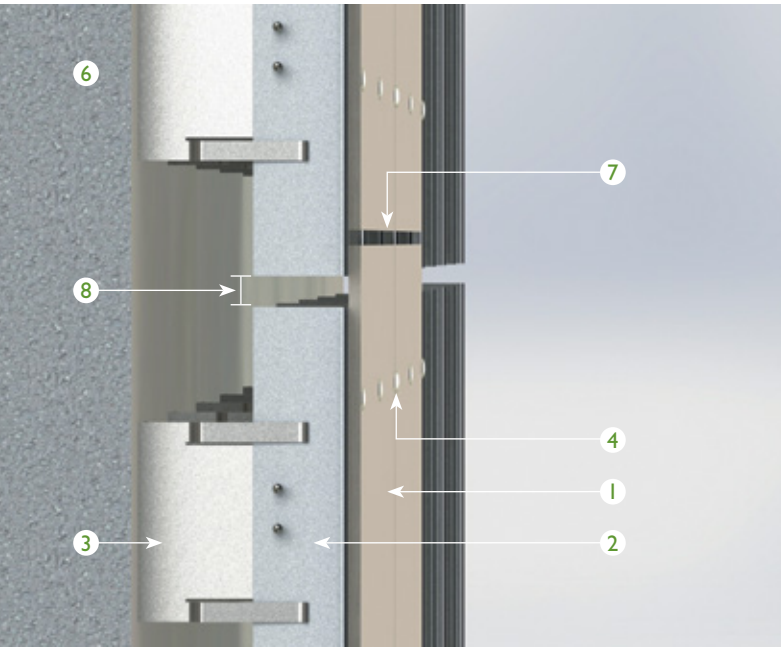
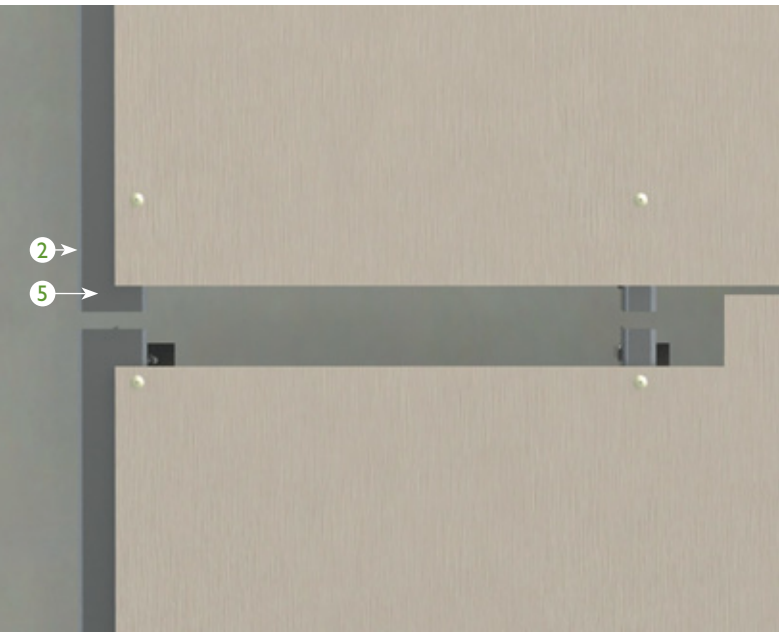
INSTALLATION ON ALUMINUM FRAMEWORK





BOARD LAPPING AT ALUMINUM JOINT

1. ZenPlus façade board
2. Aluminum profiles
3. Sliding support brackets
4. Rivet fixing
5. EPDM foam tape
6. Loadbearing building structure
7. Open board joint width ≥ 8mm & ≤ 15mm
8. Aluminum profile joint gap width ≥ 15mm & ≤ 20mm

Important note:

Never fasten a ZenPlus façade board on two adjoining aluminum profiles in a line, as movement of the two profiles in opposite direction that could potentially damage the board. The above drawings show the façade board lapping on the upper profiles. This is for the purpose of hiding all profile joints behind the boards.

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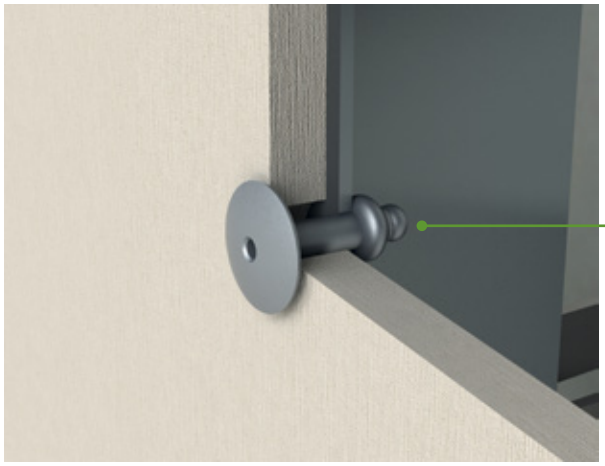
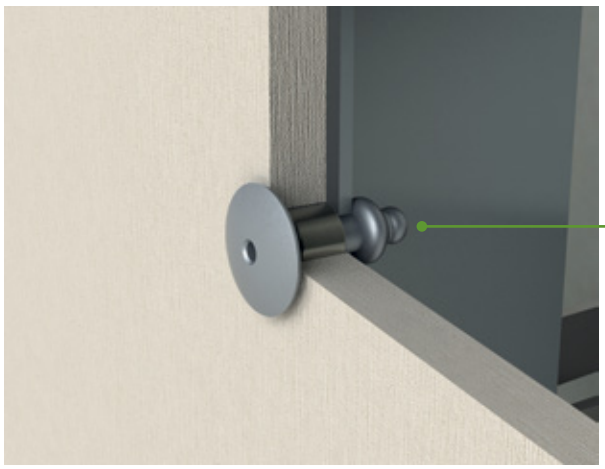
INSTALLATION ON ALUMINUM FRAMEWORK

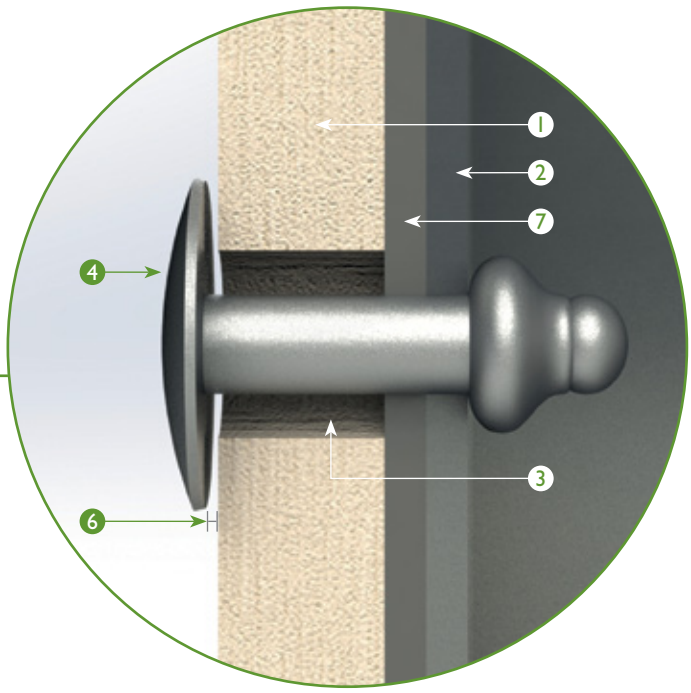
FIXING POINTS AT ZENPLUS FAÇADE BOARDS

It is crucial to prevent over-tightening rivets on façade boards, otherwise board movement is prohibited. Rivets are fastened by either Stand-off Rivet Head or Long Double-sleeve method to form fixed and gliding fixation points.

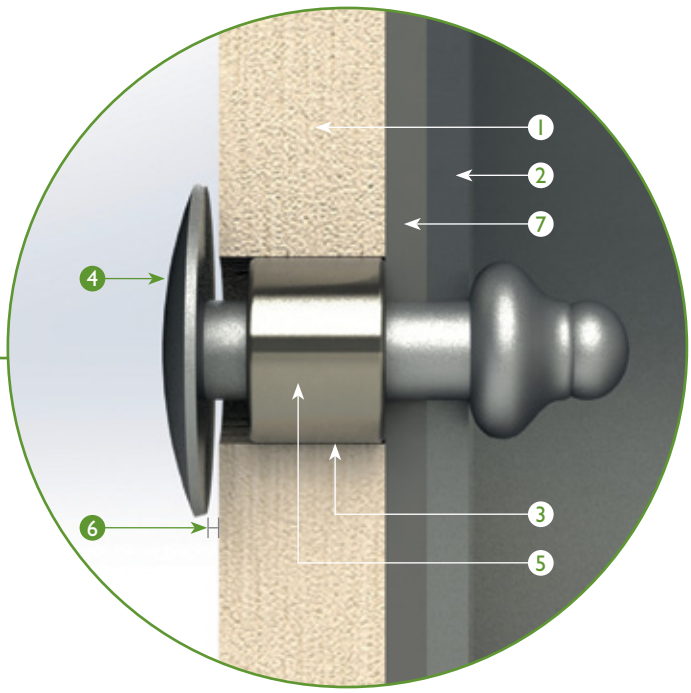
STAND-OFF RIVET HEAD







GLIDING POINT



FIXED POINT

1. ZenPlus board 8mm thick
2. Aluminum profile
3. Drill hole in board Ø9.3mm
4. Rivet Ø4.8mm x 18mm
5. Aluminum sleeve Ø9.0mm OD / Ø5.3mm ID x maximum 8mm long
6. Stand-off head distance from the board face 0.3-0.5mm
7. EDPM foam tape (optional)

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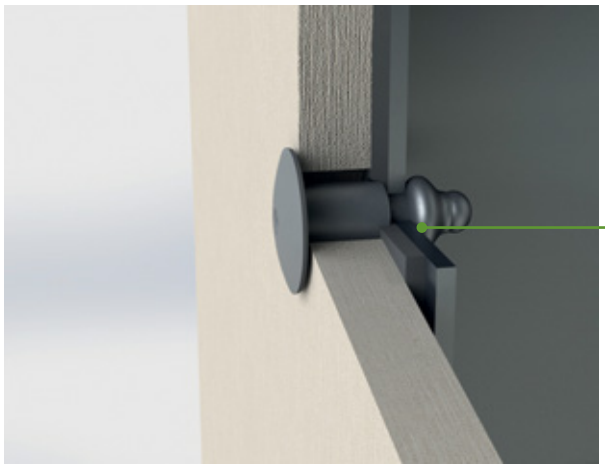
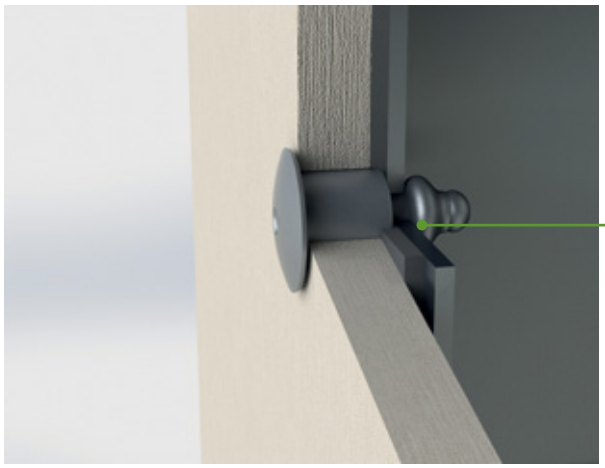
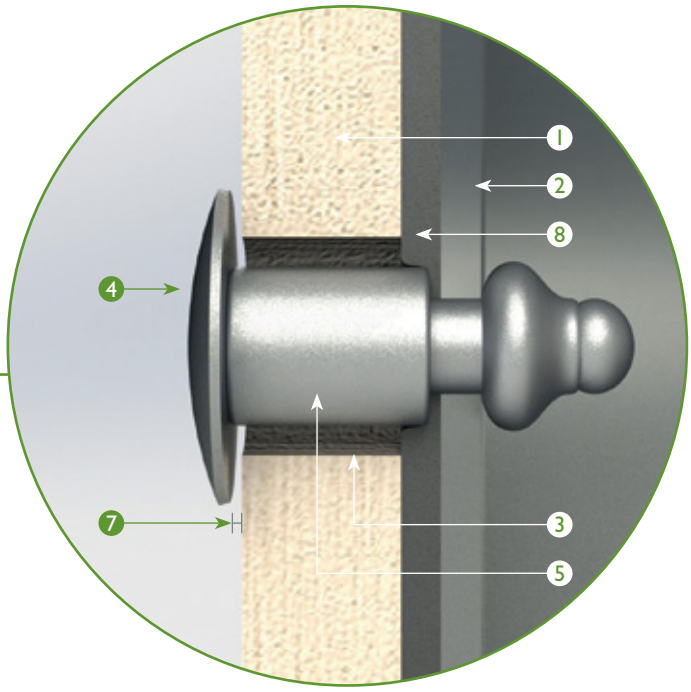
INSTALLATION ON ALUMINUM FRAMEWORK

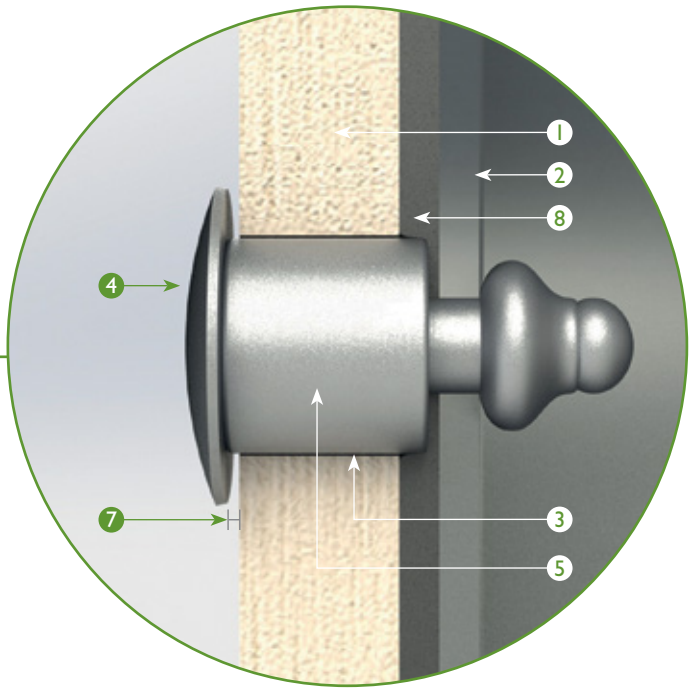
LONG DOUBLE-SLEEVE







GLIDING POINT (ONE SLEEVE APPLIED)



FIXED POINT (TWO SLEEVES APPLIED)

1. ZenPlus board 8mm thick
2. Aluminum profile
3. Drill hole in board 11.3mm
4. Rivet Ø4.8mm x 18mm
5. Inner aluminum sleeve Ø8.0 mm OD / Ø5.3mm ID x 10mm long*
6. Outer aluminum sleeve Ø11.0mm OD / Ø8.3mm ID x 10mm long
7. Rivet head distance from the board face minimum 0.3mm
8. EDPM foam tape

*Remark: length of the sleeve is 14mm long for 12mm thick ZenPlus board.

