Tempsi

breathing walls

Installation instructions

A2

Environmentally friendly

Wolf Group

Besides improved thermal insulation properties, protection of walling against moisture, noise damping and a better esthetic aspect of buildings is accentuated in these days. The relative moisture content in internal heated housing and office rooms is about 60 %. Moisture is pressed towards the outer wall surface, where water vapor condenses. When the escape of water vapor is hindered by, for instance, a ceramic coating, vapor accumulates in walling. The thermal conductivity of walling increases and water in walling freezes in winter and the volume of frozen walling increases and damages the plaster. Also, in such a way moulds can form in the interior. An optimal solution of such problems is the application of ventilating facade systems.

1 Application possibilities for ventilating Tempsi facades

The ventilated facade system from Tempsi can be used both for new buildings and for reconstruction of family houses, flat buildings, office buildings, civic amenities, industrial and agricultural buildings. The functional and elegant ventilated facade from Tempsi boards fulfils the requirements to high quality, esthetic, functionality and lifetime.

The ventilated facade system can be completed with thermal insulation.

Description of the facade system:

The ventilated facade is an integral part of peripheral structure and therefor the structure has to be treated as an unit from static point of view, and in case of additional thermal insulation also from thermal conductivity point of view.

•**The bearing structure** – ensures the insertion of thermal insulation and the fastening of facade lining to the bearing wall of the building

•**Thermal insulation** – a layer of thermal insulating material, fastened to the outer surface of peripheral structure of the building

•**Facade cover** – protects the bearing structure and the thermal insulation against the influence of weather and creates an esthetic aspect of the building at the same time

1.1 Advantages of ventilated Tempsi facades

• **Thermal insulation in winter** – the optimal choice of thermal insulation thickness in connection with the ventilated air ensures the minimal consumption of energy for heating of the house

• **Thermal insulation in summer** – the thermal damping of the facade decreases the overheating of the interior caused by the solar radiation in the summer

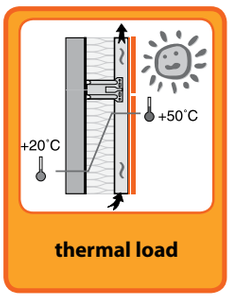
• **Hinged facade** – the hinged facade effectively protects before direct influence of the weather and holds the thermal insulation and wall in a perfect dry condition

• **Diffusion of water vapor** – the ventilated facade has favorable influence to the diffusion of water vapor in the structure and enables this way the achieving of an optimal moisture regime both in the wall and in the thermal insulation, and enables the drying of wall eventually. The stack effect between the internal cover and the thermal insulation ensures the perpetual removal of water vapor

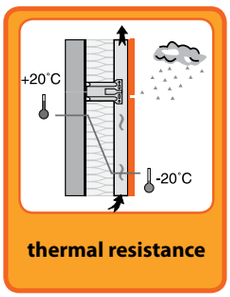
• **Acoustic insulation** – the thermal insulation from mineral fiber provides also an acoustic insulation and dominantly contributes to the protection against the outer noise

• **Facade cover** – a facade element from Tempsi boards is an element of many possible combinations of sizes, shapes, surfaces and colors and contributes to perfect realization of the architectural requirements to the facade

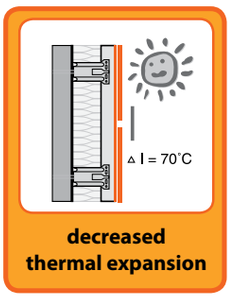
• **The system eliminates the eventual unevenness of existing wall**



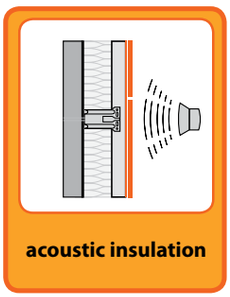
thermal load

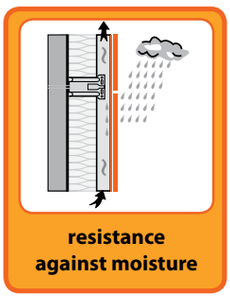


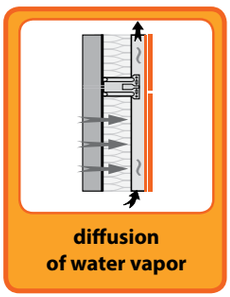
thermal resistance



decreased thermal expansion


acoustic insulation


resistance against moisture


diffusion of water vapor


fire resistance

• **Easy replacement of individual facade elements**

• **The structure is built using a "dry" method of mounting,** so the works can be performed the whole year

Tempsi ventilated facade system applied on bearing structure is a system, which together with the existing bearing structure creates a new peripheral structure, fully fulfilling all requirements to function, thermal properties, static, architectonic aspect at achieving a satisfactory lifetime.

1.2 Division of Tempsi facade systems

A) Depending on the location of Tempsi boards on the facade we divide the Tempsi facade systems as follows:

A_1) Tempsi CLADDING facade system

a facade system with manifested horizontal and vertical joint between the individual facade elements

A_2) Tempsi PANNELLO facade system a facade system with overlapped horizontal (the vertical joint is manifested only) **joints**

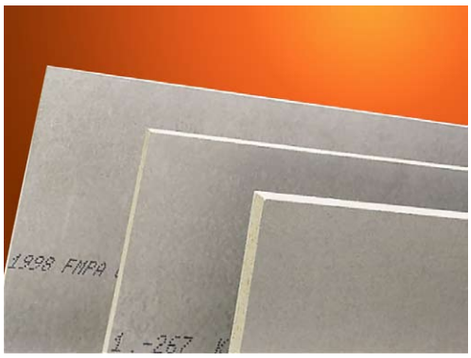
B) Two types of bearing grids can be used for anchoring of Tempsi boards on the facade

B_1) wooden bearing grid

B_2) bearing grid from system profiles from aluminum, zinc coated sheets

The extent of use of the ventilated facade system on a wooden is limited with the fire-fighting regulations. The extent of use of the ventilated Tempsi facade system on aluminum, zinc coated profiles is not limited with fire-fighting regulations. Tempsi boards have a reaction to fire class A_2-s1, d0 according to EN 1350-1 standard.

2.1 TEMPSI Base



The **TEMPSI Base** is a cement-bonded particleboard with a smooth surface (with relief) and its basic version is of cement gray color. It is suitable to provide this board with final colored or transparent paint (when the original cement aspect is required). The surface treatment increases the protection of board against weather influences and prolongs its lifetime. TEMPSI Base has a wide range of use – either for renovation of old structures or for building of new structures as floor, ceiling, walls, roof element, also in structures which have extra requirements for fire safety and resistances against environment effects.

At designing of facade systems from **TEMPSI Base** boards without surface treatment the composition of the board material – cement ware – has to be taken into account. The elements of free (not bonded) lime contained in the Portland-cement could penetrate up to the board surface and carbonize on the air by causing white "flowers", which could disturb the uniform aspect of the board surface. Claims due to such reasons therefore cannot be accepted. This phenomenon could be partly prevented by treatment of the board with deep penetrating paints, which decrease the absorbing capacity and hinder the transport of mineral substances on the board surface.

2.2 TEMPSI Colore

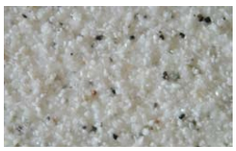
The **TEMPSI Colore** is a cement-bonded particleboard with smooth surface provided with a ground painting and a final painting (with environment effects resistant acrylic or polyurethane paints) in color shades of RAL, NCS color charts. The main area of its use are facades of old and new private houses, apartment houses, commercial and industry buildings, and their architectural details: socles, balconies, sound barriers. **TEMPSI Colore** might also serve for interior walls decoration purposes because of their mechanical resistances and a broad chart of colours, and in structures which have extra requirements for fire safety and resistances against environment effects as well.

2.3 TEMPSI Profilo

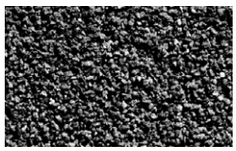
The **TEMPSI Profilo** is a cement-bonded particleboard (of 10 or 12 mm thickness), the surface of which is composed from embossment imitating the structure of wood, plaster or slate. The board surface is provided with a ground painting and a final painting (with environment effects resistant acrylic or polyurethane paints) in color shades of RAL, NCS color charts. The main area of its use are facades of old and new private houses, apartment houses, commercial and industry buildings and their architectural details: socles, balconies, sound barriers. **TEMPSI Profilo** might also serve for interior walls decoration purposes because of their mechanical resistances and broad chart of colours and in structures which have extra requirements for fire safety and resistances against environment effects as well.

2.4 TEMPSI Granito

The **TEMPSI Granito** is a cement-bonded particleboard, the surface of which is strewn with marble gravel of three different granularity and in 12 colors according to color chart. The main area of its use are facades of old and new private houses, apartment houses, commercial and industry buildings and their architectural details: socles, balconies, sound barriers. **TEMPSI Granito** might also serve for interior walls decoration purposes because of their mechanical resistances, also as a good choice for buildings with extra requirements for fire safety or resistances to environment effects.


21 R, White


33 R, Natural grey

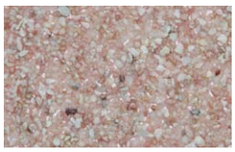

35 R, Black graphite


34 R, Red granite


85 R, Yellow dolomite


10 R, Natural brown

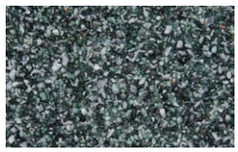

84 R, Green


83 R, Pink


88 R, Rosso Verona


13 R, Canterbury


94 R, Beige


87 R, Verde Alpi

2.5 Basic properties of cement-bonded particleboards of type Tempsi

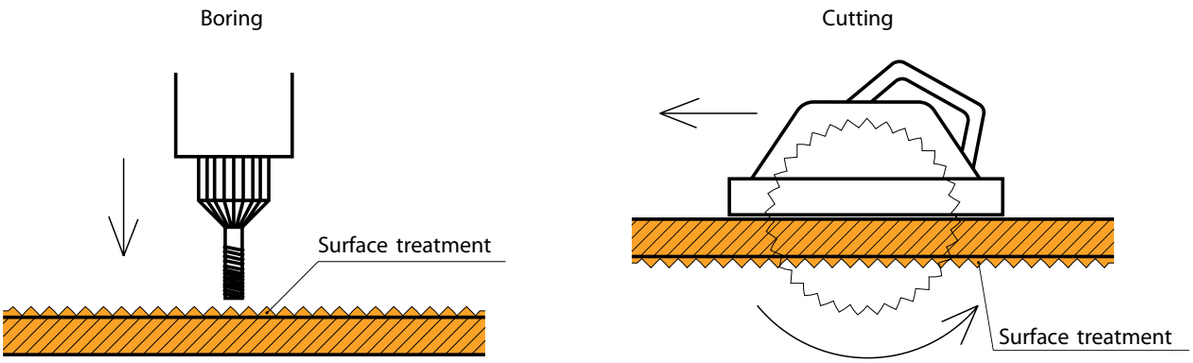
The table of principal physical-mechanical properties of cement-bonded particleboard of type Tempsi	
Density	1150 –1450 kg/m^3
Tensile strength at bending	min. 9.0 Nmm^2
Modulus of elasticity according	min. 4500 Nmm^2
Tensile strength perpendicularly to board plane	min. 0.5 Nmm^2
Equilibrium moisture at 20° C and at 50 % relative humidity	9 ± 3 %
Linear extensibility at change of air relative humidity from 35 % to 85 % at 23° C	max. 0.122 %
Coefficient of thermal expansion (according to VUPS methodology)	0.011 mm/m °C
Water absorption after 24 hour immersion in water	max. 16 %
Thickness swelling after 24 hour immersion in water	max. 1.5 %
Combustibility grade	A – non-flammable
Resistance against high voltage and low intensity arc discharge according to EN 61 621 standard	min. 143 sec – for thick. 10 mm
Coefficient of heat conductivity (according to EN 12 667 standard)	max. 0.18 W/mK
Soundproof level	thickn. 8 mm – 30 dB
	thickn. 24 mm – 33 dB
	thickn. 40 mm – 35 dB
Water vapor diffusion	0.239x10^{-11} s
Radioactivity	< 30 Bq/kg
Jointing after cycling in humid environment	min. 0.3 MPa
Thickness swelling in humid environment	max. 1.5 %
Frost resistance at 100 cycles	R_L > 0.7

3.1 Machining of Tempsi facade-boards

The Tempsi cement-bonded particleboards can be easily cut with a circular saw with carbide tipped cutting tools. A guiding lath should be used to achieve a clear and direct cut and the cutting should be provided from the backside in order not to damage the front side.

The pre-boring of holes should be done with a boring machine without impact, on a solid base. A drill for metal is recommended. The boring should be done from the front side only.

Machining of Tempsi facade-boards with surface treatment



3.2 Packaging and storing of Tempsi facade-boards

The Tempsi cement-bonded particleboards are delivered on wooden transport pallets, packaged into protective foil. Tempsi boards are separated by a softened foil that prevents damage of boards during transportation. The boards have to be stored and packaged on a solid and stable base in a dry environment, protected against rain and dust.

4.1 Tempsi CLADDING facade system

The recommended thickness for cement-bonded particleboards Tempsi for facade systems is 10 and 12 mm. For coating of pedestals boards of greater thickness can be delivered. Tempsi boards for facade systems with manifested joint of type CLADDING can be delivered in maximal dimensions of 1250 x 3350 mm. The boards can be delivered also in other dimensions; the minimal size for a facade board is 300 x 300 mm. The boring of holes and the span of consoles should correspond to the technological prescriptions. The method of fastening to the bearing structure has to enable the displacement caused with volume changes of facade boards. The individual facade elements should be fastened with joint min. 5 mm at board maximal side up to 1600 mm and min. 10 mm at the maximal dimension of 3350 mm. When the holes are bored on site, the hole diameter in the CLADDING system has to be 1.5 time bigger than the screw diameter.

Prop distances and screw spacing

BOARD THICKNESS (mm)	SCREW/BOLT SPACING b (mm)	PROP DISTANCE a (mm)	DISTANCE BETWEEN THE SCREW AND THE VERTICAL EDGE c_1 (mm)			DISTANCE BETWEEN THE SCREW AND THE HORIZONTAL EDGE wood zinc coated* aluminum c_2 (mm)
			wood	zinc coated*	aluminum	
8	<400	<420	>30 <50	>30 <50 >50 <70*	>50 <70	>70 <100
10	<450	<550				
12	<500	<625				
14	<550	<625				
16	<550	<700				

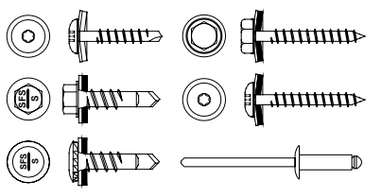
*Applicable for the Tempsi boards applied lengthwise (width > 1,875 mm)

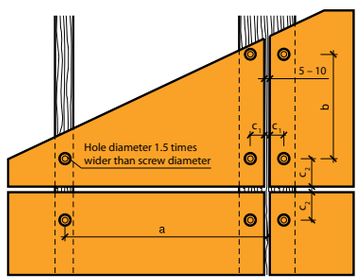
Pre-drilling the boards:

It is advisable to pre-drill holes for screws with hole diameter 1.5 times the diameter of the used screw

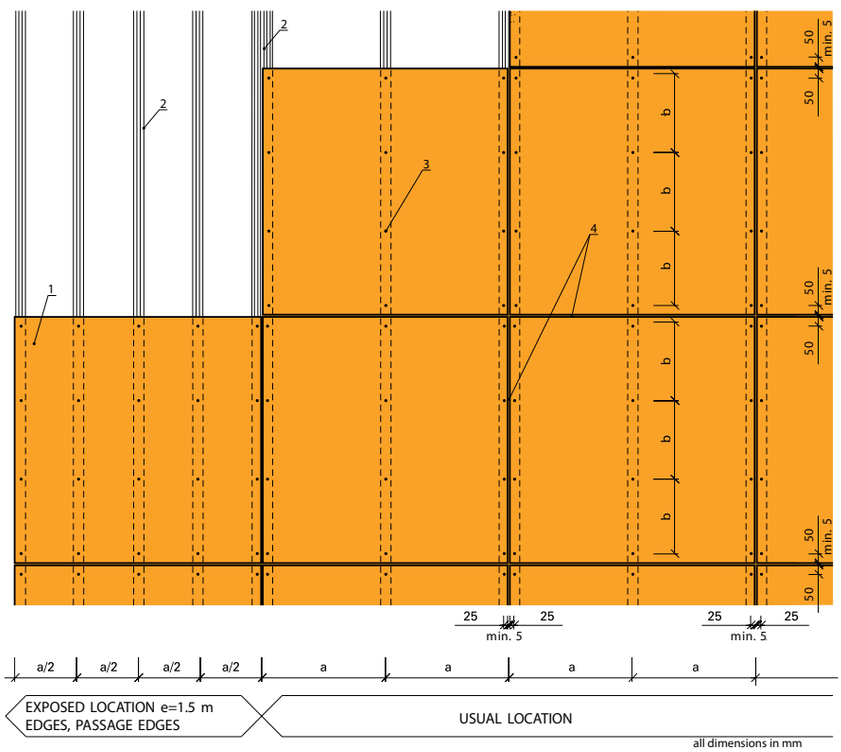
To provide for stability, a minimum of one fixed point (of 5 mm) is required. Spacing between the boards should be 5 – 10 mm.

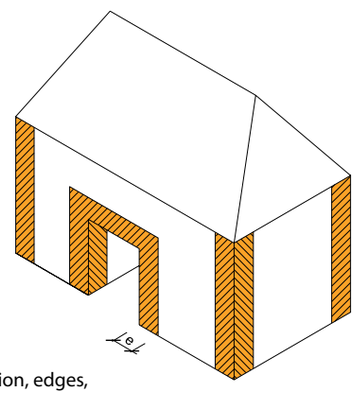
Screw type:





4.2 Scheme of laying boards in Tempsi CLADDING facade system





Exposed location, edges, passage edges

e = 1.5 m

LEGEND:

1 **TEMPSI cement-bonded particle board**
2 **vertical supports**
3 **screws for fastening of TEMPSI boards**
4 **joints between TEMPSI boards**

4.3 Mounting instructions

Due to high thermal dilatability, the **aluminum/zinc coated metal profile roster** is made only from L profiles, i.e. the boards vertically touch by means of **two independent L profiles**.

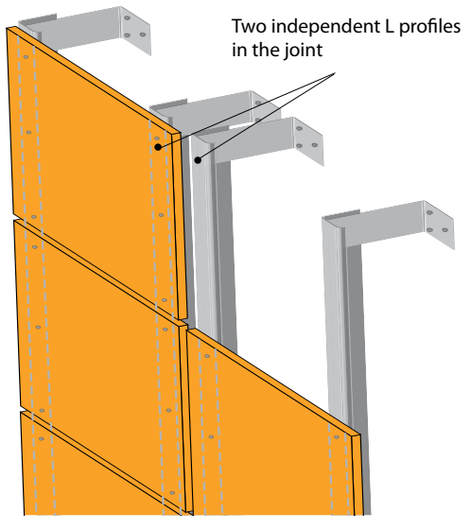
When mounting a zinc coated profile roster, use T profiles to attach the TEMPSI boards **with width 1,675 mm**. If the boards are wider (applied lengthwise), proceed as when mounting the aluminum/zinc coated metal understructure, i.e. **use two independent L profiles instead of the T profile**.

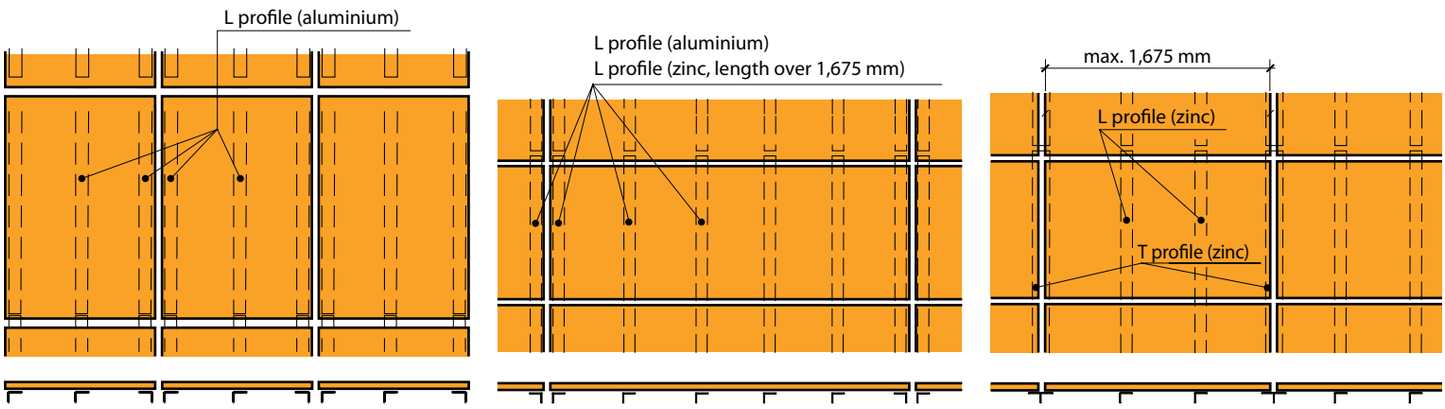
Maximum aluminum and zinc coated profile roster length is 3,35 m. The dilation between the profiles is always located along the horizontal gap, minimum width 10 mm. The bearing roster (attaching the anchors and their spacing, anchoring the profiles – fixed and moveable points, etc.) must be assembled as per the instructions provided by the roster supplier. All connecting material used for an aluminum roster must be made of stainless steel.

Maximum length of roster from wooden laths is 6 m. The wooden components must be thoroughly dry and treated against dampness, insects and woodworm. When using a combined roster, put every other anchor on the other side of the wooden laths (to reduce deformation).

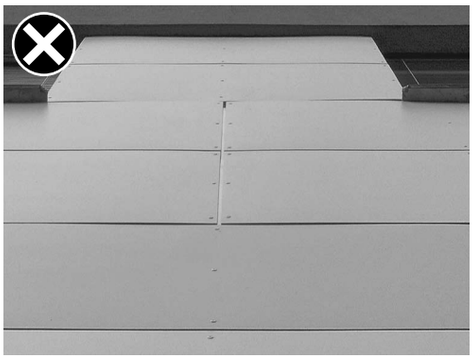
Dilation between the laths is always located along the horizontal gap, minimum width 10 mm. Using stainless steel anchoring material is recommended.

NEVER attach a board to two different rosters (different materials or different dilation units)!





Correct way of mounting the L-profiles along the vertical gap



Prop distance exceeded

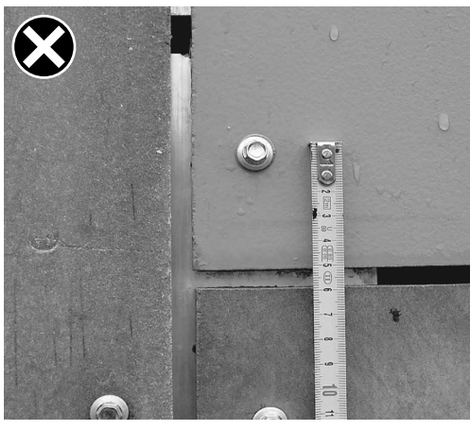
Inappropriate anchoring of the TEMPSI boards (profile and screw spacing maximum values exceeded) causes deformation (bulging or bending) which may lead to damage – breaking the boards!

Base under the Boards not leveled

When using auxiliary profiles (in corners, filling the gap), level the base along the whole height of the profile.

Correct use of the rubber tape

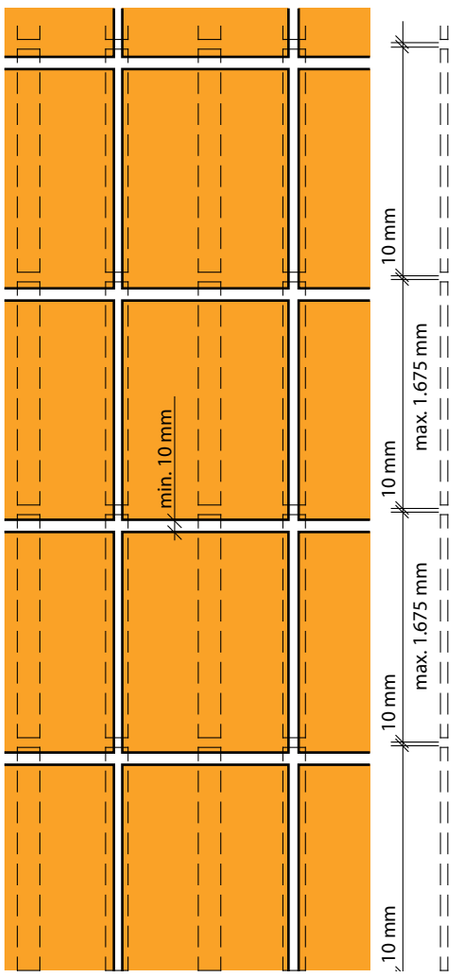
Put an EPT rubber tape on the profiles under the TEMPSI boards to level the base and facilitate dilation. The tape prevents the temperature spreading through the construction as well as potential corrosion leaking into the bottom layers (zinc coated roster).