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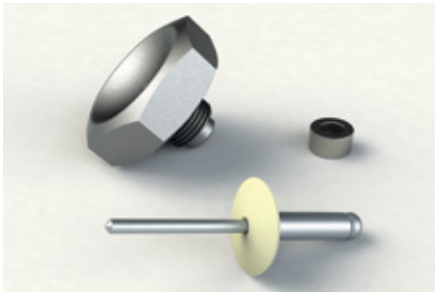
INSTALLATION ON ALUMINUM FRAMEWORK

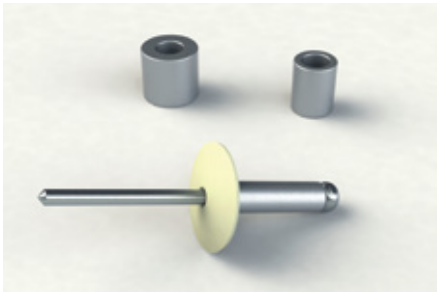
INSTALLING ZENPLUS FAÇADE BOARDS WITH RIVETS

When installing 8mm thick ZenPlus boards

- use Ø 4.8mm x 18mm large flange head (16mm) rivets made of aluminum AlMg3.5, alternative minimum Ø 4.0mm x 18mm stainless steel rivets. The rivet head can be unpainted or colour coated finish matching the façade board colour. The rivet is fitted with or without aluminum sleeve for board movement due to thermal and moisture effect.



STAND-OFF RIVET HEAD & FAÇADE NOSEPIECE



LONG DOUBLE-SLEEVE

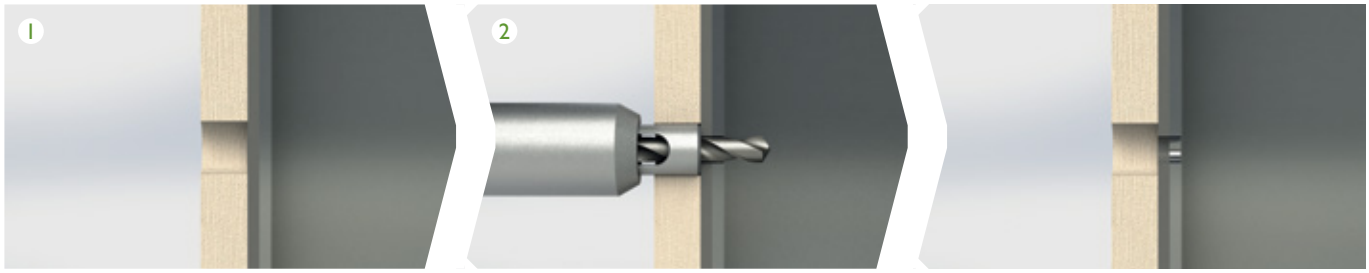
CENTRALISING DRILL TOOL

SLEEVE SIZES FOR RIVETS

Sleeves are made with either aluminum or stainless steel. There are several common sleeve sizes available in the market that suit for installation. If these sizes are not available in your country or any doubts, please contact Soben International for assistance.

RIVET			STAND-OFF RIVET HEAD		LONG DOUBLE-SLEEVE		
Size	Material *	Drilled hole in profiles - mm	Drilled hole in boards - mm	Sleeve OD/ID - mm	Drilled hole in boards - mm	Outer Sleeve OD/ID - mm	Inner sleeve OD/ID - mm
Ø4.8	Alu or A2	5	9.3	9.0/5.3	-	-	-
Ø4.8	Alu or A2	5	8.3	8.0/5.3	11.3	11.0/8.3	8.0/5.3
Ø4.0	A2	4.2	9.3	9.0/4.5	-	-	-
Ø4.0	A2	4.2	8.3	8.0/4.5	10.3	10.0/ 7.3	7.0/4.5

Material * Alu: rivet made of Aluminum AlMg3.5 body & stainless steel mandrel, A2: rivet made of 304 stainless steel



1. Pre-drilled holes in façade boards

Prior to installation of boards on the aluminum framework, pre-drilled holes in ZenPlus façade boards are fabricated. For preparation of large quantities of façade boards, CNC router offers fast and high accuracy of cutting and drilling.

2. Drilling in aluminum by centralising drill tool

Before drilling the hole in the aluminum profile, position the predrilled facade board on the aluminum framework and hold the board in place using locking pliers or put a supporting batten below the board. Using a centralising drill tool at the pre-drilled hole in the board ensures that a concentric hole is drilled in the aluminum profile behind the board.

- Use Ø5mm HSS drill for rivet Ø4.8mm.
- Use Ø4.2mm HSS drill for rivet Ø4.0mm.

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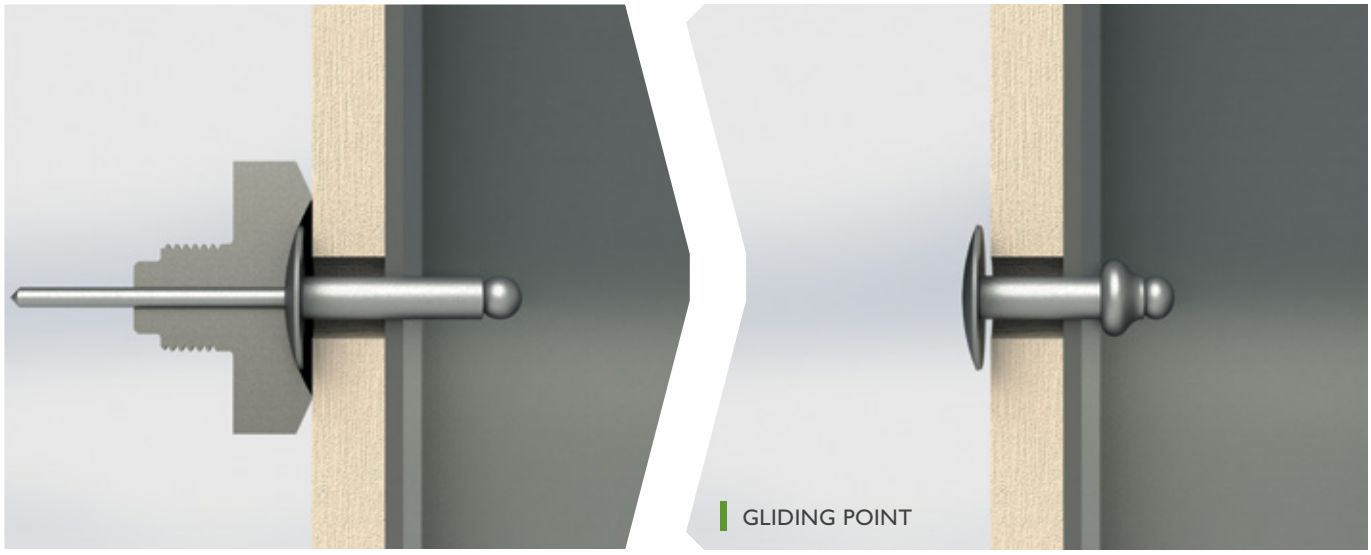
INSTALLATION ON ALUMINUM FRAMEWORK

STAND-OFF RIVET HEAD FASTENING

Stand-off rivet head fastening is a common type applied on fibre cement façade material. By using a specialised rivet spacer nosepiece for façade makes a clearance 0.3-0.5mm between the rivet head and the ZenPlus board. The stand-off head prevents compression on the façade board.



LONG DOUBLE-SLEEVE FASTENING

Fastening the rivet with a standard rivet gun and nosepiece, the length of sleeves is longer than the thickness of ZenPlus board that provide a clearance between the rivet head and the board. Gliding point rivets are fitted with a smaller sleeve (inner sleeve) only. Two sleeves with a larger sleeve (outer) and a smaller sleeve (inner) are together fitted on fixed point rivets. EPDM foam tapes on the profiles are required for this installation.

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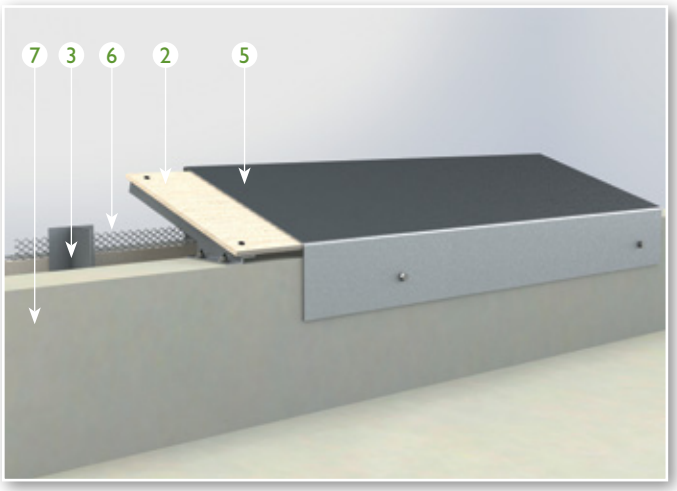
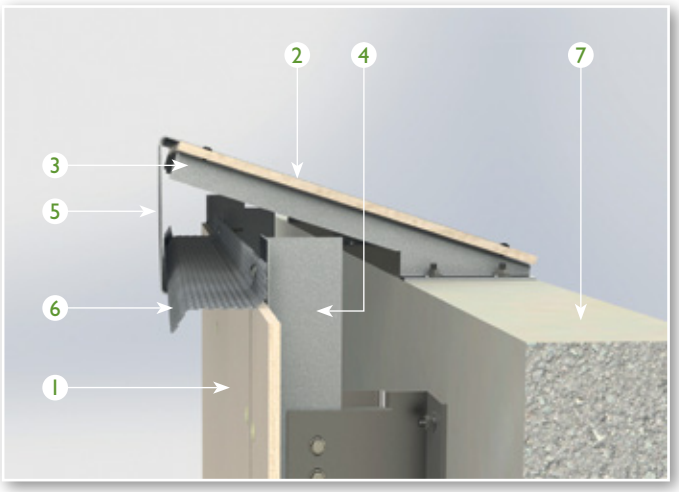
INSTALLATION ON ALUMINUM FRAMEWORK

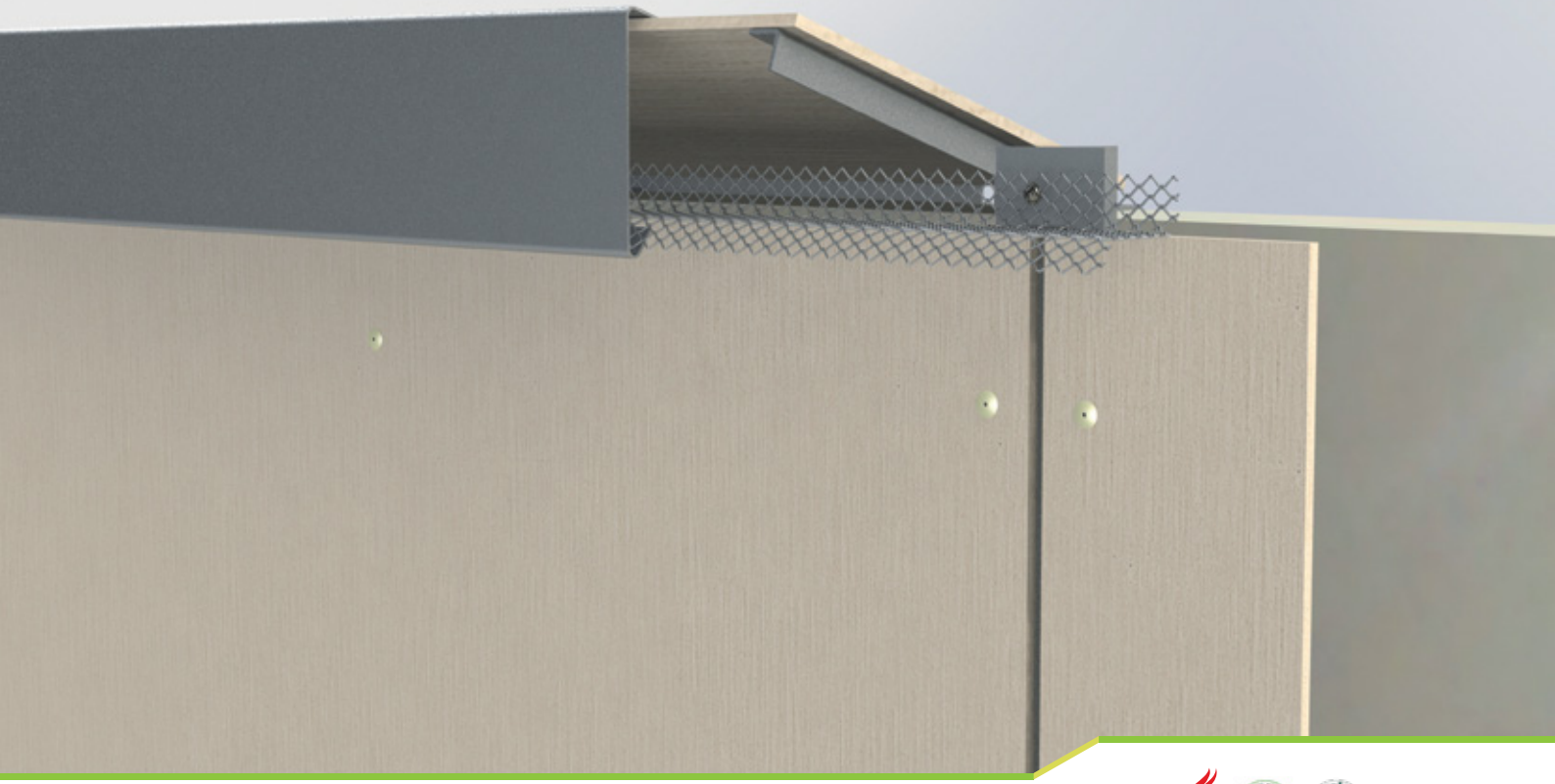
FACADE AT PARAPET WALL HEAD

The top end of ZenPlus façade up to the parapet wall head should remain open for release of moisture and free air flow. It is necessary to prevent mice and birds nesting in the cavity, perforated closures are installed to shut off the openings of cavity at the top and the bottom ends.





1. ZenPlus façade board
2. ZenPlus board or WeatherPro fibre cement backing board
3. Supporting structures for backing board at maximum 600mm centres
4. Aluminum profile
5. Wall head capping panel
6. Perforated closure made of stainless steel or aluminum
7. Parapet



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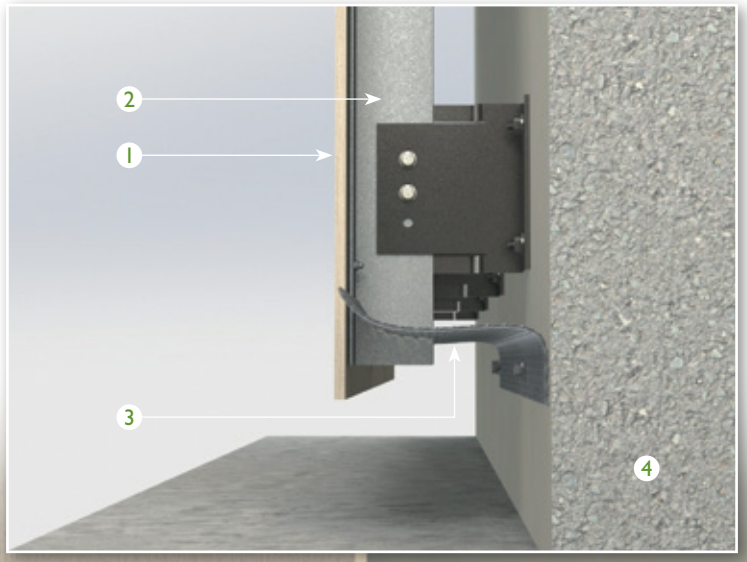
INSTALLATION ON ALUMINUM FRAMEWORK

CAVITY OPENING AT THE BOTTOM END

1. ZenPlus façade board
2. Aluminum profile
3. Perforated closure made of stainless steel or aluminum
4. Building structure



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INSTALLATION ON ALUMINUM FRAMEWORK

OPENING FOR WINDOWS AND DOORS

The installed ZenPlus façade boards around a window opening are backed by aluminum L profiles which are fixed at the both sides and upper side of the wall opening. The window sill made of aluminum or extruded fibre cement module is installed at last. Alternatively, fast installation can make use of prefabricated GRC units or aluminum window enclosure modules. The same installation method can be applied at door openings.