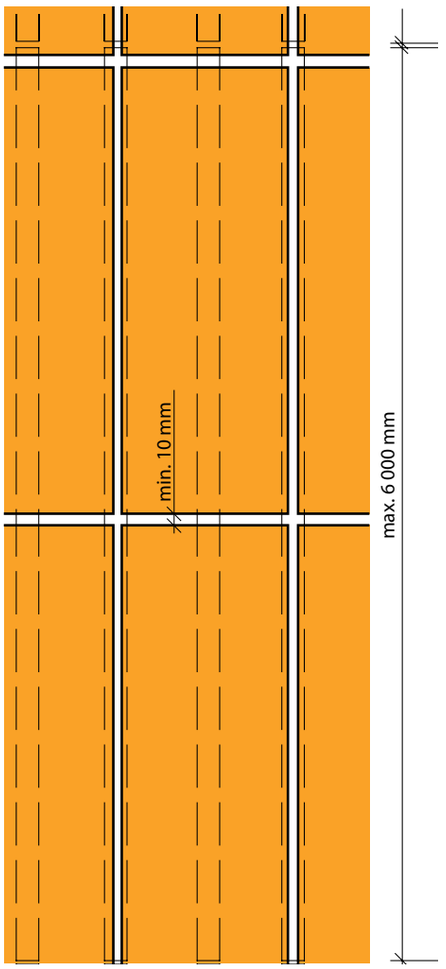
Faulty Roster Dilation

Incorrect profile dilatation, off the horizontal gap level between the Tempsi boards.

Dilation – aluminium or zinc coated roster

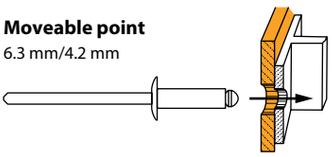


Dilation – wooden roster

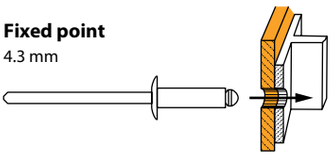


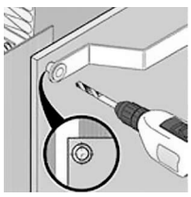
Please observe the appropriate spacing of the predrilled holes and the connecting material. When anchoring, attach the board in the fixed point first (FEST, one or two points according to the board shape and size – as near the board centre as possible). Then attach the sliding – moveable points, preferably clockwise.

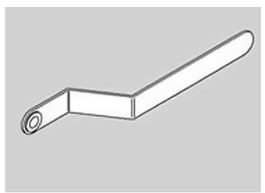
Moveable point
6.3 mm/4.2 mm



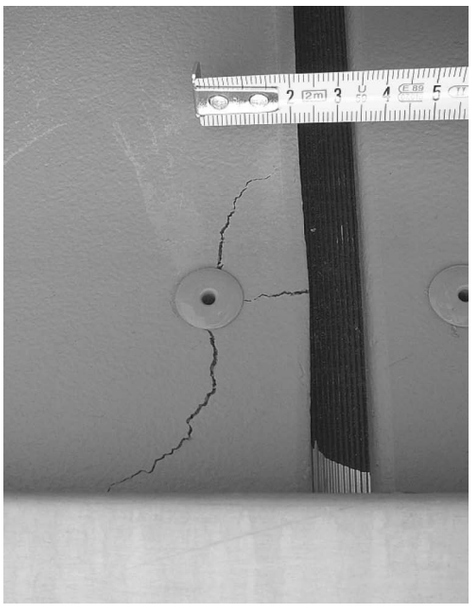
Fixed point
4.3 mm





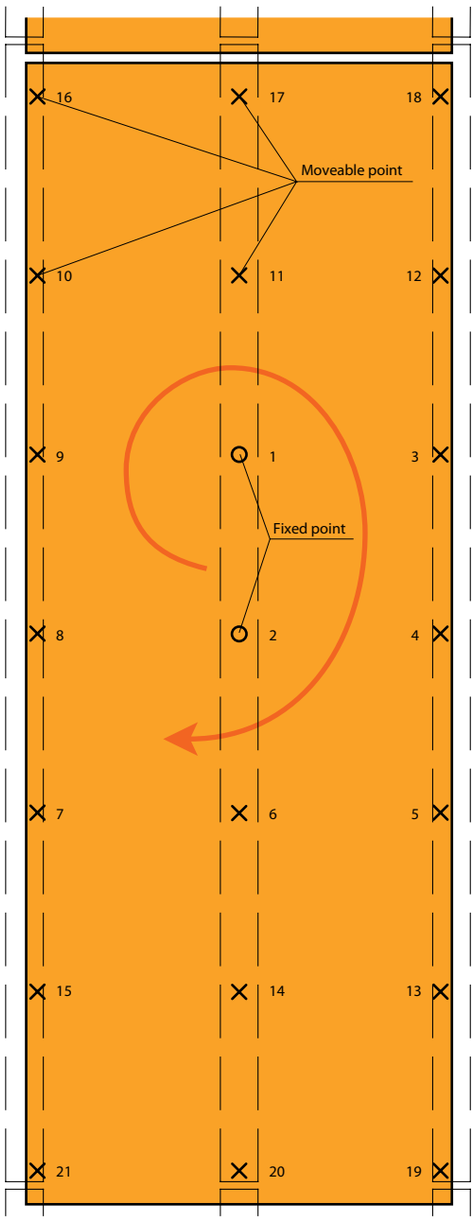


Set the screw tightening moment to prevent the screw or TEMPSI board spacer from deformation. Place the screw (bolt) into the centre of the predrilled hole, perpendicular to the board. To ensure for moveable points when using bolts, use a spacer size approx. 1 mm.



End Screw too near

Anchoring process



5.1 Tempsi PANNELLO facade system

The Tempsi cement-bonded particleboards for the overlapped facade system PANNELLO can be delivered from 200 to 500 mm width, in maximal length 3350 mm. The boring of holes and the span of consoles should correspond to the technological prescriptions.

The method of fastening to the bearing structure has to enable the displacement caused with volume changes of facade boards. The individual facade elements should be fastened with joint min. 5 mm at board maximal side up to 1600 mm and min. 10 mm at the maximal dimension of 3350 mm. When the holes are bored on site, the hole diameter in the PANNELLO system has to be 1.2 times the screw shaft diameter.

Distance prop and spacing screws

BOARD THICK-NESS (mm)	SCREW/ BOLT SPACING b (mm)	PROP DISTANCE a (mm)	DISTANCE BETWEEN THE SCREW AND THE VERTICAL EDGE c_1 (mm)			DISTANCE BETWEEN THE SCREW AND THE HORIZONTAL EDGE wood zinc coated* aluminum c_2 (mm)
			wood	zinc coated*	aluminum	
8	<400	<420	>35 <50			40
10	<450	<550				
12	<350	<625				
14	<500	<625				
16	<500	<700				

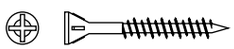
Maximum board length is 3 times the distance/spacing – i.e. 3 . 625 = 1,875 mm for a 12 mm thick board.

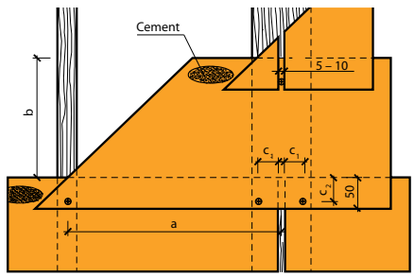
Pre-drilling the boards:

- 1.2 times the screw cross-section (usually 6 mm) (Also applies to screws up to 5 mm)

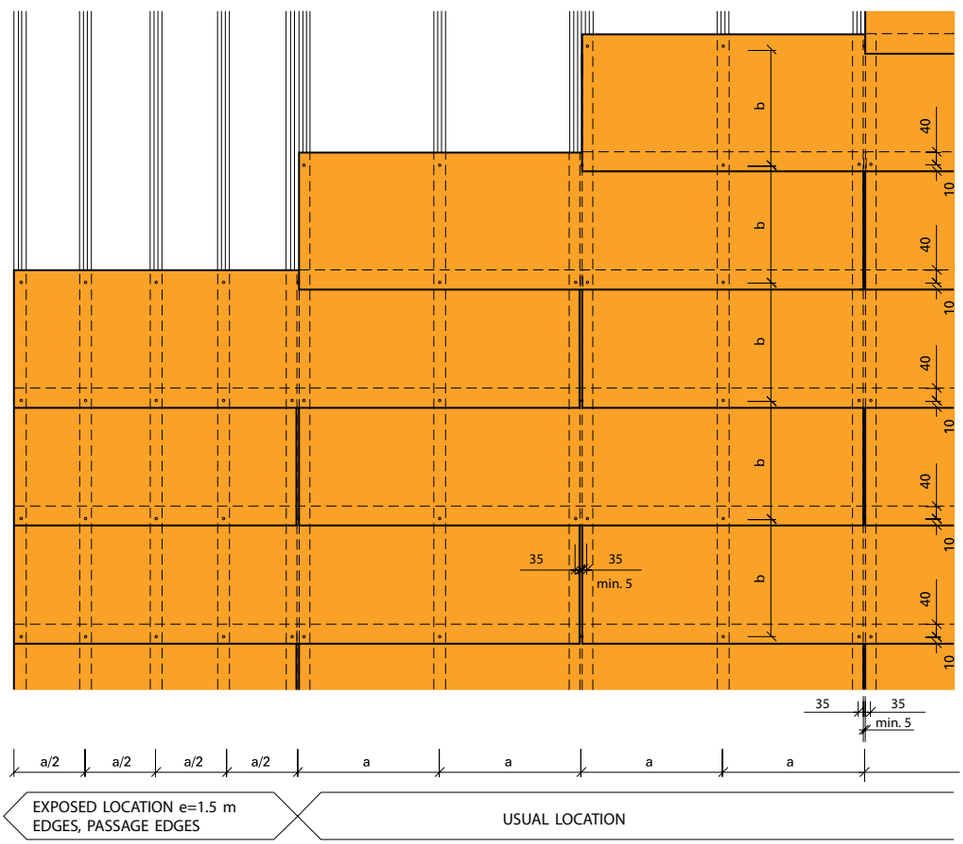
Spacing between the boards 5 – 10 mm

Screw type:





5.2 Scheme of laying boards in Tempsi PANNELLO facade system



Two independent L profiles
in the joint or two wooden grids

all dimensions in mm

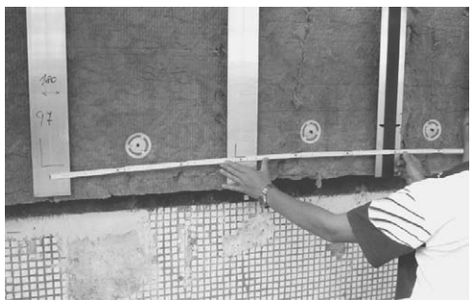
6.1 Bearing structure

The bearing structure has to fulfill all requirements of technical regulations for this type of the structure. Namely homogeneity, compactness, the total and local strength and flatness are important. The strength of the base is determined also according to the requirements of individual producers of anchoring elements and their instructions for designing of given anchoring elements.

6.2 Thermal insulation

We recommend, in cases, when a thermal insulation is required, the use of hydrophobic mineral wool with flammability class at least "B", with minimal board thickness given with the production program of individual producers and with the requirements to thermal resistance of insulation layer (with calculation of thermal losses).

The fastening of insulation boards is provided with plated dowels, in dowel lengths according the instructions of the producer. The minimal quantity of dowels to 1 m^2 is determined with the instructions of the mineral board producers.



6.3 Air gap

The air gap ensures the removal of atmospheric moisture and rain and snowfall moisture through joints into the open system as well as the removal of moisture diffused from the bearing structure. This air gap favorably contributes as inhibition of temperature increase in the bearing structure in the summer. The condensation of moisture in the ventilated area depends namely from the intensity of ventilating air stream and from its velocity. The minimal thickness of the air gap is 25 mm, the maximal 50 mm.

6.4 Bearing grid from wood

Bearing structure

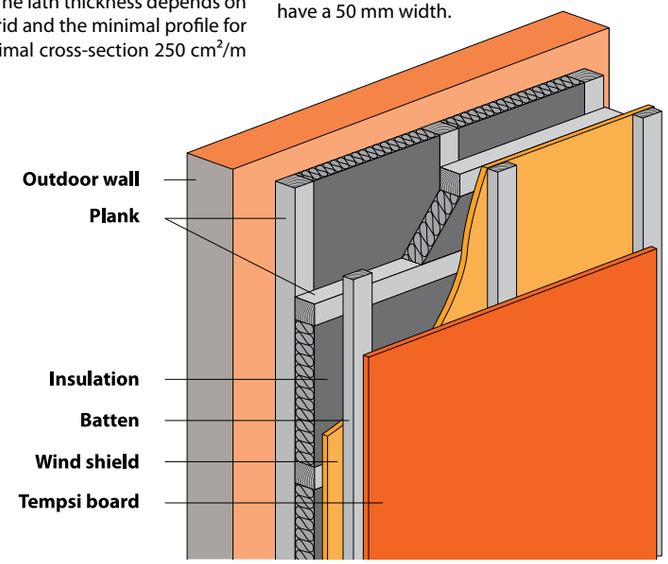
The bearing structure is composed from a grid of wooden lathes and planks. The lathes and planks are produced from high quality pine timber, dried to a max. 12% moisture content. In such a way dried wood should be impregnated with appropriate fungicide agent.