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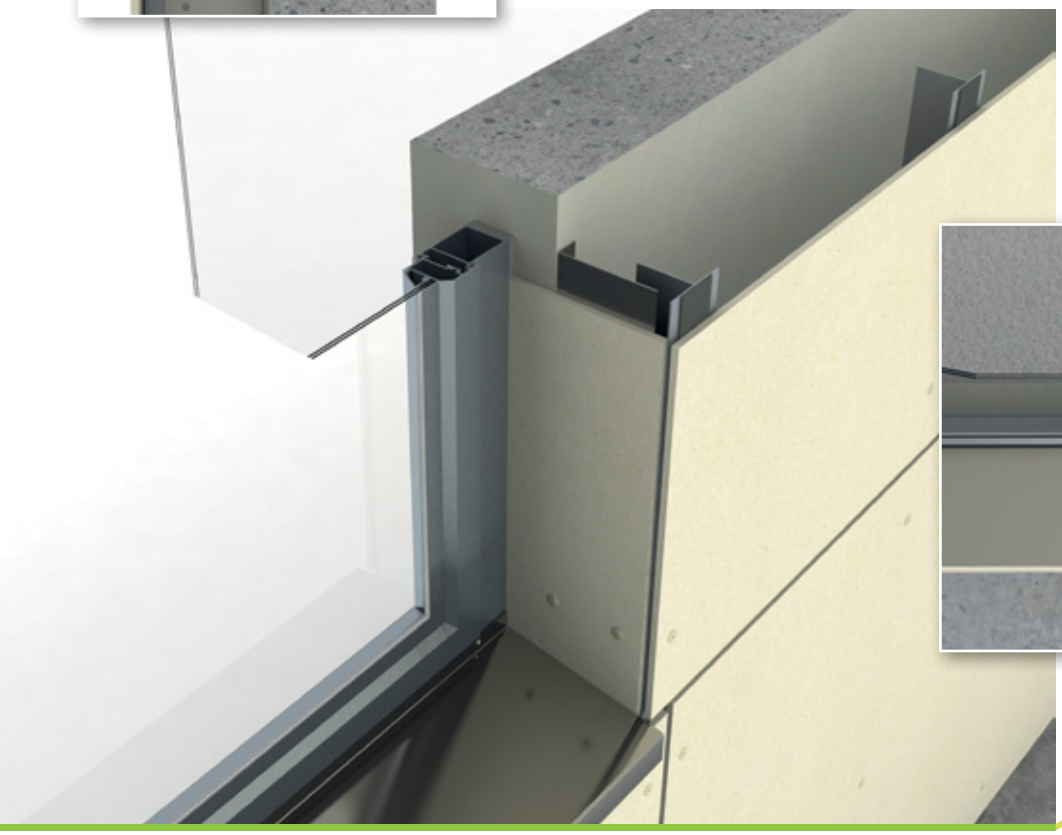
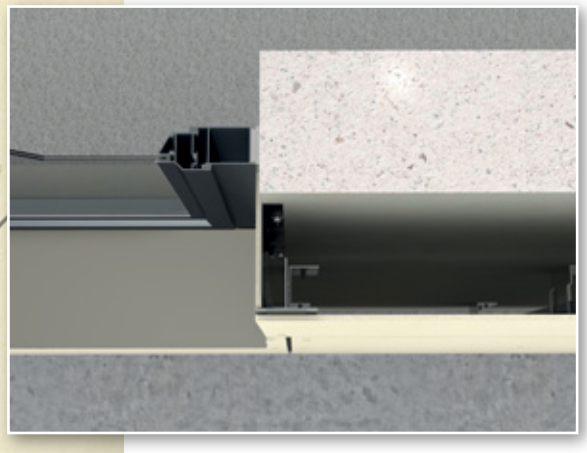
INSTALLATION ON ALUMINUM FRAMEWORK

Fixing façade boards around the window and door openings are the same as the large façade board . Fixed and gliding rivet fixation points are required for movement.





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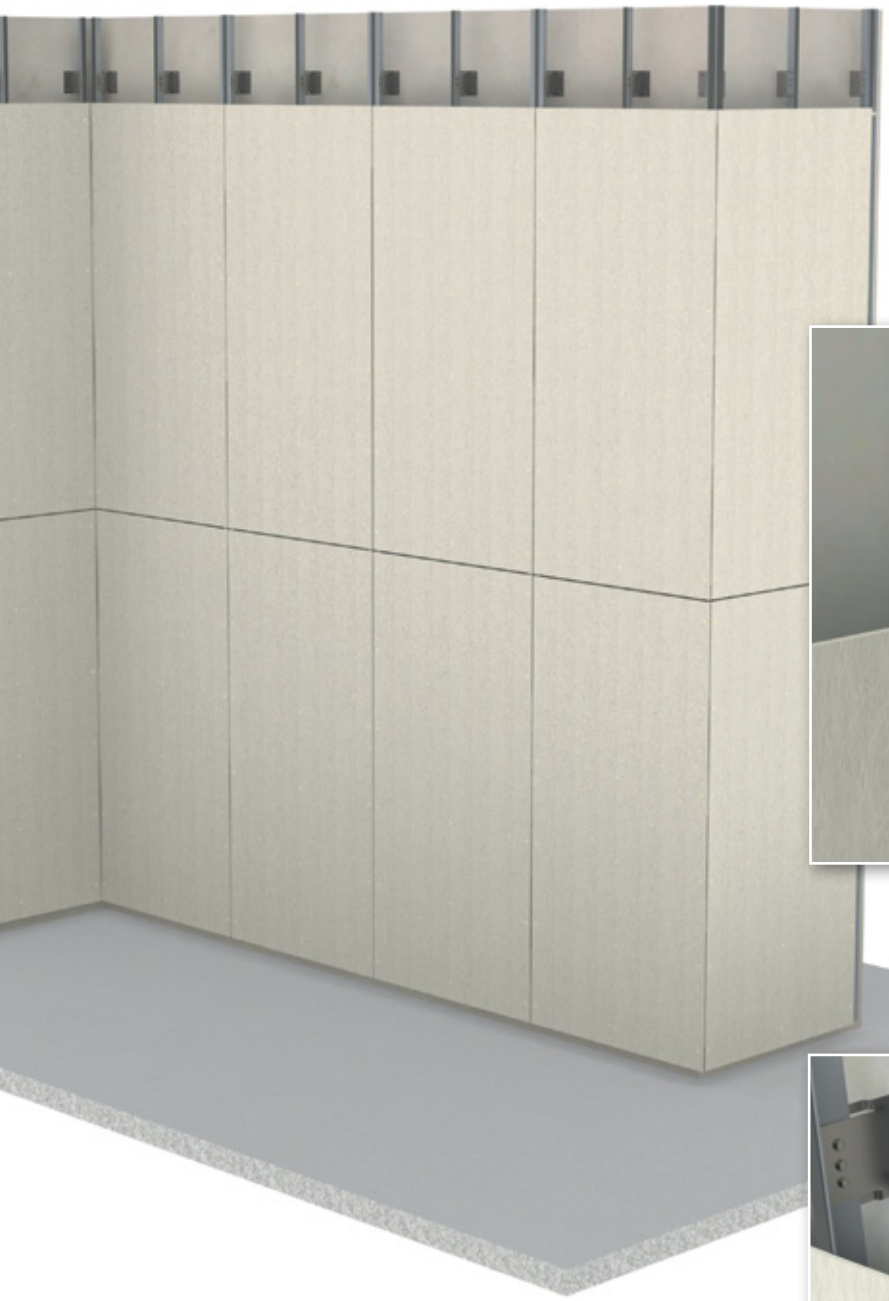
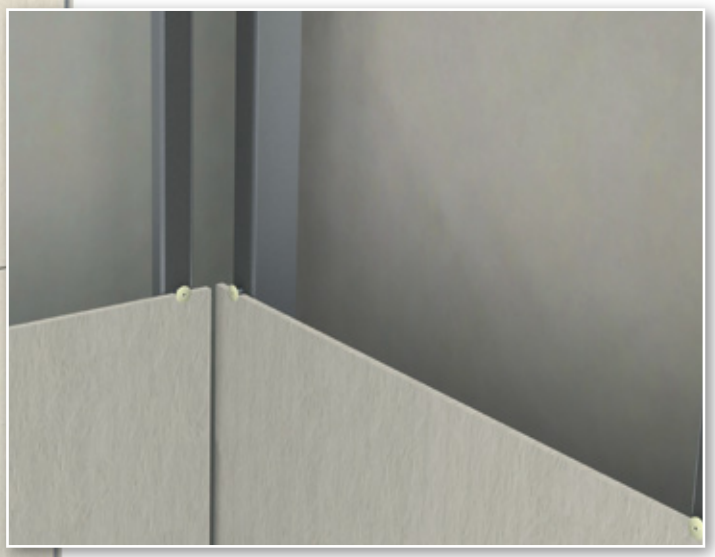
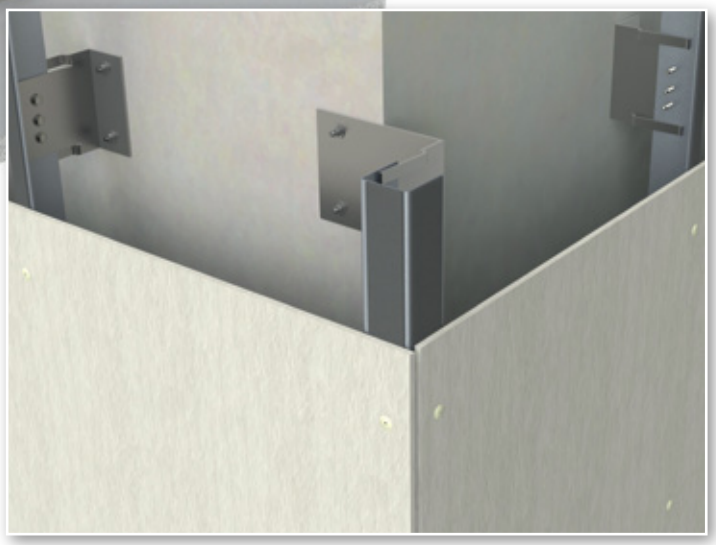
INSTALLATION ON ALUMINUM FRAMEWORK





INTERNAL CORNER



EXTERNAL CORNER

CORNERS

ZenPlus façade board layout arrangement at building corners can be simply paneling to create a beauty in simplicity. What is more, stunning designs by using coloured aluminum featured profiles that can shape up the aesthetic layout designs.

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INSTALLATION ON ALUMINUM FRAMEWORK

CORNERS WITH FEATURED PROFILES

BOLD STATEMENT FORGED BY
LARGE CORNER PROFILES

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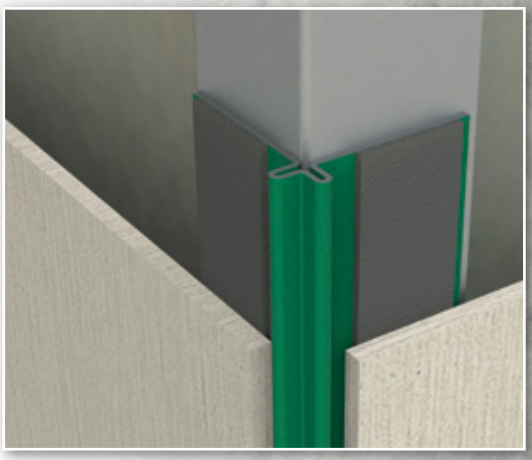
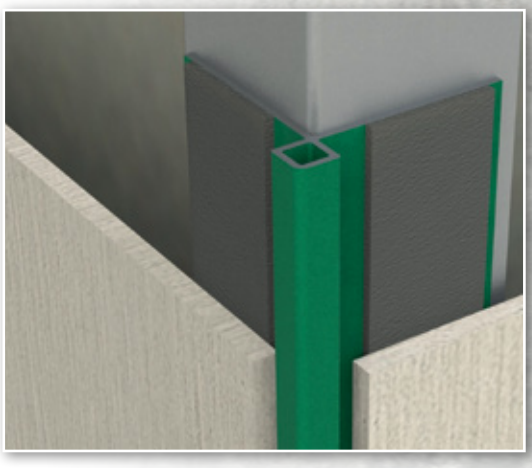
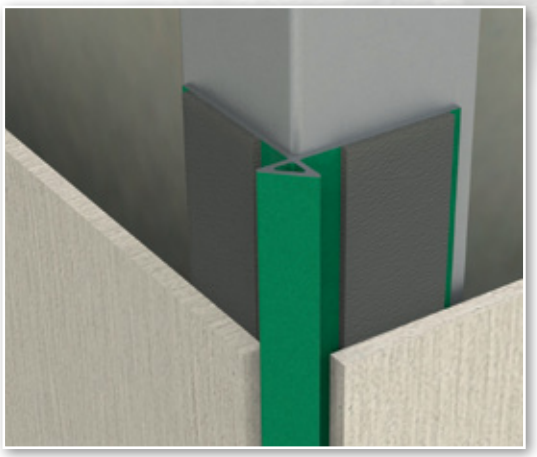
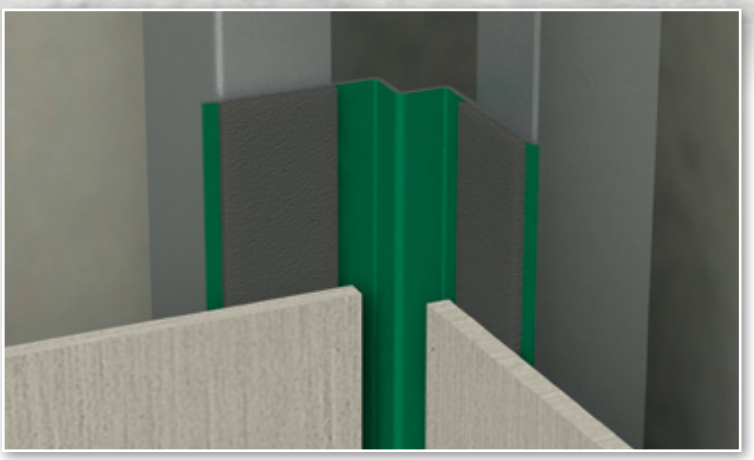
INSTALLATION ON ALUMINUM FRAMEWORK

A minimum 4mm gap between the board edge and the profile should be provided.