The primary – horizontal – grid

This grid is used, when an additional thermal insulation is required. The grid thickness corresponds with the insulation thickness – the recommended width is 100 mm. The dimensions, the method of anchoring, and the lath span are determined by the designer according to the provided static and thermal calculations of peripheral walling.

The secondary – vertical – grid

This grid creates the ventilating gap between the facade lining and it forms the bearing structure for the facade boards at the same time. The lath thickness depends on the span of the primary grid and the minimal profile for the ventilating gap – minimal cross-section 250 cm^2/m and the maximal one 500 cm^2/m – has to be observed at the same time. This means that the minimal distance of facade-board internal surface from the thermal insulation or to the bearing wall of the building is 25 mm and the maximal one 50 mm. The lathes are fastened to the primary grid in spans corresponding to the facade lining type. The lath width in connection place of two facade elements is min. 100 mm, the interlacing lathes have a 50 mm width.



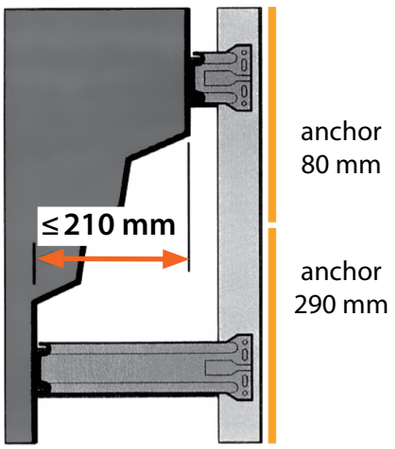
6.5 Bearing grid from aluminum/zinc coated metal profiles

Bearing structure

The bearing structure is composed from a system of anchors, profiles and consoles. The cost-effective, from static point of view optimized structure of basic system elements enables the composition thickness of the lining from 80 mm to 330 mm.

Bearing elements enable – thanks to tongue and groove connection with vertical bearing profiles – the aligning of unevenness of base structures up to 35 mm in the plane upright to the basic reference plane.

The elements of aluminum/zinc coated metal system



Bearing anchor with dowel and screw

The bearing anchoring element is produced from aluminum or zinc-coated metal, L-shaped, with dimensions of 80/80 – 290 mm, sheet thickness 2 mm.

Vertical T, L-shaped (corner) consoles

The vertical T, L-shaped (also corner) consoles are produced from aluminum or zinc-coated metal, in length of 6000 mm, sheet thickness 1.6 mm.

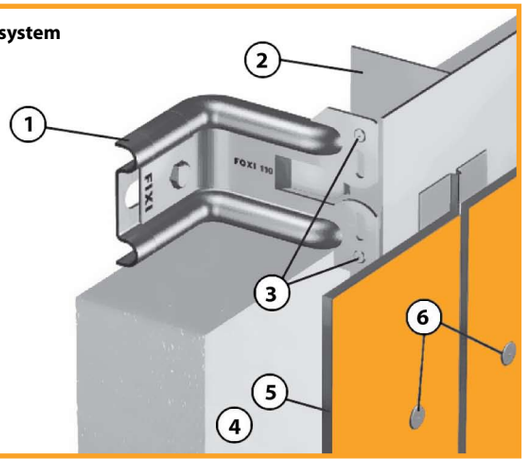
L-shaped profile in dimensions	60/40 mm
T-shaped profile in dimensions	60/80 mm
Corner profile in dimensions	30/30 mm

Self-drilling screws 4.2

The self-drilling screws 4.2 are produced from noble steel of class A4 (resistant against stain, inoxidable). They are used for connection of the anchors with vertical consoles and to connection of customer-built profiles with vertical consoles according to the requirements of the design.

The elements of aluminum/zinc coated metal system

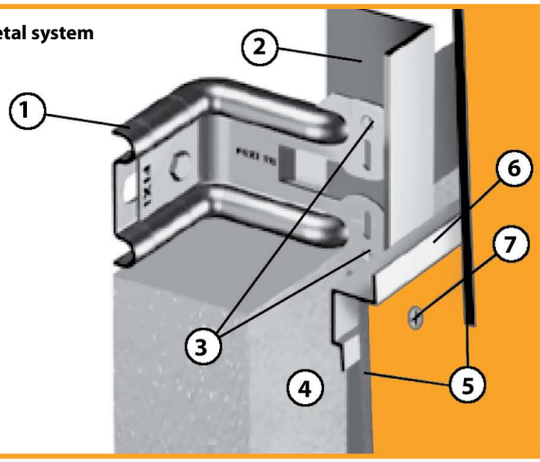
Type CLADDING



1 bearing anchor with dowel and screw
2 vertical T-shaped console
3 self-drilling stainless screws
4 thermal insulation from mineral hydrophobized boards
5 TEMPSI cement-bonded particleboard
6 stainless screw

The elements of aluminum/zinc coated metal system

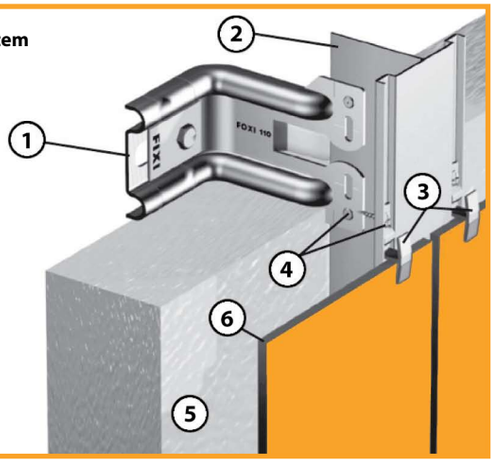
Type PANNELLO



1 bearing anchor with dowel and screw
2 vertical L-shaped console
3 self-drilling stainless screws
4 thermal insulation from mineral hydrophobized boards
5 TEMPSI cement-bonded particleboard
6 horizontal console
7 stainless screw

The elements of aluminum/zinc coated metal system

TYPE ELEMENT



1 bearing anchor with dowel and screw
2 vertical T-shaped console
3 aluminum fasteners for fastening of TEMPSI boards
4 self-drilling stainless screws
5 thermal insulation from mineral hydrophobized boards
6 Tempsi cement-bonded particleboard

6.6 Auxiliary material

Screws for fastening of Tempsi cement-bonded particleboards to the grid

For fastening of Tempsi boards in the system CLADDING (visible joints) stainless screws with a cylindrical or hexagon head with pressing watertight washer are used. The lower side of such washer is provided with vulcanized layer of EPDM elastomer, which ensures the watertight and elastic connection of materials. The type of the screw also depends on the type of the base material – the used bearing grid.

For fastening of Tempsi boards in the system PANNELLO (overlapped system) galvanized screws with sunk head are used. The recommended screws for boards of 10 (12) mm in thickness, at wooden bearing structure:

•noble steel screws, diameter 4.2 mm, length 35

System for invisible fastening (gluing) of Tempsi boards to the grid

The boards can be glued to the grid, when invisible fastening elements (valid for CLADDING system only) are required.

The recommended system comes from the company SIKA and is composed from the following components:

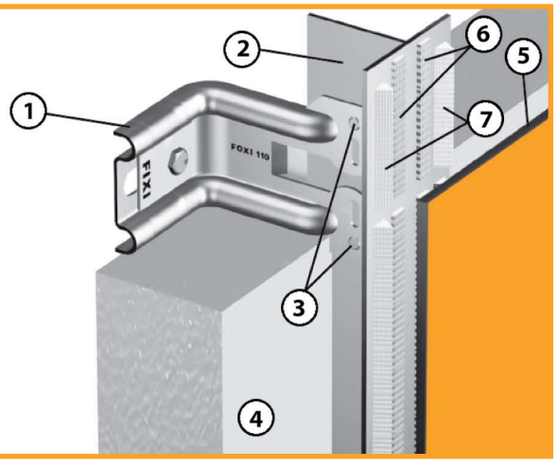
•primer paint (de-greasing agent) SikaTack – Panel Primer (for treatment of contact surfaces)

•double-faced adhesive mounting belt SikaTack (ensures the pressing of board to the grid up to the activation of the glue)

•gluing mastic (cement) SikaTack – Panel

When designing this system a consultation with the producer SIKA is necessary. The mounting can be provided with a schooled company only.

Gluing of boards in SIKA system



1 bearing anchor with dowel and screw
2 vertical T-shaped console
3 self-drilling stainless screws
4 thermal insulation from mineral hydrophobized boards
5 TEMPSI cement-bonded particleboard
6 double-faced adhesive belt
7 special gluing mastic

Permanently elastic connecting sealant (mastic)

At laying of Tempsi cement-bonded particleboards in the PANNELLO system is suitable to secure the free ends of facade boards with application of permanently elastic cements. The acrylic type cements with tensile strength min. 0.1 MPa are recommended for this purpose.

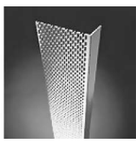
Anchoring elements

Stainless or galvanized screws are used for fastening of vertical lathes to the horizontal ones (secondary and primary grid).

Auxiliary profiles (lathes) to he facade system

Special shaped profiles (lathes) are used for solution of details of hinged ventilated facade (lower ending – ventilation, upper ending – ventilation, lining of holes, outer corners, inner corners, etc.). Such lathes are made from zinc coated sheets (possible colored versions) or from aluminum sheets.





The recommended screws for Tempsi boards

board thickness 10 (12) mm, wooden bearing structure:

•SFS TW-S-D12-A10 4.8 x 38 mm (half-eye)
•EJOT SAPHIR JT 2 -2H 4.9 x 35 mm (hexagonal)
•EJOT SAPHIR JT 3 -FR - 2 4.9 x 35 mm (half-eye)

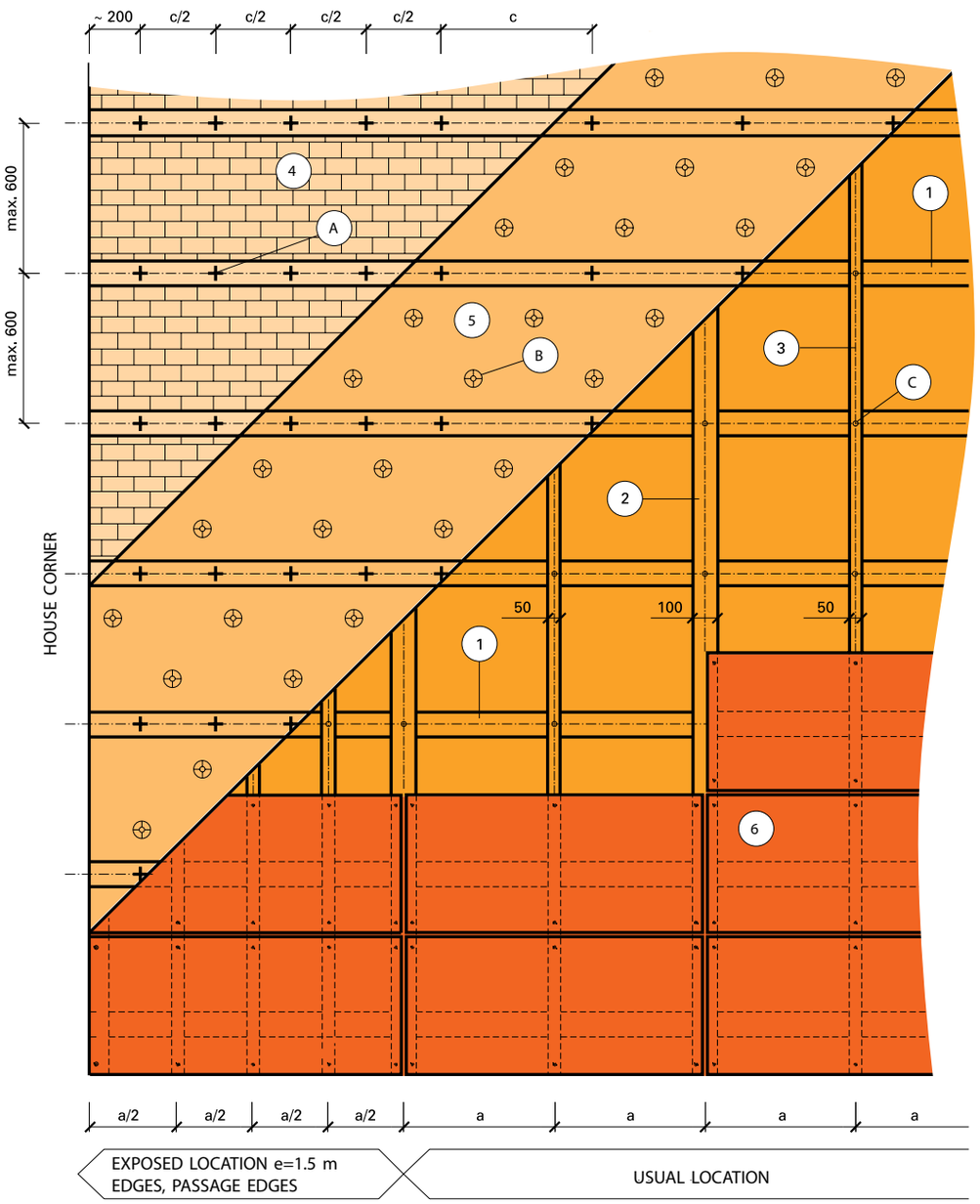
The recommended screws for Tempsi boards

board thickness 10 (12) mm, aluminum/ bearing structure (aluminum):

•SFS SX 3/10-S16 5.5 x 28 mm (hexagonal)
•EJOT SAPHIR JT 2 – 3 4.8 x 32 mm (hexagonal)
•EJOT SAPHIR JT 3 – FR – 3H 5.5 x 25 mm (half-eye)

7 Technological process of mounting in TEMPSI facade system

Cross-section of TEMPSI CLADDING facade system with thermal insulation on wooden structure



•all dimensions in mm

Legend of anchoring elements:

A) Fastening of horizontal profiles to the house wall:
- concrete wall – frame dowel, c = 750 mm
- porous concrete – frame dowel, c = 600 mm
- brick wall – frame dowel – span c = 600 mm

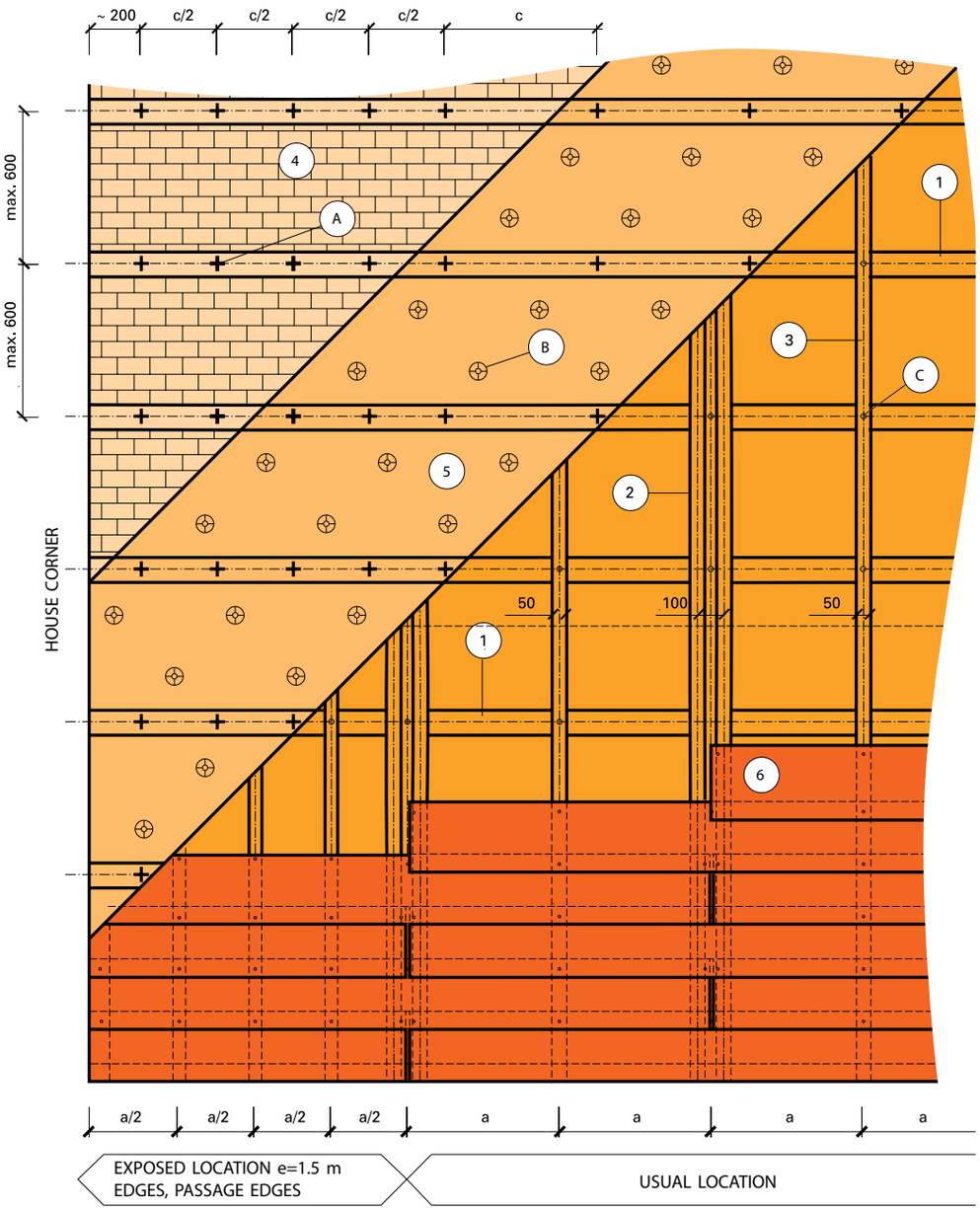
B) Fastening of thermal insulation layer:
- dish shaped dowels (according to the type and thickness ofinsulation)
- according to instructions of insulation material producer,
- the bearing capacity of the base have to be checked with tests, namely at porous concrete

C) Fastening of vertical lathes to the horizontal profiles:
- stainless or galvanized screws 6.3x80

LEGEND:

1 horizontal wooden profiles, (w . h) min. 100. thickness of thermal insulation in mm
2 vertical wooden lathes 100 . 32 mm
3 vertical wooden lathes 50 . 32 mm
4 bearing base structure
5 thermal insulation
6 TEMPSI cement-bonded particleboard

Cross-section of TEMPSI PANNELLO facade system with thermal insulation on wooden structure



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B) Fastening of thermal insulation layer:
- dish shaped dowels (according to the type and thickness of insulation)
- according to instructions of insulation material producer, the bearing capacity of the base have to be checked with tests, namely at porous concrete

C) Fastening of vertical lathes to the horizontal profiles:
- stainless or galvanized screws 6.3 . 80

LEGEND:

1 **horizontal wooden profiles, (w . h) min. 100. thickness of thermal insulation in mm**
2 **vertical wooden lathes 100 . 32 mm**
3 **vertical wooden lathes 50 . 32 mm**
4 **bearing base structure**
5 **thermal insulation**
6 **TEMPSI cement-bonded particleboard**

Technological process of mounting in TEMPSI facade system

7.1 Mounting of wooden bearing structure of the facade

Determination of principal axes and reference plane for providing of walls
It is suitable to determinate the principal axes, namely the width of pillars between the windows and the reference planes for compact surfaces of the facade lining, when possible.

Wooden bearing structure of ventilated facade:

Providing of primary grid – horizontal lathes
The wooden lathes are with wall plugs (dowels) fastened to the aligned base in order to achieve a bearing structure of a corresponding stability. The wall plug type and size is chosen considering the properties of the base. At uneven base the lathes are aligned with wooden rests. For aligning of individual surfaces we should fasten the vertical lathes on their sides. We drive nails in these lathes and extend lines between them. The face plane of the wooden grid is determined by this method. We adapt also other horizontal laths by inserting wooden rests or locking into the wall – to this plane. Then the lathes should be fastened.

Mounting of thermal insulation layer
We fasten the horizontal lathes to the base first, when additional thermal insulation is provided (the lath thickness is the same as for insulation). We insert lengthwise the thermal insulation, fastened with dish-shaped wall plugs to the base. The mounting of thermal insulation layer with dish-shaped wall plugs should be provided according to requirements of the producer of anchoring elements. The quantity of dish-shaped wall plugs is determined by the designer according to recommendation of the producer of thermal insulation. The thermal insulation layer has to be fit tightly to the base, continuously, without open joints (very tightly!). The dish-shaped wall plugs should have a solid bed in the base and they should fit tightly to the insulation layer.

Providing of secondary grid – vertical bearing lathes
The vertical lathes (with minimal width 50 mm, in connection of two lathes 100 mm) are fastened with screws to the primary grid. The span of lathes should not be greater as the determined value. After fastening of vertical lathes an air gap will be created in the grid, the minimal width of this air gap is 25 mm, the maximal one 50 mm.

Mounting of auxiliary structures
The auxiliary structures are fastened according to requirements of realization documentation. They are namely auxiliary vertical or horizontal lathes determine the openings (window and door case and rabbet), internal and external corners, lower and upper endings, etc.

7.2 Mounting of aluminum/zinc coated metal bearing structure for TEMPSI facade

The bearing structure can be provided with a company schooled by the producer only.

The mounting is composed from the following partial steps:

- determination of the principal axis and the reference plane
- measurement of the raw building, determination of the axis of vertical consoles
- mounting of bearing elements
- mounting of vertical bearing lathes
- mounting of auxiliary structures
- mounting of TEMPSI cement-bonded particleboards
- details of opening's case and rabbet, corners, arch dilatations, etc.
- boring and cutting of TEMPSI cement-bonded particleboards contact of facade lining with transient structures

Measurement (survey) of principal axis and reference plane for providing of the brickwork

It is suitable to determinate the principal axes, namely the width of pillars between the windows and the reference planes for compact surfaces of the facade lining, when possible.

Keeping of such principal dimensions and the evenness according to the reference plane in case of the walls as the base for the bearing structure of aluminum/zinc coated metal could spare all additional expenditures connected with modification of dimensions and evenness of facade lining base or with modification of the thickness of facade lining and distribution of joints, eventually.

- We mark – with help of a laser beam, taking into account the segmentation of facade lining – the reference vertical axis, with reference to which we measure the first right or left side axis, or the axis of symmetry for the surface, eventually.
- From the solid axis determined in such a way we measure the edges for pillars between the windows, in the highest and lowest level of the surface. The edges of such pillars are determined for prevention of an eventual measurement error, with help of a measure tape with integral method of measuring.
- We mark the reference plane – with help of a laser beam in a distance about 100 mm from the assumed wall front.

In such a way the net of axis is created that determines the bearing structure for the facade lining (wall) on the whole surface and also in place of openings, both in regard of their size and heir location.

The survey of finished raw building

We provide this step as in the previous part:

- We determine the vertical axis.
- We determine the vertical axis of vertical elements of the cover (lining) from this principal axis. With repeated measurement we check, if the location of window pillows, infillings or openings for such infillings corresponds to the corresponding documentation for the facade lining. It is necessary to adjust the above mentioned dimensions – providing additional building, cutting – with the documentation, in case of deviations. It is prohibited – in order to ensure the corresponding strength of the base – to provide the above mentioned modifications with lime-cast or lime-cement cast or with "screening".
- We drive nails or rod from concrete reinforcing so they should run out about 150 mm from the base.
- We mark – with help of a laser beam in a distance of about 100 mm from wall front, the reference plane, which we mark further on auxiliary points (nails, rods). We measure the distance between the reference axis and the front of the base, e.g. we ensure the planeness of the walling. We insert – in the place of minimal distance between the front of the base and reference axis – an anchor and then – with self-drilling screws – we fasten to it the vertical bearing profile such a way, that it will be in a minimal possible distance from the front of the base (up to contact). Thus, the maximal distance of the front from the vertical profiles is determined and a rectification of vertical elements – due to unevenness of the walling – by up to 35 mm is possible. A greater anchor (by one step) should be used, when a such rectification would not be sufficient. The above described method should be repeated in case of unevenness exceeding 35 mm, and this with a – by one step – shorter anchor (respecting here the relation of thermal insulation layer thickness to the length of anchor). As to the static optimization of aluminum/zinc coated metal bearing structure, it is not necessary the repetition of static calculation.
- We check the height of parapets, window cases, the vertical dimension of fillings, or the dimensions of openings for such fillings and we check the evenness in horizontal direction.

Mounting of bearing elements

The bearing elements are mounted in positions according to the documentation. The mounting is provided with help of element and an appropriate wall plug with a corresponding screw, according to the type of the base structure and according to the instructions of the corresponding producers of anchoring elements. The insertion of anchor should not allow any side movement of the anchor.