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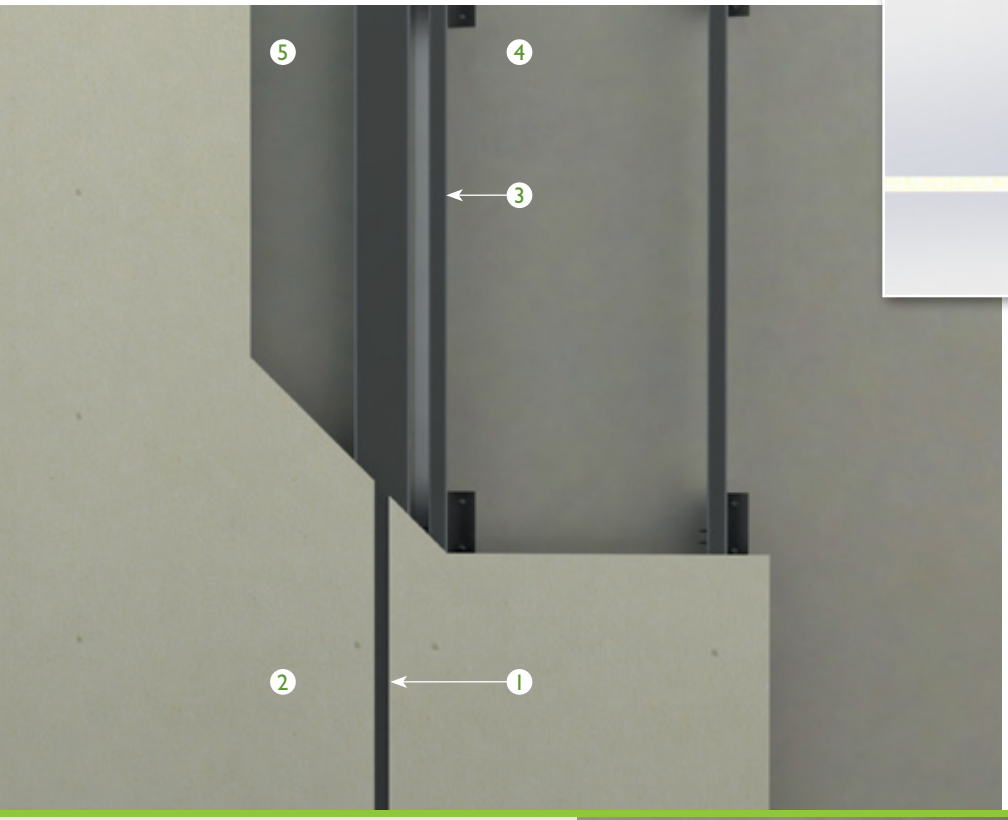
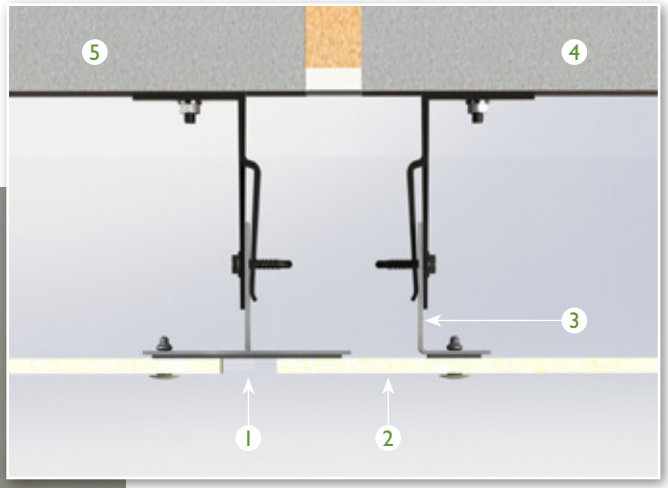
INSTALLATION ON ALUMINUM FRAMEWORK

OTHER DETAILS

MOVEMENT JOINT AT ZENPLUS FAÇADE





When ZenPlus façade clads over two adjoined building structures, a movement joint at the façade boards should be provided.

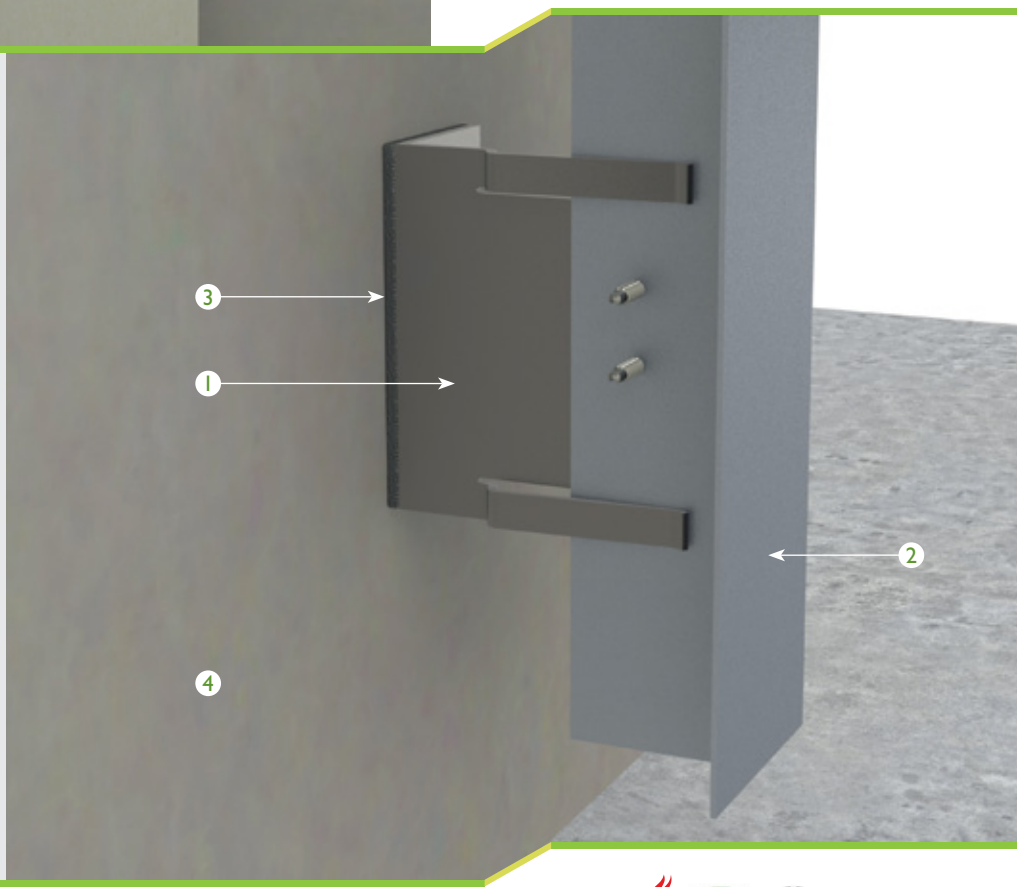
1. Movement Joint
2. ZenPlus façade boards
3. Aluminum profiles
4. Structure A
5. Structure B

THERMAL BRIDGE

Thermal bridging happens on external walls of a building which has poor thermal insulation. It results heat loss from the inside of the building in cold weather or gaining of heat from the outside particularly in hot weather countries.

The framework of ZenPlus façade requires metal angle brackets fixed onto the external wall that create thermal bridge. An effective solution is to place a piece of rigid strong PVC pad, "Thermostop" between the metal angle bracket and the external wall. It breaks the bridge so as to prevent the passage of heat.

1. Metal bracket
2. Aluminum profile
3. Thermostop
4. Backing wall



WEATHERPRO®-PLUS CLADDING
ZenPlus Self-ventilating Façade System

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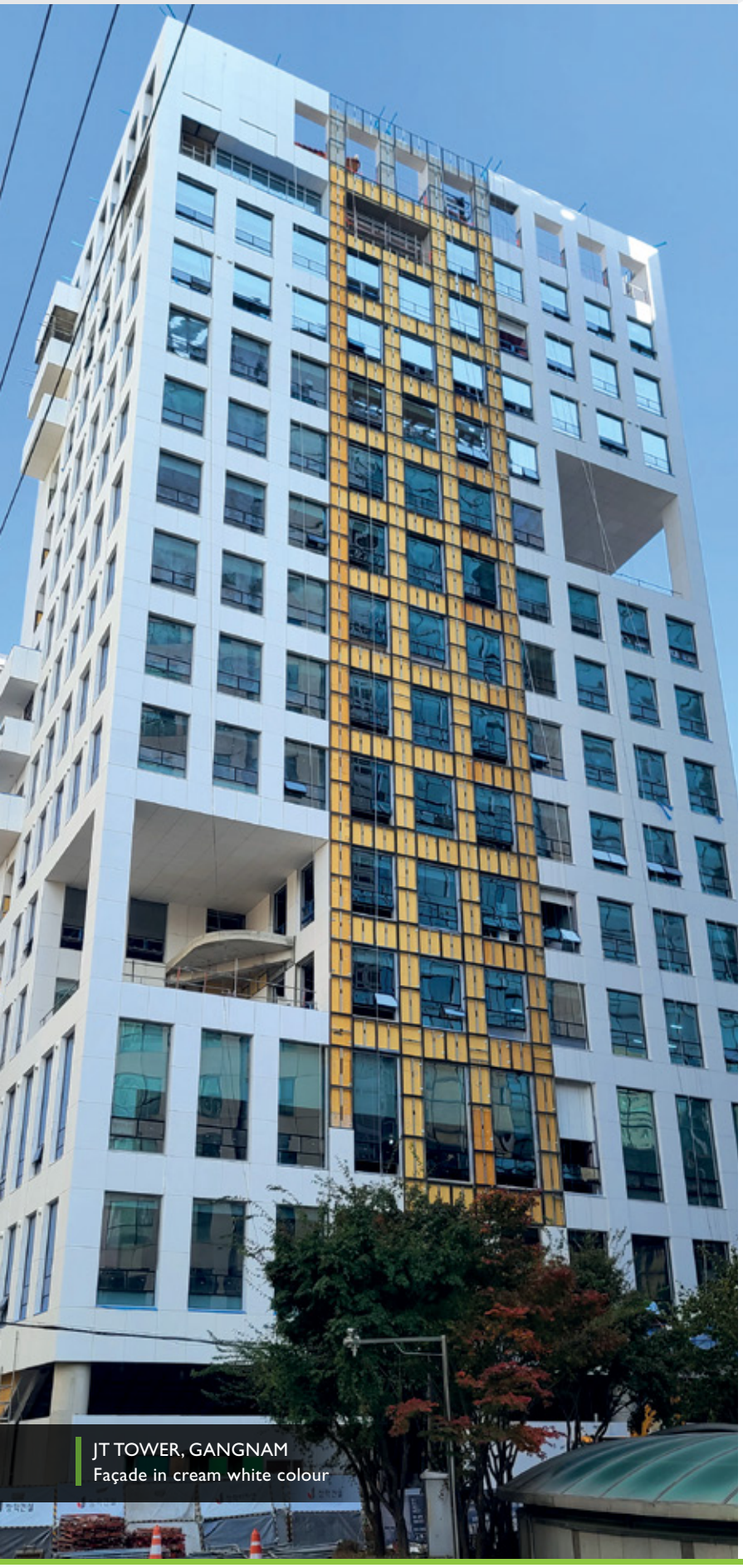
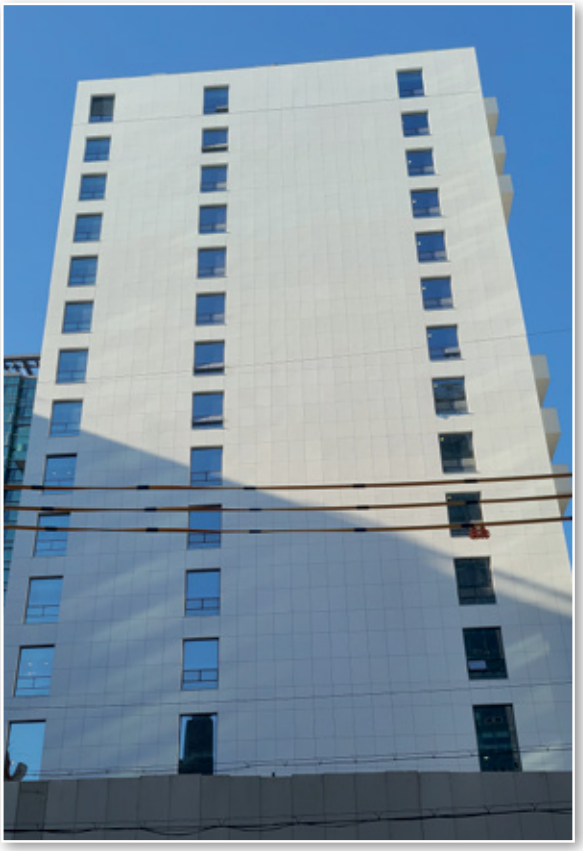
THE HIGH-RISE PROJECT



JT TOWER, GANGNAM
Façade in cream white colour

ZenPlus through coloured fibre cement façade has been installed at many large or small buildings of new-built or refurbishment in Korea. ZenPlus with its proven excellent performance and attractive appearance has gained the trust of façade contractors, architects, and project clients from private sectors and the government. JT Tower, a newly built high-rise building is a headquarter office of a Buddhist non-profit organization. The Tower is situated at the hustle and bustle of central business district, Gangnam in Seoul. ZenPlus façade has been selected among other commercially available façade systems. Un-doubtfully, ZenPlus fulfills the contractual criteria on project budget and stringent technical requirements. The ZenPlus façade is designed to resist earthquake and high intensity of wind force. A series of site tests have been conducted to reconfirm the façade performance in compliance with project specifications. These tests include fire resistance performance, materials' durability, mechanical and wind load tests. Further reading please refer to the Section "System Stability" on the page 13.



SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

TYPICAL TIMBER FRAMEWORK SUB-STRUCTURE

Timber is a natural hydroscopic material. It is economic for construction and commonly applied on bungalows and low-rise buildings in some countries. However, common findings on decay or swelling of un-protected timbers when exposed to hot and wet weather. Timber has higher wet and thermal expansion rate than steel or aluminum. When ZenPlus ventilated façade is supported by a timber substructure, it is recommended to use metal brackets to support the vertical timber battens rather supported by horizontal counter battens on the backing wall structure. The metal sliding support brackets allow free movement for the timber battens. Especially the ventilated façade with open joints where humid air and rain can access the timber substructure behind the façade boards. Wet expansion is not favourable to the battens that can cause timber warping or swelling as a result of obstructing movements of façade boards. To accommodate proper movement, using primed and pressure-treated timber battens are preferred. Façade layout with small sized ZenPlus boards helps to minimise latent damages of the board due to unexpected deformation of the timber substructure. The lengths of the small sized boards range from 600mm to 1500mm.

ZENPLUS FIBRE CEMENT FAÇADE ON TIMBER FRAMEWORK

1. ZenPlus façade board
2. Wider timber batten at board joint support
3. Timber batten at intermediate support up to maximum 618mm centres
4. Wall mount metal brackets
   - Fixed to loadbearing building structures with minimum M8 steel anchors
   - Fixed to timber battens with M4.8, A2 stainless steel screw
5. A2 Stainless steel Torx screw minimum M4.8mm x 38mm, flange head Ø 12mm with unpainted or painted colour head fitted with circular sleeve where appropriate
6. Flat EPDM self-adhesive foam tape
7. Thermostop, optional
8. Non-combustible mineral stone wool thermal insulation layer in the cavity, optional
9. Loadbearing building structure

SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

TIMBER BATTEN GRID

Ⓕ Fixed support bracket, Ⓢ Sliding support bracket

Timbers run vertically, air flow and moisture behind the boards is free to move up from lower level to upper level.

FASTENERS FOR TIMBER FRAMEWORK

FIXING BATTENS TO BRACKETS

- Minimum M4.8 x 25mm, A2 stainless steel screw

FIXING BRACKETS TO LOADBEARING BUILDING STRUCTURES

- Minimum M8 x 65mm wedge anchor for concrete structures or expansion type steel anchor suitable for the material of backing structure, subject to wind calculation.