Mounting of thermal insulation layer

The mounting of thermal insulation layer is provided with dish-shaped wall plugs according to requirements of the producer of anchoring elements. The quantity of dish-shaped wall plugs is determined by the designer according to recommendation of the producer of thermal insulation. The thermal insulation layer has to be fit tightly to the base, continuously, without open joints (very tightly!). The dish-shaped wall plugs should have a solid bed in the base and they should fit tightly to the insulation layer.

Providing of vertical bearing lathes

The vertical bearing lathes (T-, L-shaped or corners) are fastened with self-drilling screws to the bearing elements such a way, that one of the anchor (the middle one) is screwed through the circular holes (solid assembly) and the other through the oval holes (slide assembly). A gap should remain between the individual vertical lathes (min. 10 mm, max. 15 mm). The sufficient dilatation for movement of the structure, caused by the thermal expansion for a temperature difference up to 100° C is ensured this way. The plane aligning of vertical bearing elements is provided with a laser beam, in relation to the basic location of the vertical bearing element.

Mounting of auxiliary structures

The auxiliary structures are fastened according to requirements of realization documentation. They are namely aluminum square bars of different dimensions and length, enabling the mounting of parapets, outer jalousies, metal plating of attic, connections to the metal plating of flat roofs or mounting of lathes, the lower ending of facade lining, the connections with other types of hinged peripheral covers.

7.3 Mounting of TEMPSI facade boards

Mounting of TEMPSI boards – system CLADDING (visible joints)

The principal horizontal plane should be determined (according to the documentation) before the mounting of boards.

The principal horizontal plane is usually determined by:

- the lower edge of second horizontal row of TEMPSI cement-bonded particleboards;
- the level of parapets (of windows, doors), when the joints between the boards follow this level;
- the lintel level of openings (windows, doors), when the joints between the boards follow this level.

This plane will be then decisive for the whole perimeter of the building. When the design have more height levels of the cover (lining), so – according to the documentation – the other guiding horizontal axis (determined always with the lower edge of first horizontal row of TEMPSI cement-bonded particleboards) should be marked (with laser beam as the best) in this stage of the work.

The boards are laid down one side-by-side with visible horizontal and vertical joints of minimal 5 mm width. The TEMPSI cement-bonded particleboards are fastened with visible connecting elements with help of screws or fasteners or with invisible connecting elements with Sika Tack glue. The screws near the board edge have to be located always min. 50 mm from the horizontal (upper/lower) row and min. 25 mm from the vertical edge, when the boards are fastened to the grid with screws. The screws should be screwed upright to the board plane and tightened without deformation of the facade element and without preventing the volume changes of the board.

Mounting of TEMPSI boards – system PANNELLO (visible joints)

The principal horizontal plane should be determined (according to the documentation) before the mounting of boards.

The principal horizontal plane is – at system with overlapping – determined by the upper edge of first horizontal row of TEMPSI boards. This is then the determining plane for the whole building perimeter. The necessary quantity of cover-boards and the necessary overlapping should be ensured as the boards are laid down with overlapped horizontal joint.

Number of boards: $N = 1 + (H - 300) / 250$

Overlapping of boards: $O = (N \cdot 300 - H) / (N - 1)$

N – number of boards

H – facade height in mm

O – overlapping of boards in mm, at least 50 mm.

300 = the board width for TEMPSI PANNELLO boards

250 = visible board width for TEMPSI PANNELLO boards

The mounting begins from below, where a belt of the same thickness as for TEMPSI boards and of the same width as the calculated overlapping is put on the principal horizontal plane. The belt is then covered with the first row of cover boards of 500 (200) mm width. The connecting elements are located always at the upper edge of the board (40 mm from the upper edge, 35 mm from the vertical edge). The screws should be tightened without deformation of the facade element and without preventing the volume changes of the board. The aligning of first row should be perfect for preventing of later troubles. Under the upper edge of already fastened cover board a permanently elastic cement (cake-like, diameter ca. 20 mm, in distances about 300 mm) should be laid before laying down of each next row. Each free end of a cover board should be underlaid. The vertical joint is at least 5 mm; for boards with 3350 mm length – at least 10 mm.

7.4 Solution of details at TEMPSI facade systems

The method of mounting for individual details of hinged facade lining is solved individually according to documentation. The recommended solutions are illustrated on the following pages

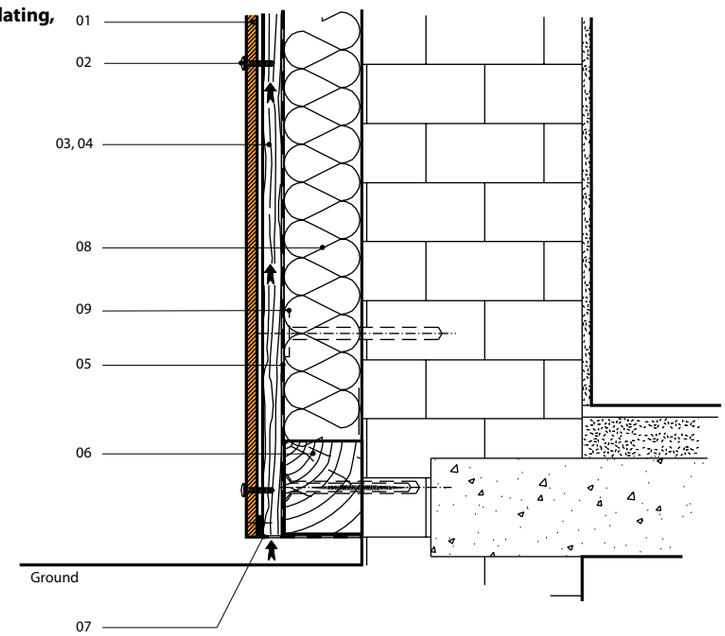
Remark: The boring and cutting (milling eventually) of TEMPSI cement-bonded particleboards is possible with carbide tipped cutting tools only and designed for the type of the cut. When some anchoring elements should go though the lining (for instance, for external lighting of the building, for mounting of marking or advertising sheets, etc.), a corresponding dilatation gap should be ensured between the lining and the anchoring elements, e.g. the holes for such elements should be at least by 15 mm greater as the greater dimension of the anchoring element. We should use to his purpose and with all order delivered paint for renewal of surface finish of exposed new edges. The mounting of other structures (for instance advertising sheets, etc.) directly to facade lining is possible after special static calculation only and after considering the composite action of such structures and the lining as from thermal extension of individual materials point of view.

Technological process of mounting in TEMPSI facade system

Detail of lower ending with metal plating, TEMPSI boards on wooden grid

CLADDING system

vertical cross-section

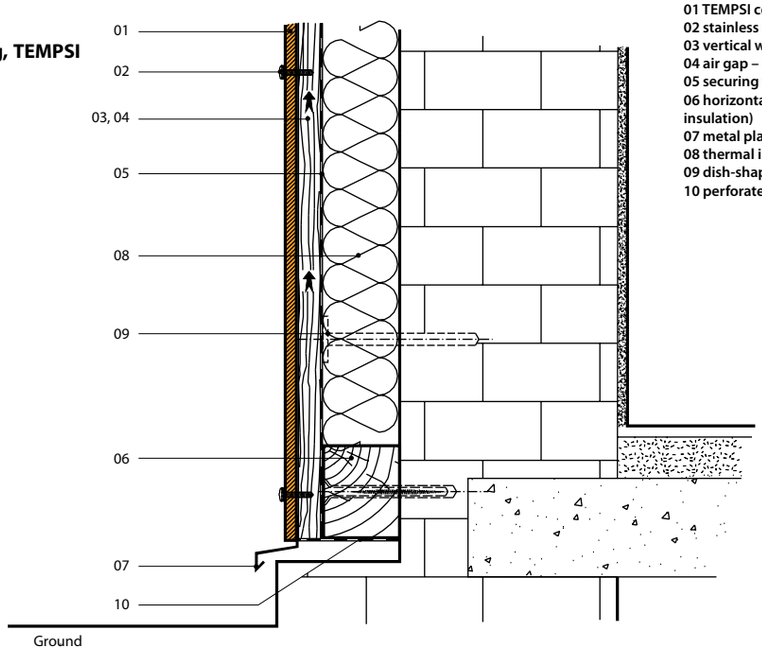


01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 metal plating – tin work
08 thermal insulation
09 dish-shaped wall plug
10 perforated ventilation profile

Detail of lower ending with metal plating, TEMPSI boards on wooden grid

CLADDING system

vertical cross-section



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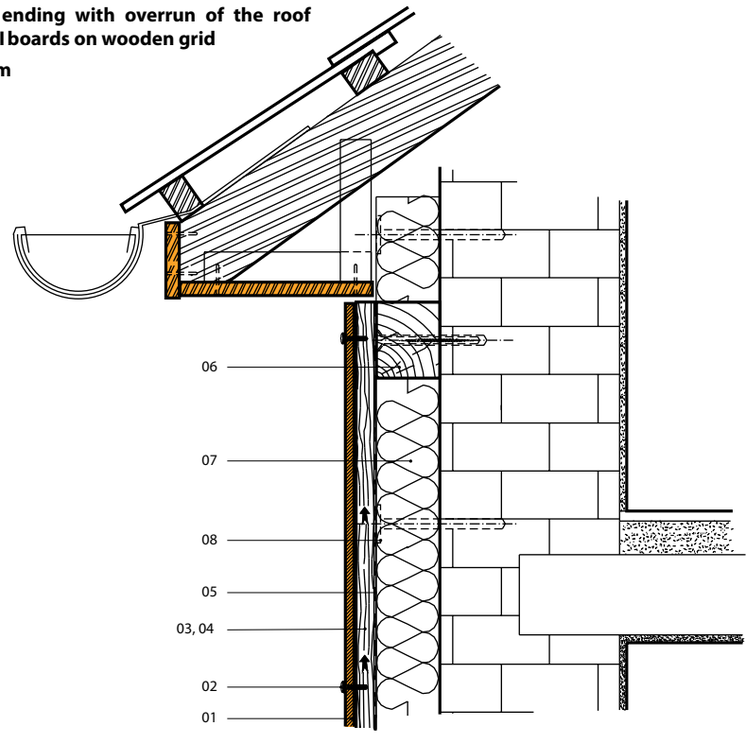
02 stainless screw with washer
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 metal plating – tin work
08 thermal insulation
09 dish-shaped wall plug
10 perforated ventilation profile

Detail of upper ending with overrun of the roof structure, TEMPSI boards on wooden grid

CLADDING system

vertical cross-section

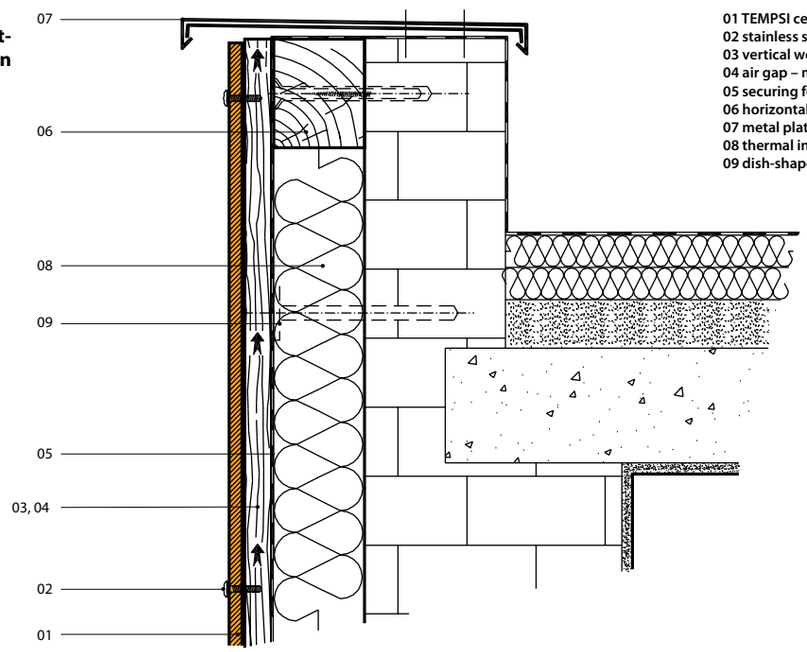


01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 dish-shaped wall plug

Detail of upper ending with attic, TEMPSI boards on wooden grid

CLADDING system

vertical cross-section



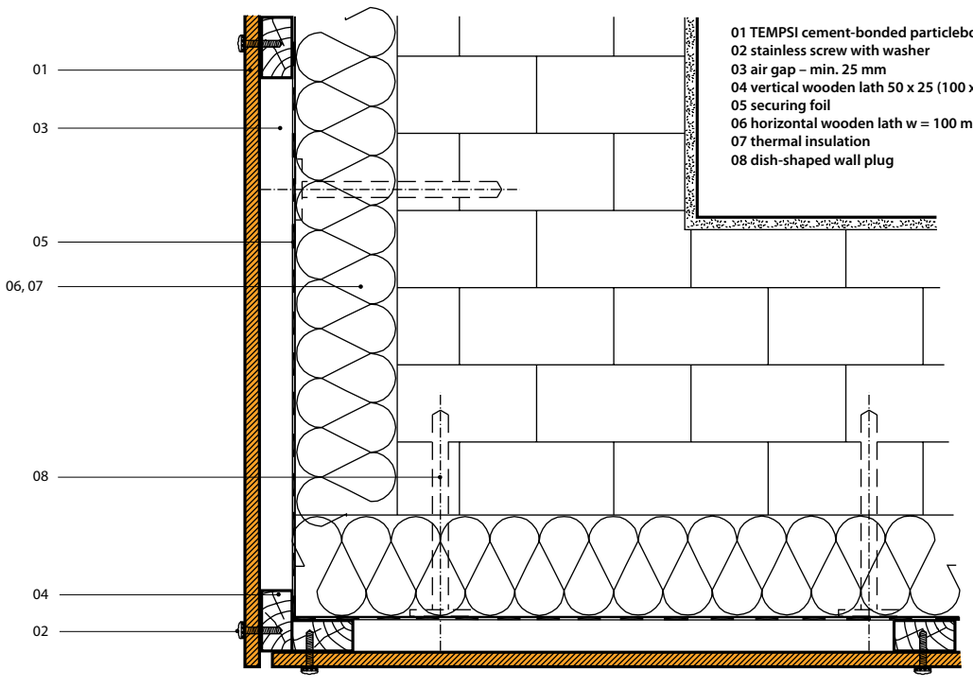
01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 metal plating – tin work
08 thermal insulation
09 dish-shaped wall plug