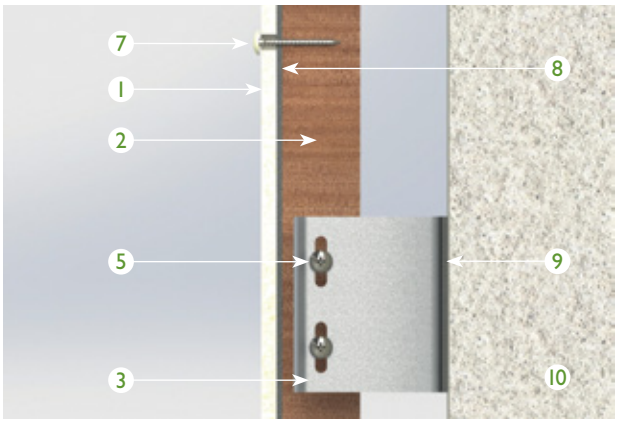
SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

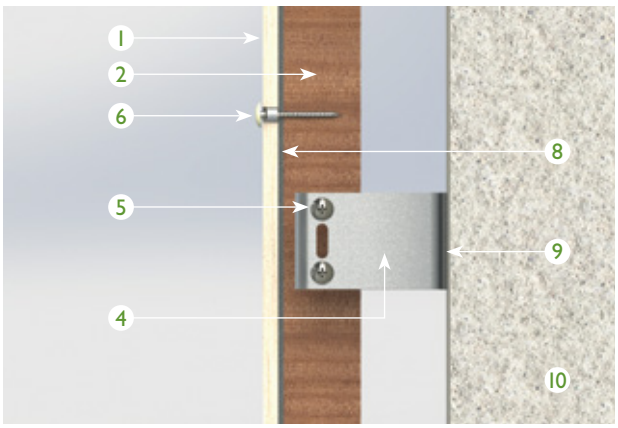
MOVEMENT OF TIMBER BATTENS

Since timber battens will expand or contract according to climatic and temperature change, it is recommended to use metal bracket supports securing the battens that allow them for wet and thermal movement. Typically, a vertical timber batten is supported by three brackets which are fastened to a building structure. The fixed support bracket Ⓕ should be positioned as close to the centre of the batten and the sliding support brackets Ⓢ at two ends of the batten. These allow the batten moving up and down as the expansion or contraction. If a short batten is supported by two brackets, the fixed support bracket Ⓕ should be provided at the top, so the batten can move from the top downward. Any length of a batten should only have one fixed support in all circumstances. A movement joint gap minimum 20mm between the upper and lower battens should be allowed.

TYPICAL TIMBER FRAMEWORK



SLIDING SUPPORT Ⓕ



FIXED SUPPORT Ⓕ

FAÇADE SYSTEM

1. ZenPLus façade boards
2. Batten
3. Brackets for sliding support Ⓢ
4. Brackets for fixed support Ⓕ
5. Stainless steel screw minimum M4.8
6. Stainless steel Torx screw M4.8 with sleeve
7. Stainless steel Torx screw M4.8
8. EPDM foam tape as wide as the battens
9. Thermostop, optiona
10. Building structure

WEATHERPRO®-PLUS CLADDING
ZenPlus Self-ventilating Façade System

INSTALLATION ON TIMBER FRAMEWORK

ZENPLUS FAÇADE BOARDS ON TIMBER FRAMEWORK

1. Maximum ZenPlus board size at 1220mm x 2440mm
2. Maximum batten support distance at 618mm centres*
3. Screws at nominal 450mm centres (ranging from minimum 300 to maximum 570mm centres subject to wind calculation)
4. Building wrap
5. Mineral wool insulation is optional. It may be required in some countries for compulsory energy saving. The mineral wool should be firmly installed on the backing wall with insulation pins.
6. Insulation pin
7. Battens with EPDM foam tape

* Spacing for batten support distance and fasteners are subject to wind load calculation.

INSULATION PIN

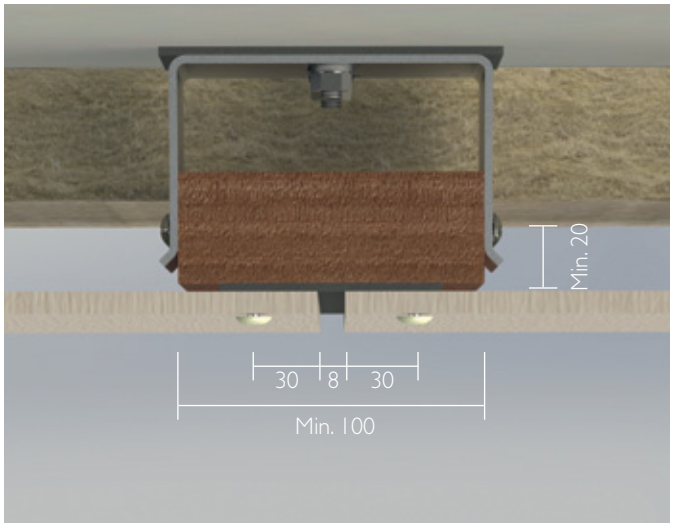
SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

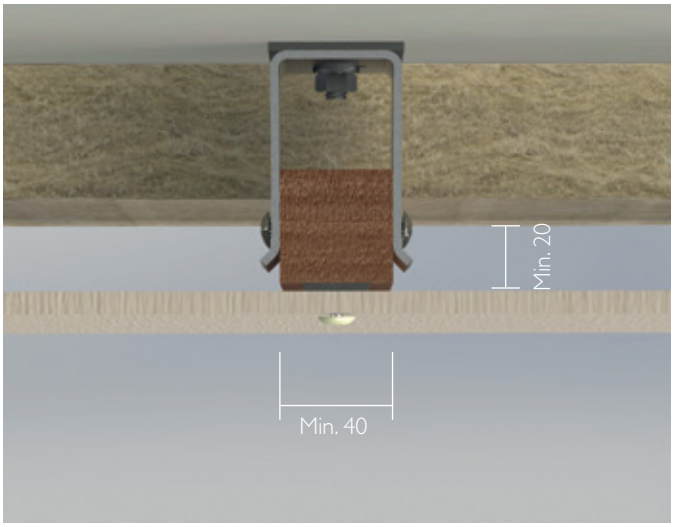
FASTENING FAÇADE BOARDS ON TIMBER

Installation of ZenPlus facade boards on timber with correct method is essential. It ensures that the installed boards are able to accommodate movement without damage. The edge distances for screws should not be lesser than the specified as below.

WIDER BATTEN AT BOARD JOINT SUPPORT



BATTEN AT INTERMEDIATE SUPPORT



Note: The batten thickness should not less than 27mm thick. Average thickness is 38mm subject to a number of bracket supports and wind load calculation.

SCREWS AT BOARD CORNERS

EDGE DISTANCES

The minimum edge distance for drilled holes in timber battens should have minimum 15mm from the edge.

The allowable edge distances from the board edges to the screw centre should be respected.

- At the board corners, horizontal 30 -100mm & vertical 70 -120mm
- Open board joint width ≥ 8mm & ≤ 15mm
- Ventilation cavity behind facade boards ≥ 20mm

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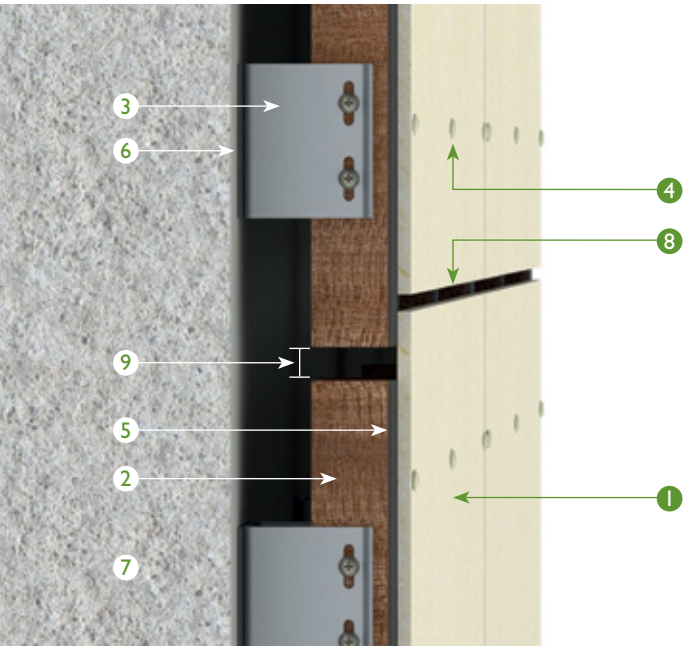
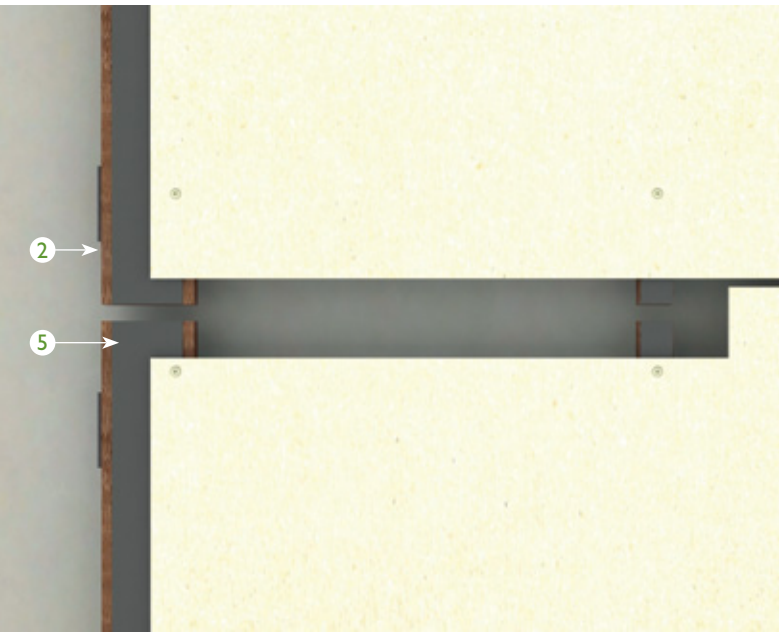
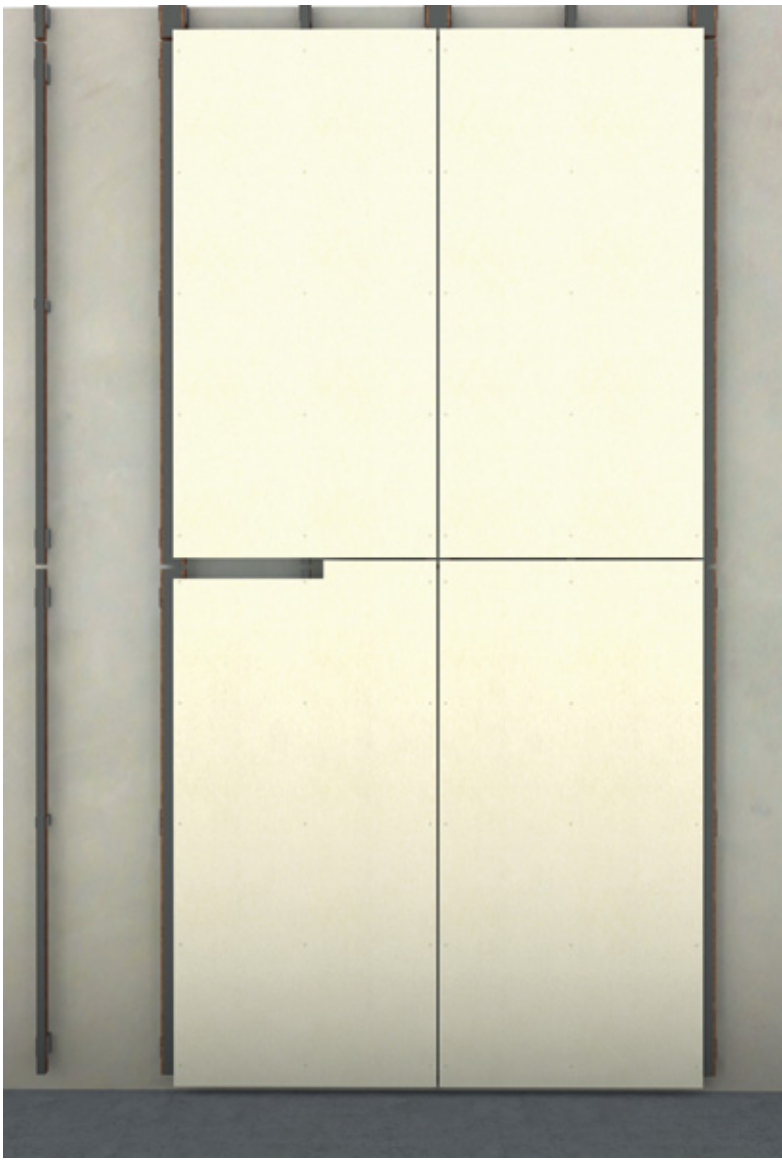
INSTALLATION ON TIMBER FRAMEWORK



BOARD LAPPING AT BATTEN JOINT

1. ZenPlus façade board
2. Battens
3. Sliding support brackets
4. Screw fixing
5. EPDM foam tape
6. Thermostop
7. Loadbearing building structure
8. Open board joint width ≥ 8mm & ≤ 15mm
9. Batten joint gap width ≥ 20mm & ≤ 25mm





Important note:

Never fasten a ZenPlus façade board on two adjoining battens in a line, as movement of the two battens in opposite direction that could damage the board. The above drawings show the façade board lapping on the upper batten (or the lower batten). This is for the aesthetic purpose of hiding all batten joints behind the boards.

SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

USE OF HORIZONTAL COUNTER BATTENS

Whilst Soben International advocates using metal sliding bracket supports to vertical battens in favour of hydroscopic movement, typically vertical battens of the most common rain screen framework constructions are using horizontal counter batten supports which are attached to the building external wall. All these battens are nailed connection. As such, all supports for the vertical battens are rigid that limit any hydroscopic amd thermal expansions. These may cause timber warping. It is recommended to use short battens rather long ones for ZenPlus façade system. Nonetheless, small sizes of ZenPlus façade boards should be installed to minimise board damage in case of deformation of timber framework.

TRADITIONAL WAY OF TIMBER BATTEN CONSTRUCTION

1. ZenPlus board
2. Vertical batten
3. Horizontal counter batten
4. Nail fixed connection
5. Building wrap (optional)
6. External masonry wall

SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

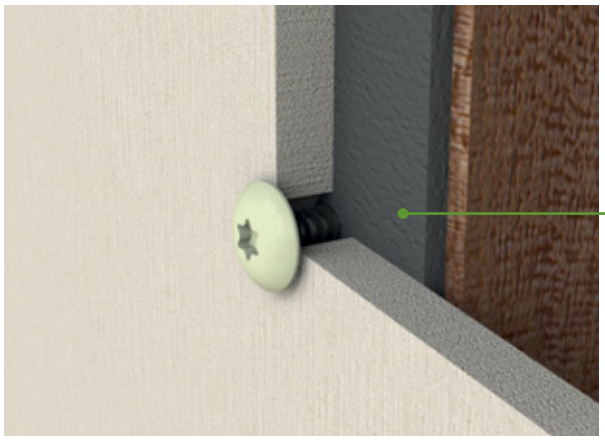
FIXING POINTS AT ZENPLUS FAÇADE BOARDS

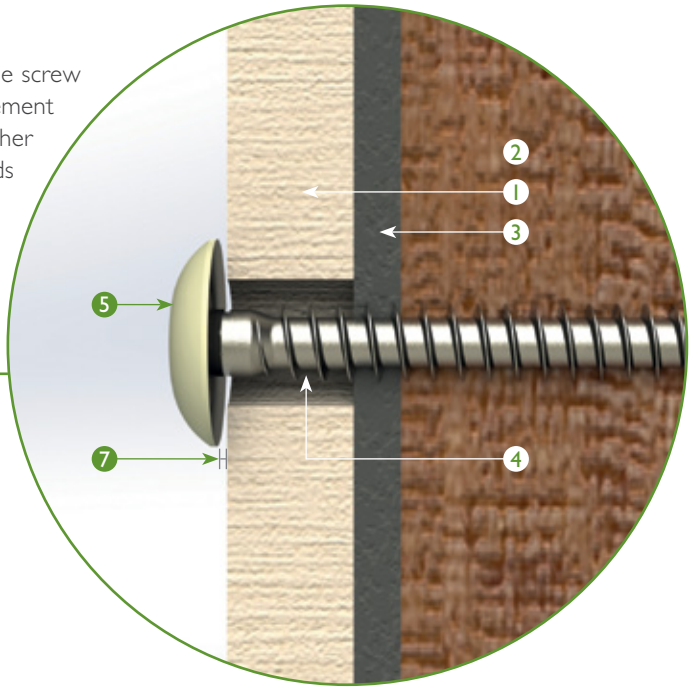
It is crucial to prevent over-tightening screws on façade boards, otherwise board movement is prohibited. The façade boards are fastened to the timber substructure by Torx screws. Proper fixed and gliding fixation points at façade boards should be installed to accommodate board movement. Further details should be read in conjunction with the section for "Movement of Façade Board" of this manual.

Important note:

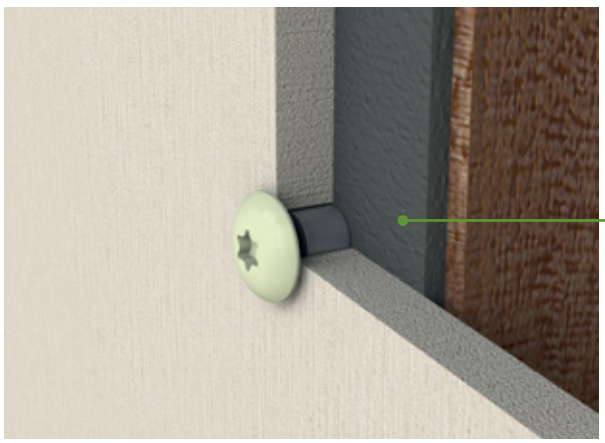
Installers should ensure a clearance 0.3mm to 0.5mm between the screw head and the façade board surface after screw fixing. Façade movement occurs due to weather effect or structural resonance. As many other façade materials, a correct installation of fibre cement façade boards is essential to prevent latent damages from any movements.

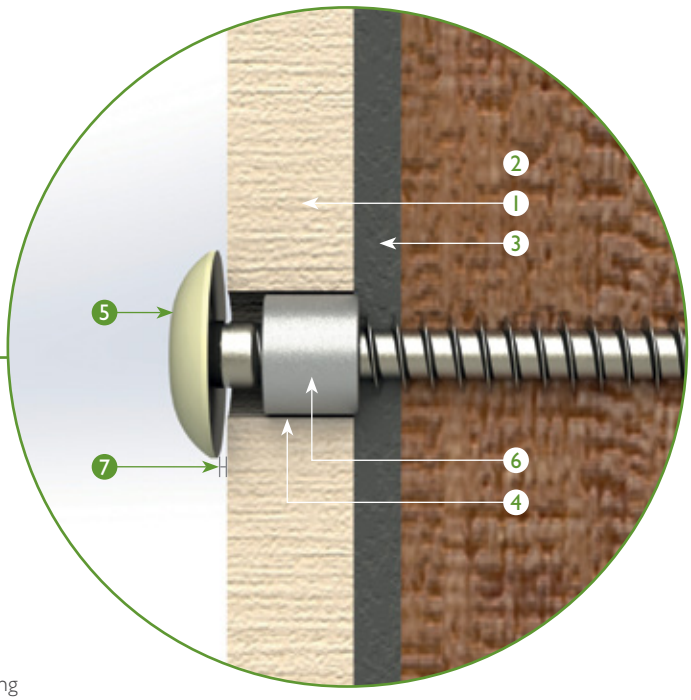
STAND-OFF SCREW HEAD





GLIDING POINT





FIXED POINT

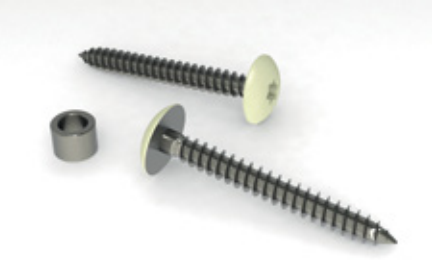
1. ZenPlus board 8mm thick
2. Batten
3. EDPM foam tape
4. Drill hole in the board Ø8.3mm
5. A2 stainless steel Torx screw Ø4.8mm x 38mm
6. Aluminum sleeve Ø8.0mm OD / Ø5.3mm ID x maximum 8mm long
7. Screw head distance from the board face 0.3-0.5mm
8. EDPM foam tape

SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

INSTALLING ZENPLUS FAÇADE BOARD WITH SCREWS

When installing 8mm thick ZenPlus boards, use stainless steel Torx screw minimum M4.8 x 38mm. The screw head can be unpainted or colour coated finish matching the façade board colour. The screw for fixed points is fitted with an aluminum sleeve.



TORX SCREW & SLEEVE

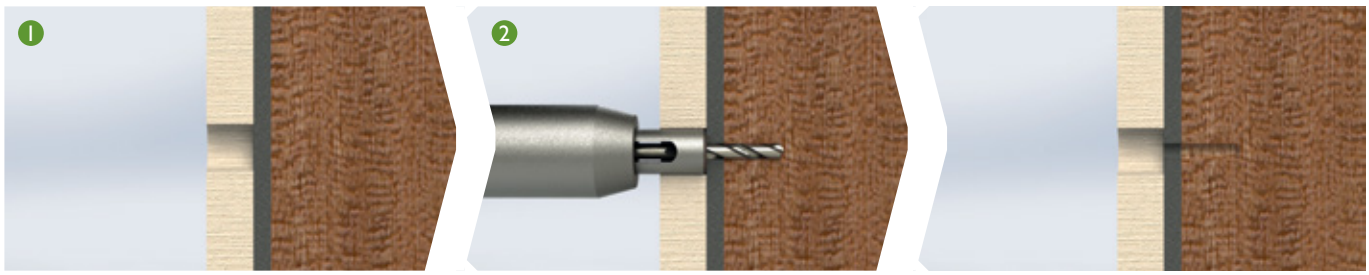
CENTRALISING DRILL TOOL

SLEEVE SIZES FOR SCREWS

Sleeves are made of either aluminum or stainless steel. There are several common sleeve sizes available in the market that suit for installation. If these sizes are not available in your country or any doubts, please contact Soben International for assistance.

TORX SCREW				BATTEN	FAÇADE BOARD	SLEEVE
Size	Length / Board	Flange Head - Ø mm	Material *	Centering hole in timber - Ø mm x mm depth	Drilled hole in boards - mm	Sleeve OD/ID - mm
M4.8	38mm / 8mm board	12	A2	Max. Ø3.5 x 15mm	8.3	8.0/5.3
M5.5	45mm / 12mm board	16			9.3	9.0/6.0

Material* A2/304 stainless steel

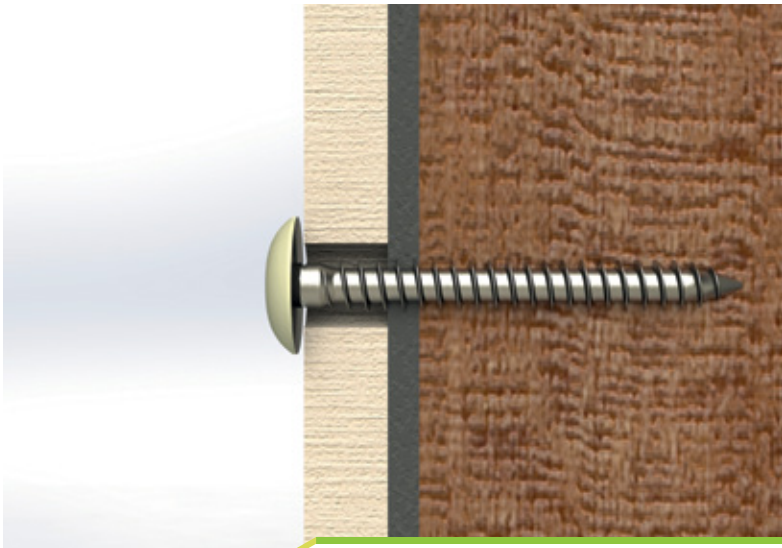


1. Pre-drilled holes in façade boards

Prior to installation of boards on the timber framework, pre-drilled holes in ZenPlus façade boards are fabricated. For preparation of large quantities of façade boards, CNC router offers fast and high accuracy of cutting and drilling.

2. Drilling in battens by centralising drill tool

Before fastening the screw in the batten, position the predrilled facade board on the timber framework and hold the board in place using locking pliers or put a supporting batten below the board. Using a centralising drill tool at the pre-drilled hole in the board ensures that a small concentric hole is drilled into the batten behind the board. Finally, the screw is fastened.

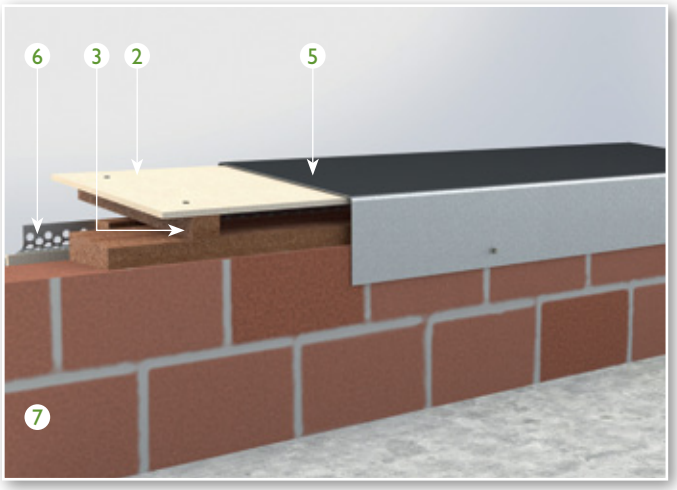


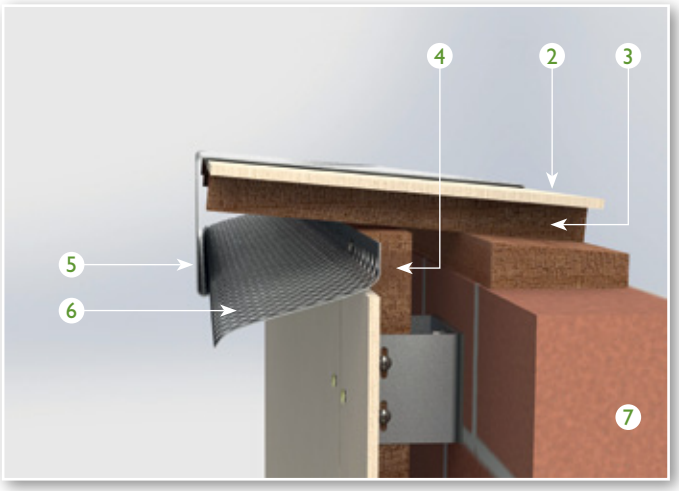
SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

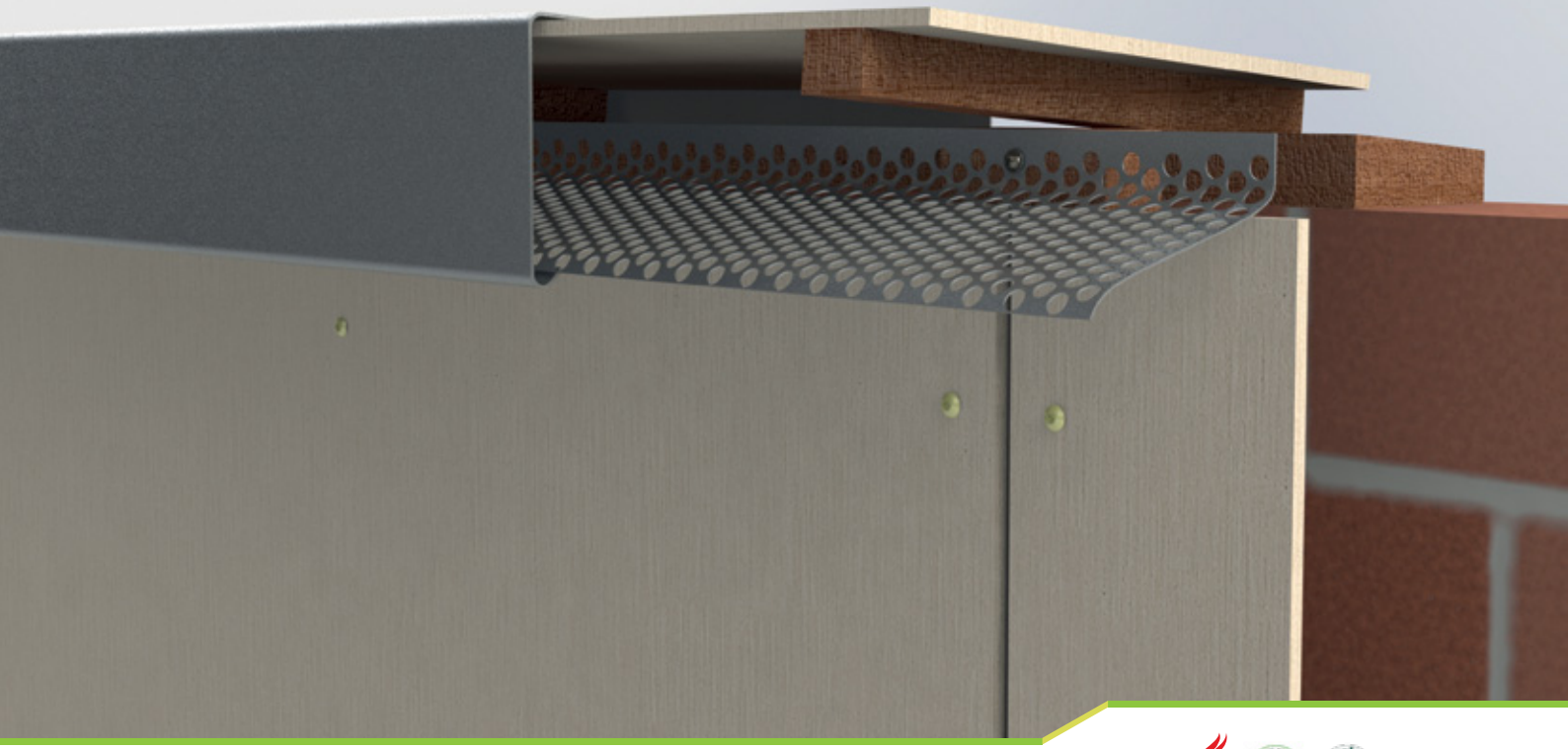
FACADE AT PARAPET WALL HEAD

The top end of ZenPlus façade up to the parapet wall head should remain open for release of moisture and free air flow. It is necessary to prevent mice and birds nesting in the cavity, perforated closures are installed to shut off the openings of cavity at the top and the bottom ends.