Technological process of mounting in TEMPSI facade system

Detail of outer corner, TEMPSI boards on wooden grid with corner profile

CLADDING system

horizontal cross-section

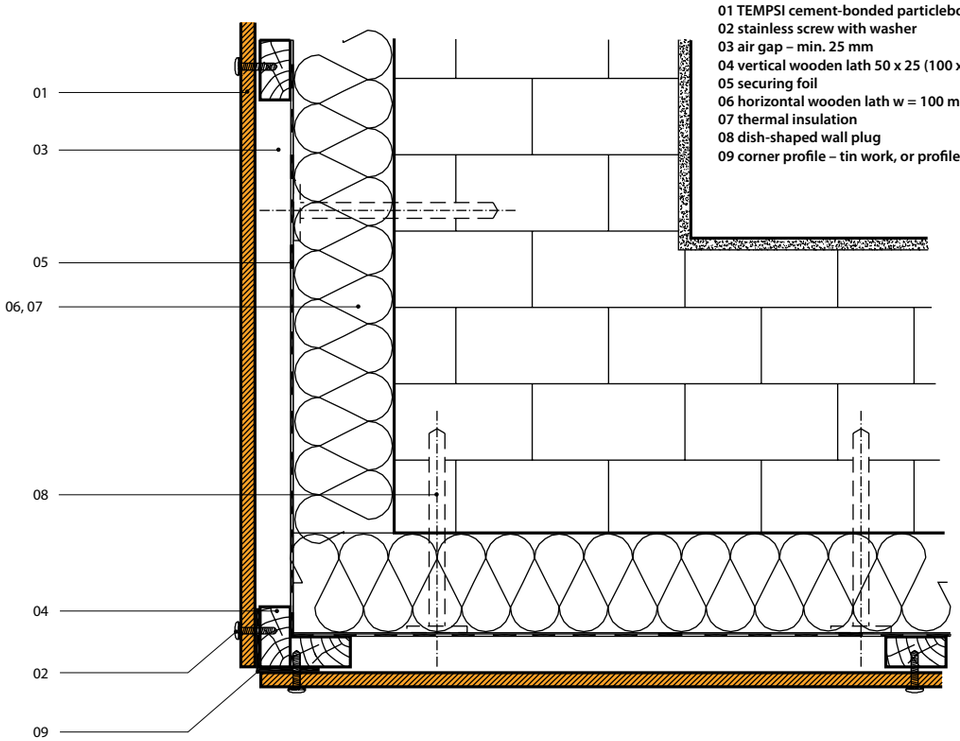


01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 dish-shaped wall plug

Detail of outer corner, TEMPSI boards on wooden grid with corner profile

CLADDING system

horizontal cross-section



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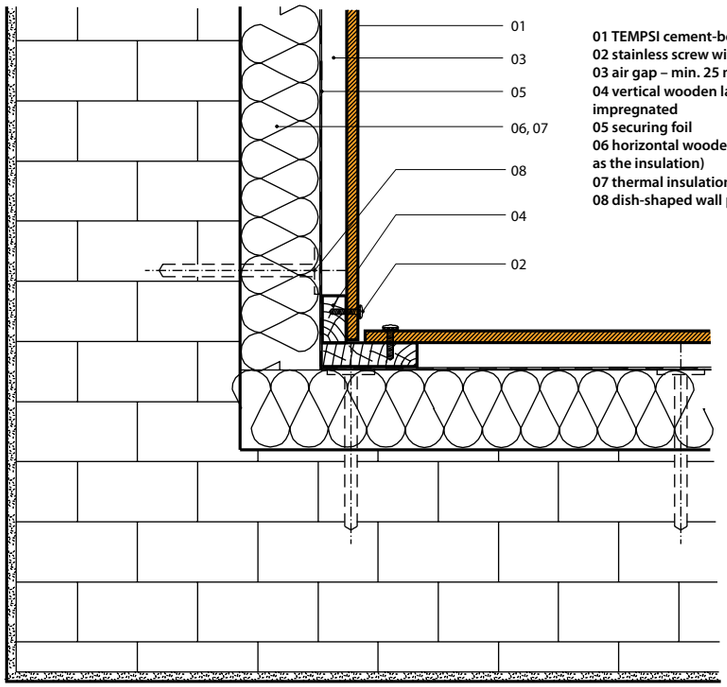
03 air gap – min. 25 mm
04 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 dish-shaped wall plug
09 corner profile – tin work, or profile, eventually

Detail of internal corner, TEMPSI boards on wooden grid with overrun

CLADDING system

horizontal cross-section

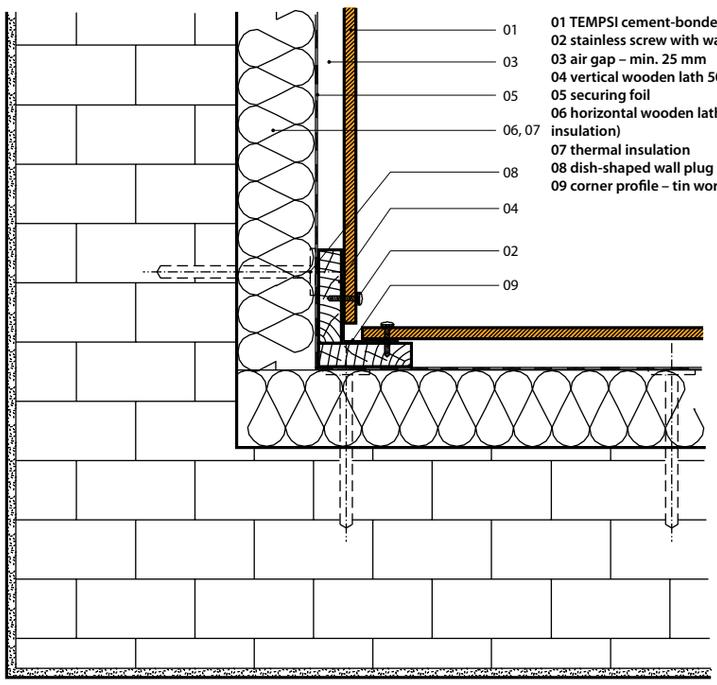


01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 dish-shaped wall plug

Detail of internal corner, TEMPSI boards on wooden grid with corner profile

CLADDING system

horizontal cross-section

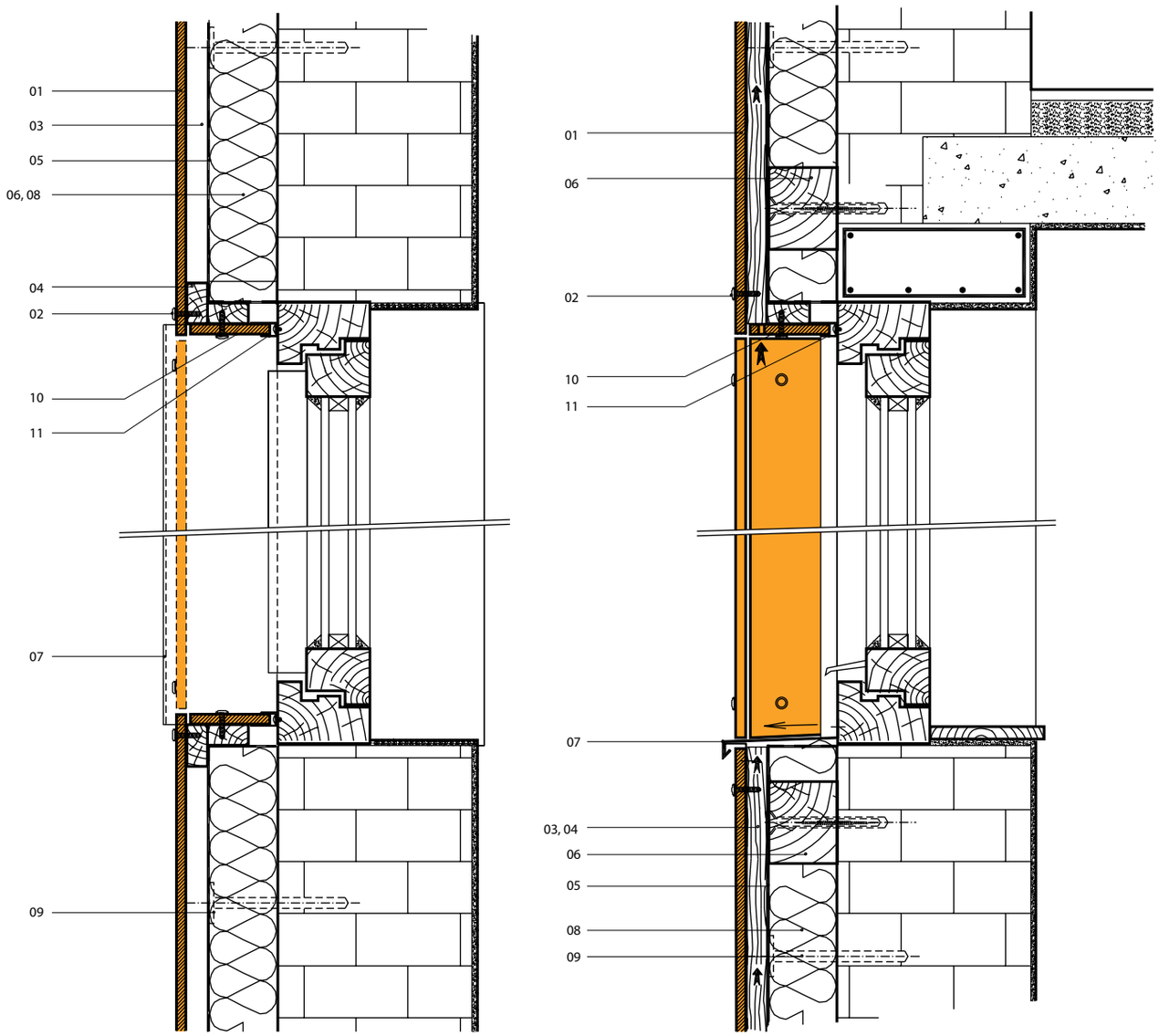


01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 dish-shaped wall plug
09 corner profile – tin work, or profile, eventually