1. ZenPlus façade board
2. ZenPlus board or WeatherPro fibre cement backing board
3. Supporting timber structures for backing board at maximum 600mm centres
4. Batten
5. Wall head capping panel
6. Perforated closure made of stainless steel or aluminum
7. Parapet



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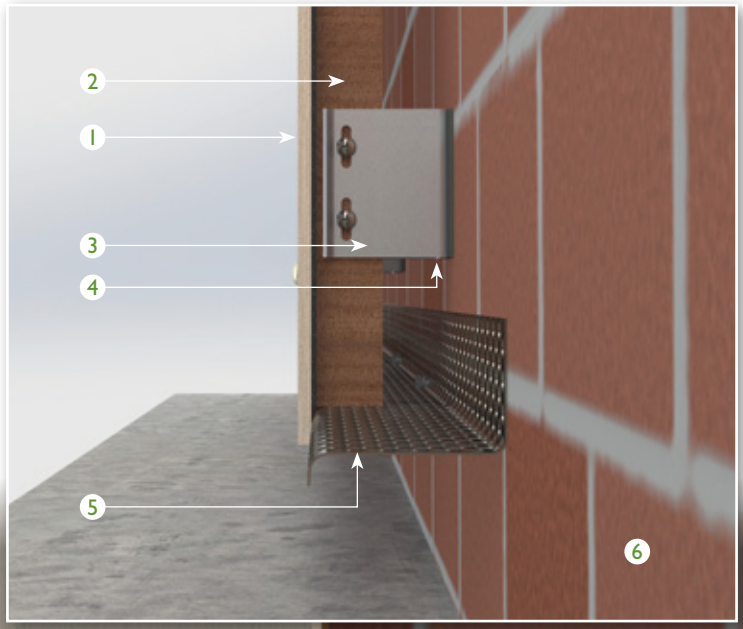
INSTALLATION ON TIMBER FRAMEWORK

CAVITY OPENING AT THE BOTTOM END

1. ZenPlus façade board
2. Batten
3. Metal bracket
4. Thermostop, optional
5. Perforated closure made of stainless steel or aluminum
6. Building structure



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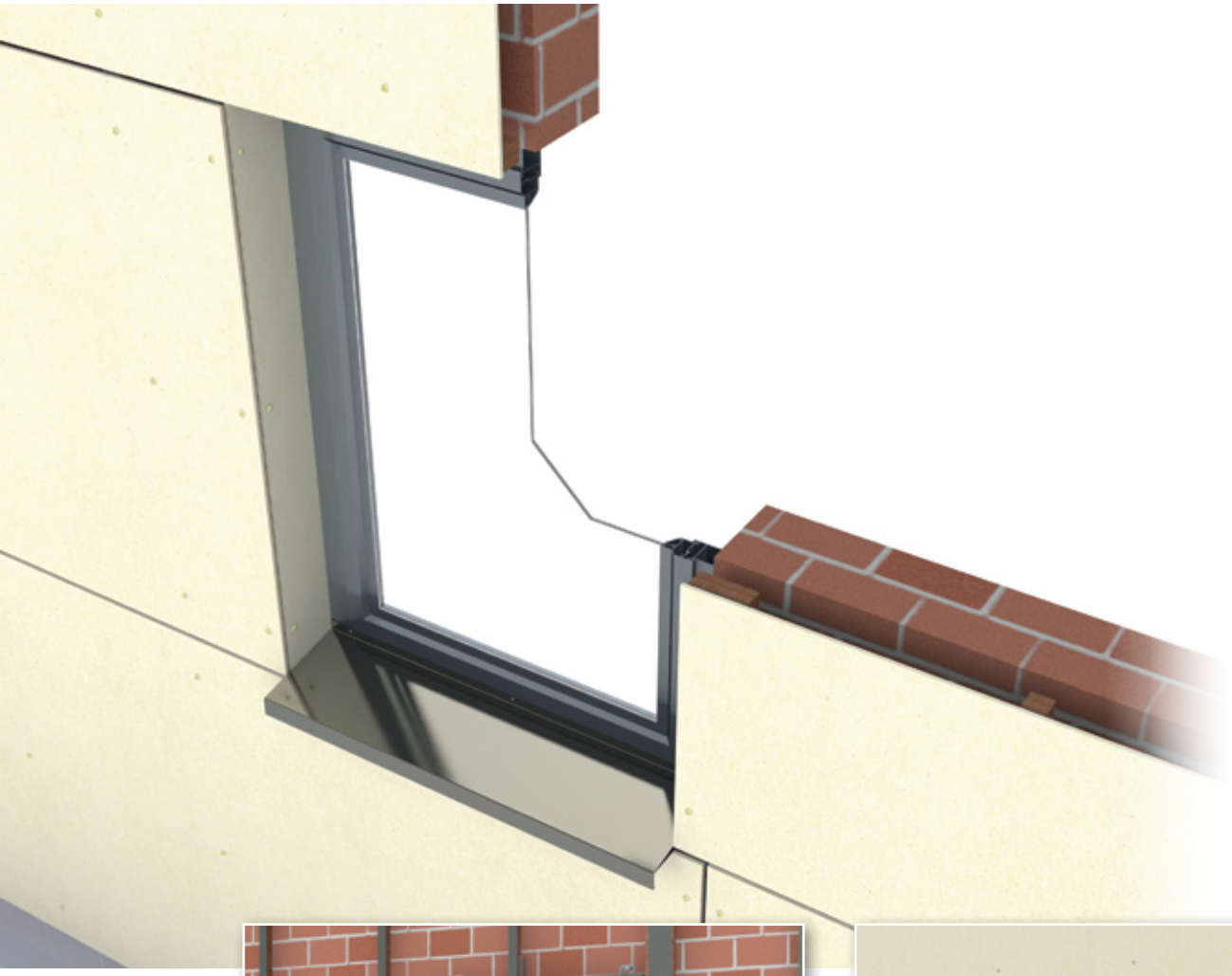
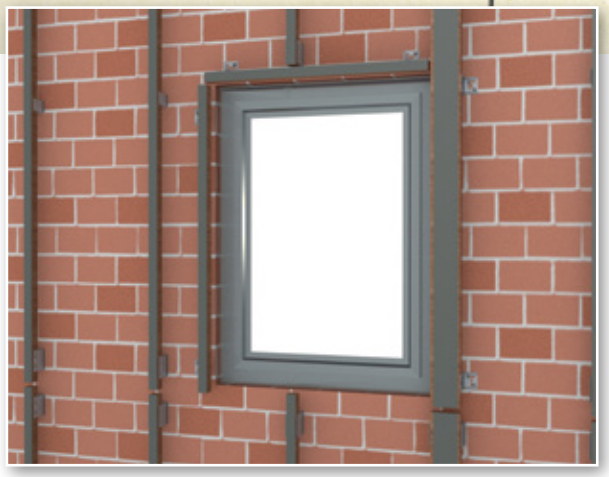
INSTALLATION ON TIMBER FRAMEWORK

OPENING FOR WINDOWS AND DOORS

The installed ZenPlus façade boards around a window opening are backed by battens which are fixed at the both sides and upper side of the wall opening. The window sill made of aluminum or extruded fibre cement module is installed at last. Alternatively, fast installation can make use of prefabricated GRC units or aluminum window enclosure modules. The same installation method can be applied at door openings.

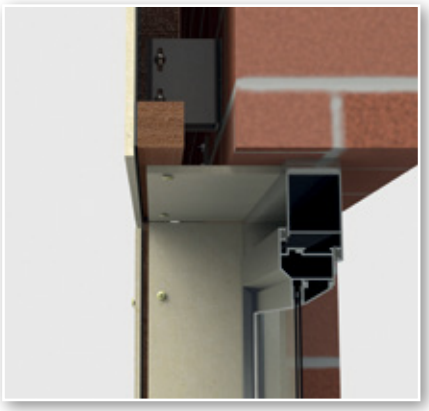


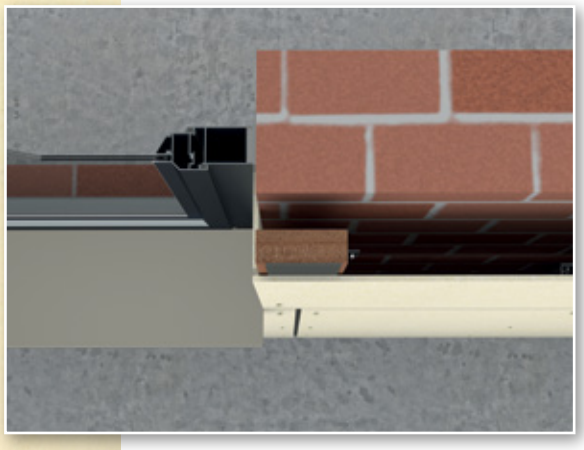


SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

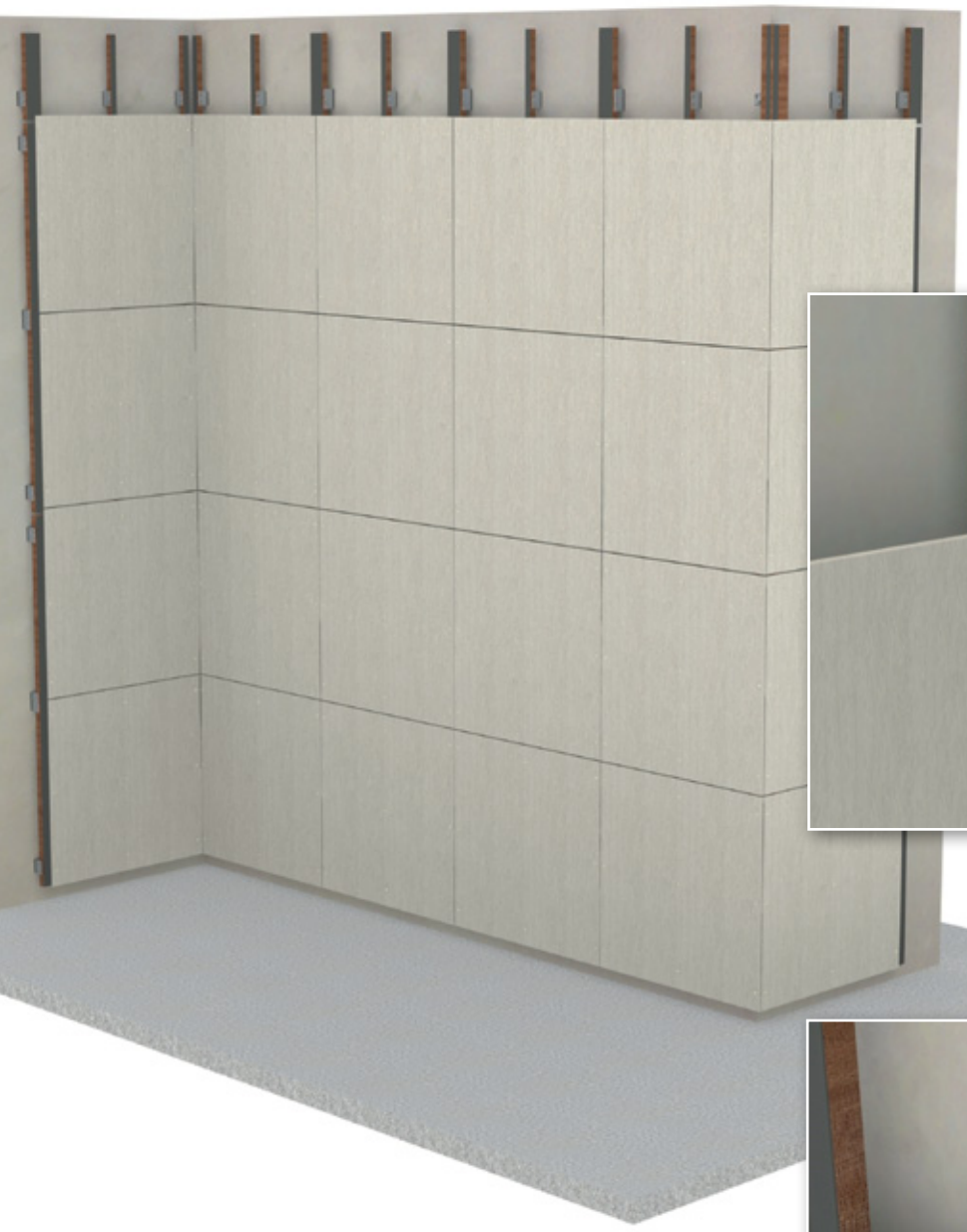
Fixing façade boards around the window and door openings are the same as the large façade board . Fixed and gliding fixation points are required for movement.

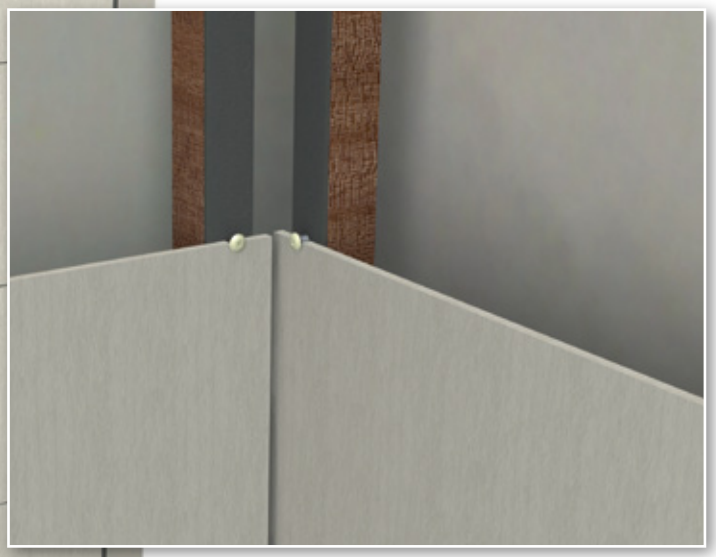




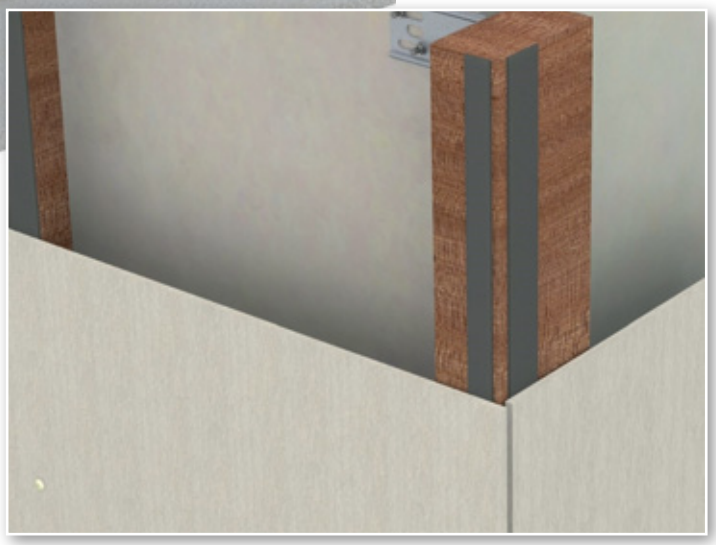
SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK





INTERNAL CORNER



EXTERNAL CORNER

CORNERS

ZenPlus façade board layout arrangement at building corners can be simply paneling to create a beauty in simplicity. What is more, stunning designs by using coloured aluminum or timber featured profiles that can shape up the aesthetic layout designs.

SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

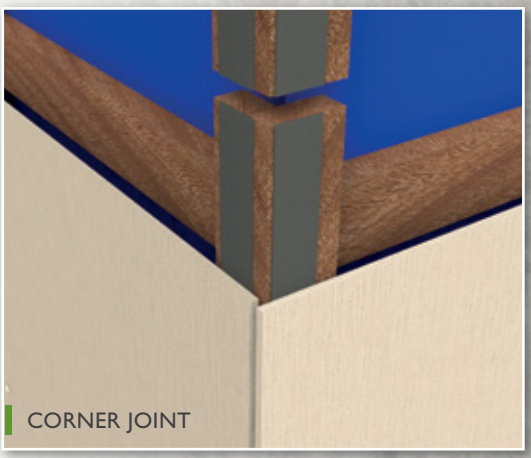
CORNERS WITH FEATURED PROFILES

BOLD STATEMENT FORGED BY
LARGE CORNER PROFILES

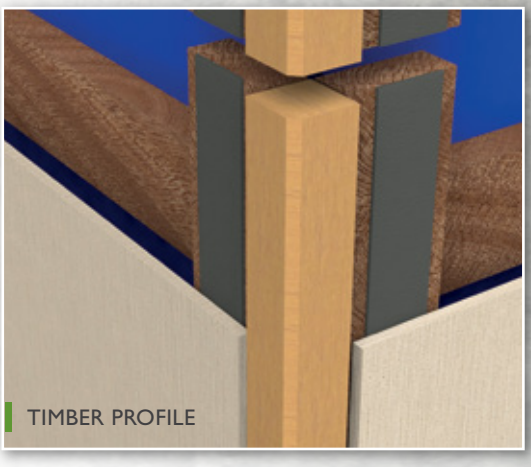
WEATHERPRO®-PLUS CLADDING
ZenPlus Self-ventilating Façade System

INSTALLATION ON TIMBER FRAMEWORK

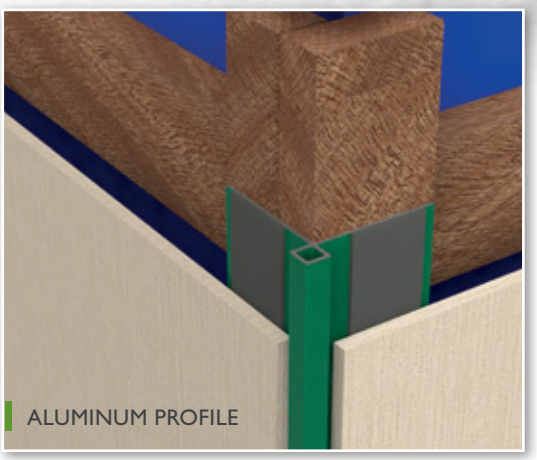
A minimum 4 mm gap between the board edge and the profile should be provided.



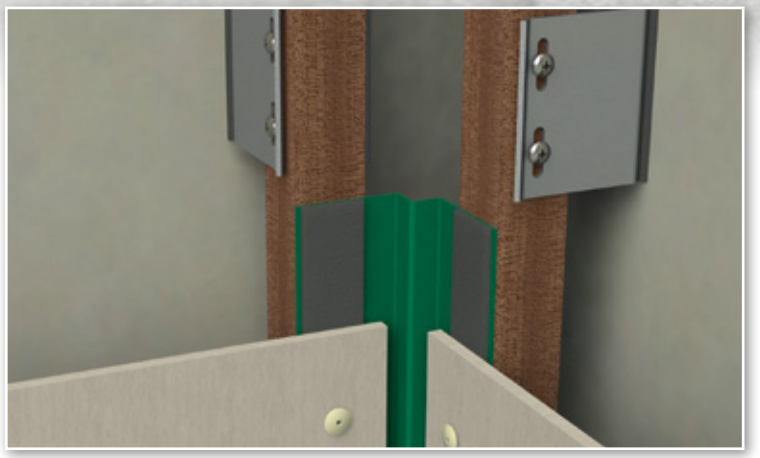
CORNER JOINT



TIMBER PROFILE



ALUMINUM PROFILE

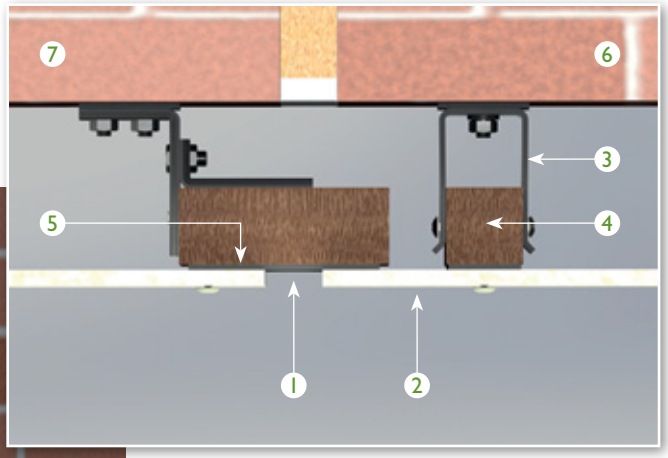


SOBEN INTERNATIONAL

INSTALLATION ON TIMBER FRAMEWORK

OTHER DETAILS

MOVEMENT JOINT AT ZENPLUS FAÇADE



When ZenPlus façade clads over two adjoined building structures, a movement joint at the façade boards should be provided.

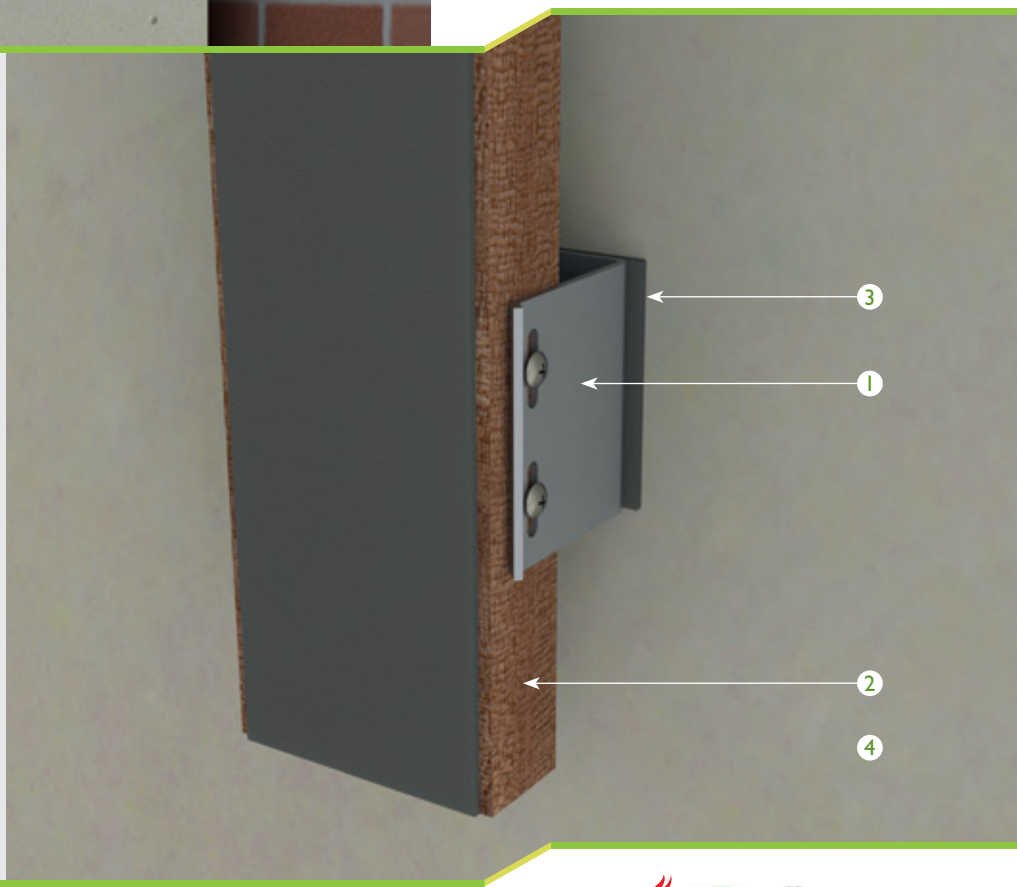
1. Movement Joint
2. ZenPlus façade boards
3. Metal brackets
4. Battens
5. EPDM foam
6. Structure A
7. Structure B

THERMAL BRIDGE

Thermal bridging happens on external walls of a building which has poor thermal insulation. It results heat loss from the inside of the building in cold weather or gaining of heat from the outside particularly in hot weather countries.

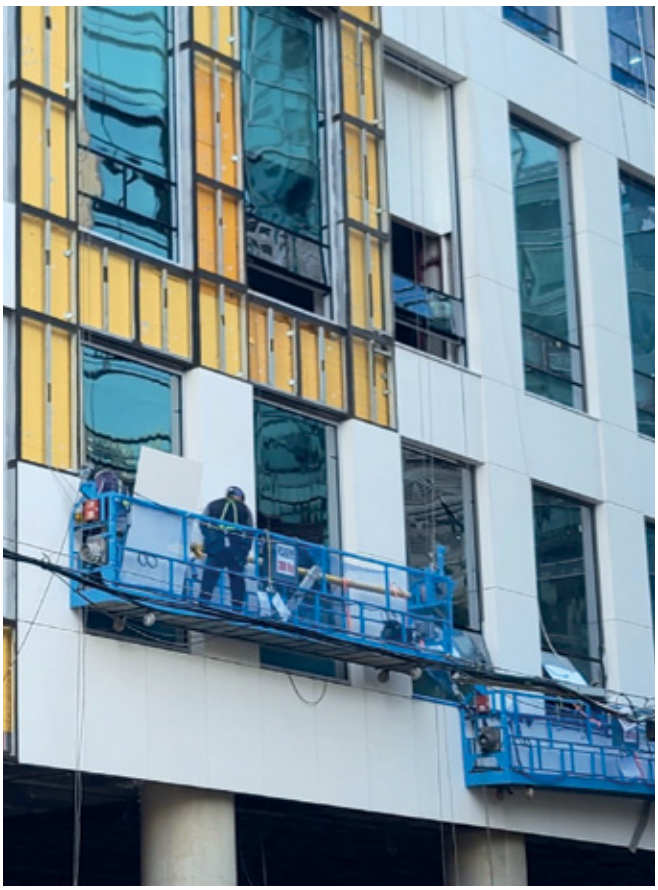
The framework of ZenPlus façade requires metal angle brackets fixed onto the external wall that create thermal bridge. An effective solution is to place a piece of rigid strong PVC pad, "Thermostop" between the metal bracket and the external wall. It breaks the bridge so as to prevent the passage of heat.

1. Metal bracket
2. Batten
3. Thermostop
4. Backing wall



SOBEN INTERNATIONAL

SAFETY, STORAGE & HANDLING INSTRUCTIONS



HEALTHY & SAFETY

Processing

As for all other building materials, handling with safety precautions must be taken into account and local laws and regulations must be observed.

Horizontal façade boards or ceiling boards must not be walked on as they are not designed intentionally in doing so unless stated otherwise. If there is a risk as this occurring, warning notices should be displayed. Installers must ensure that they work from adequate and safe platform where necessary.

Personal Protective Equipment

The best practice for work safety & occupational health should be for workers to use dust masks to prevent dust inhalation. Working clothes is preferred to be long sleeve shirts, trousers and hats to prevent direct contact with skin. Gloves should be worn at all time to prevent cuts.

STORAGE & HANDLING

Storage

Soben International ZenPlus façade board products are delivered in pallet with recycled plastic protection cover against weather conditions during transportation. They are preferred to be stored inside and undercover in a dry and flat level surface on pallets or sleepers with maximum 400 mm distance, maximum 3 pallets in a stack. Stacks of loose boards should not exceed 1m (height). If the products have to be stayed outdoor temporarily, a weatherproof tarpaulin is recommended to wrap over it to provide protection.

When the board products get wet, move them to a dry area with good ventilation and let them dry out naturally. It will not degrade the board themselves.

Manual Handling

European or local manual handling regulations applies for any heavy loading practices in order to minimise the risk of accidents to the handlers and also the possible damage to the product.

- Always lift boards off the board below, never slide board on board or drag the stack. This prevents scratches and damages to the board surface.
- Always carry the boards on edge, but do not store on edge.
- Never carry the boards on edge horizontally or at corners, it may cause the board broken.

Mechanical Handling

Mechanical handling is preferred. If machine is not available, boards can also be removed manually.

WORKING PROPERLY

Cutting & drilling

- Cutting and drilling are subject to dust development, proper precautions must be taken by using appropriate dust extract equipment if necessary.
- Cutting to size may be done with running hand tools or stationary equipment at well-ventilated area.
- Power saw uses a tungsten carbide or diamond tipped blade.
- High precision and fast cutting requires automation of CNC machine tools.
- ZenPlus façade boards should be pre-drilled prior to installation. Normal low or high speed drill suitable for fibre cement can be used. A scrap board placed under the drilling location can ensure a clean hole.
- Cut edges can be sanded to smooth finish by using 80 grit fine grinder or file.
- All cut edges must be sealed with hydrophobic agent recommended by Soben International. Apply the hydrophobic agent on the cut edges and remove excessive agent on the boards' face with a clean cloth.

CARE & MAINTENANCE

CARE & MAINTENANCE

Cleaning of boards

It is a good practice to ensure ZenPlus façade boards are clean before installation. If necessary, simply use clean water or added with little mild detergent and soft sponge to remove dust and dirt from the board surface, followed by wiping the boards with a damp cloth and a dry cloth again. If the building job site condition is unfavourable, washing the surface of façade may be needed after installation.

Avoiding surface damages

As any façade materials, it should avoid damages and scratches on ZenPlus façade board' surfaces, lift the boards off the pallet with care and properly handling during installation. For façade boards stacking, dust or wastes from cutting or drilling must be removed from the boards with a soft brush or a vacuum cleaner immediately once the work has been completed. Scratches might leave white streaks on the board surface which will turn dark when exposed to rain, because the board absorb water through the scratches. Therefore, remedial for hydrophobisation is needed for the damages or scratches, carefully apply clear hydrophobic agent with a thin brush. In any case, the darkening scratch areas will be gradually diminishing owning to carbonation of fibre cement matrix taking place.

Annual Inspection

Though ZenPlus façade require low-maintenance, it is recommended an annual inspection on the installed façade is conducted. This ensures the lifespan of installed façade in good condition without any issues of fixings, joints or openings for services pipes. If found, remedial should be taken immediately. The remedial area, damage surface or scratches should be sealed with hydrophobic agent.

Behaviour in rain conditions

Fibre cement façade boards are treated to water repellant. The boards are made of Portland cement, their colour may turn darker when exposed to rain if the boards absorb moisture through holes, scratches or insufficiently sealed edges. Wet darkening is a natural behaviour for any cement based products. It does not degrade the integrity or long term durability of the boards. The original colour will be restored as long as the boards dry out. The darkening will show after heavy rainfall for the first few months after installation. Afterwards, it will gradually reduce in next 12 months because the fibre cement matrix continuously reacts with atmospheric carbon dioxide as a result of the surface slightly carbonated that reduces water penetration

Maintenance cleaning

ZenPlus façade boards have been treated to hydrophobisation during manufacture that helps to reduce dirt and dust retained on the installed façade surface. However, if the building site environment has been unfavourable, the façade can be cleaned with cold or lukewarm water mixed with a household mild detergent. Rinse with plenty of clean water until the façade is clean. Before full scale cleaning of the façade, it is recommended to test the selected cleaning method on a small area that ensures no adverse effect on the façade board surface.

Note!

- Cleaning façade boards with solvent and acetic acidic cleaning agent are not allowed. It might cause permanent stains on board surfaces.
- Inappropriate use of high-pressure cleaning may damage the surface that is not recommended.

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