Technological process of mounting in TEMPSI facade system

Detail of opening's case, TEMPSI boards on wooden grid, CLADDING system

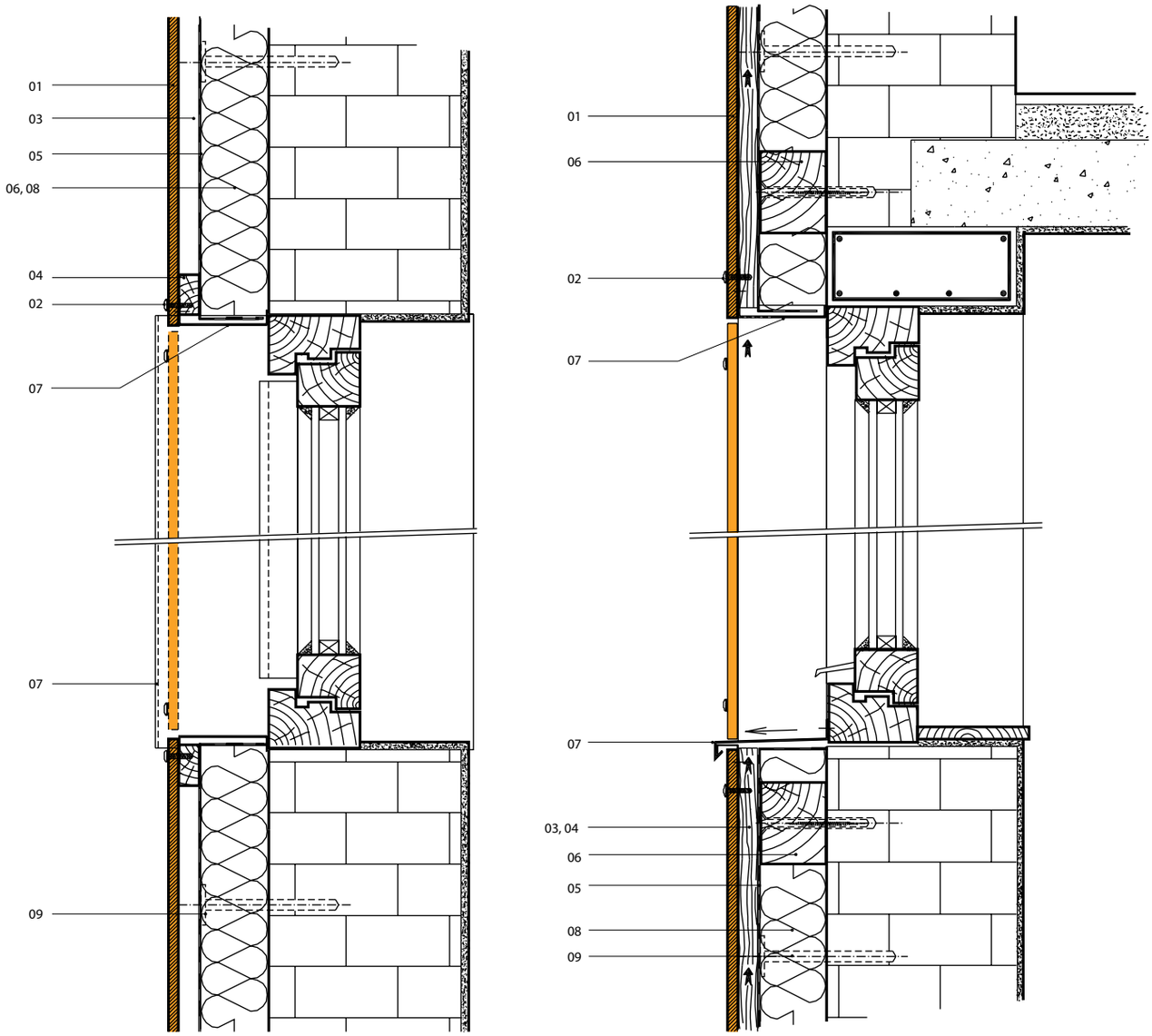
horizontal and vertical cross-section



01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 metal plating – tin work
08 thermal insulation
09 dish-shaped wall plug
10 case (lining) – perforated TEMPSI board
11 ending profile

Detail of opening's case with metal plating, TEMPSI boards on wooden grid, CLADDING system

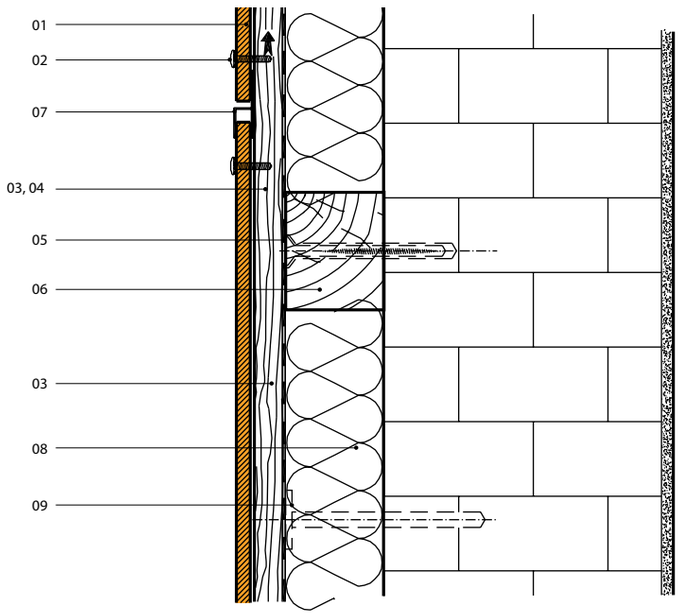
horizontal and vertical cross-section



01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 metal plating – tin work
08 thermal insulation
09 dish-shaped wall plug

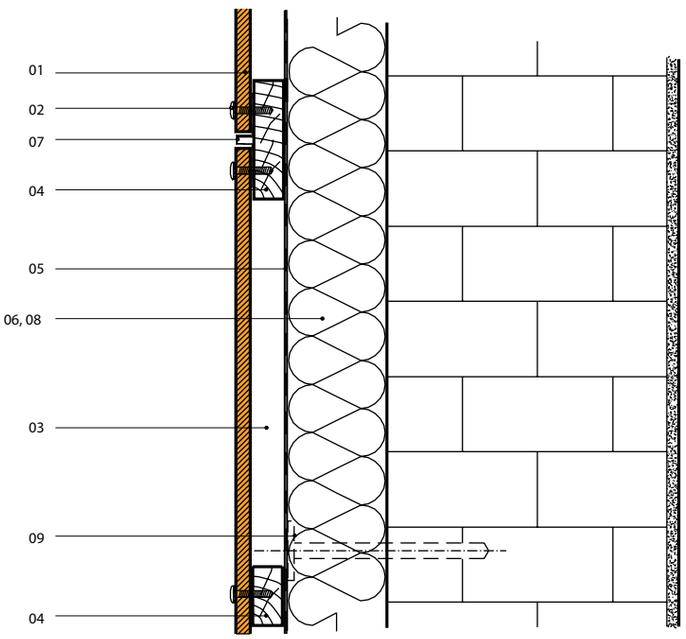
Technological process of mounting in TEMPSI facade system

Detail of horizontal joint, TEMPSI boards on wooden grid CLADDING system
vertical cross-section



01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 profile in the joint – tin work, or profile, eventually
08 thermal insulation
09 dish-shaped wall plug

Detail of vertical joint, TEMPSI boards on wooden grid CLADDING system
vertical cross-section

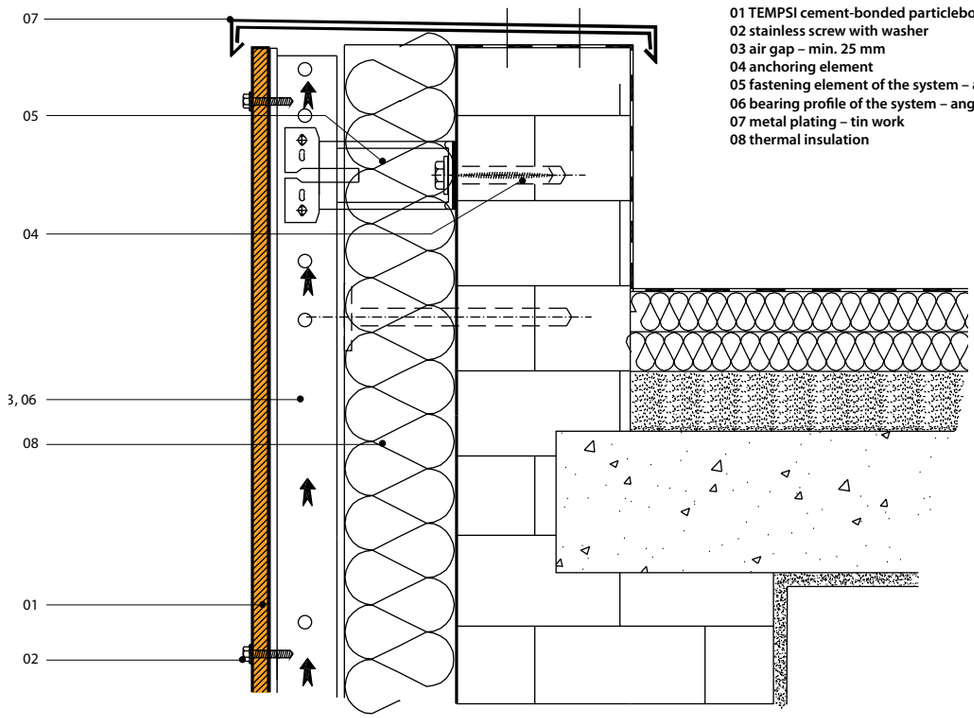


01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 profile in the joint – tin work, or profile, eventually
08 thermal insulation
09 dish-shaped wall plug

Detail of upper ending with attic, TEMPSI boards on system profiles

CLADDING system

vertical cross-section

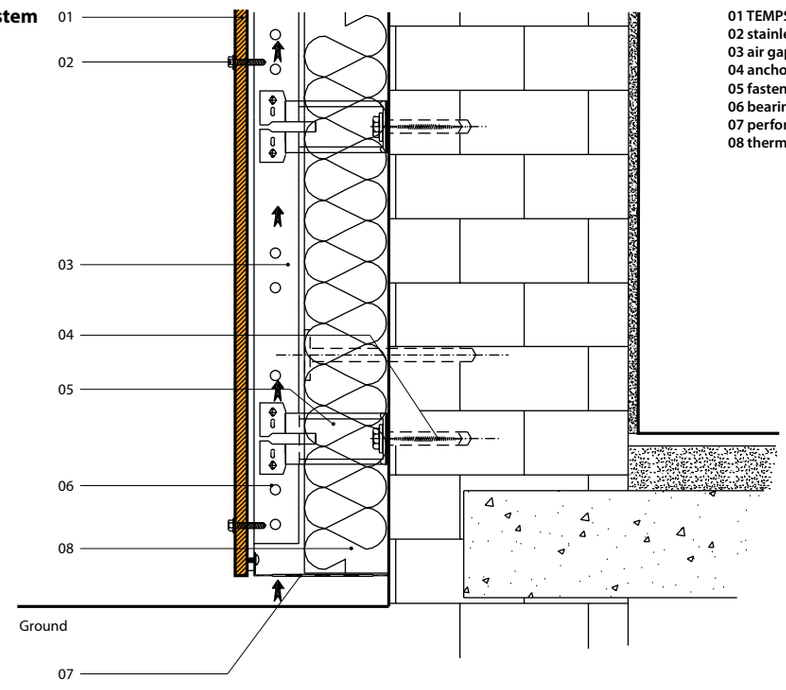


01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system – angular sheet
07 metal plating – tin work
08 thermal insulation

Detail of lower ending with over-run, TEMPSI boards on system profiles

CLADDING system

vertical cross-section



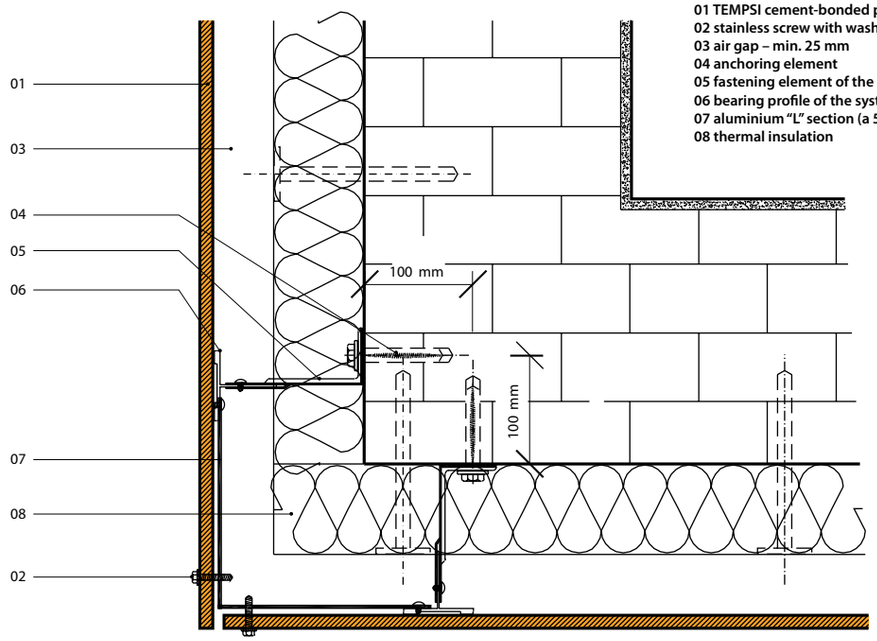
01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system – angular sheet
07 perforated ventilating profile
08 thermal insulation

Technological process of mounting in TEMPSI facade system

Detail of outer corner, TEMPSI boards on system profiles

CLADDING system

horizontal cross-section

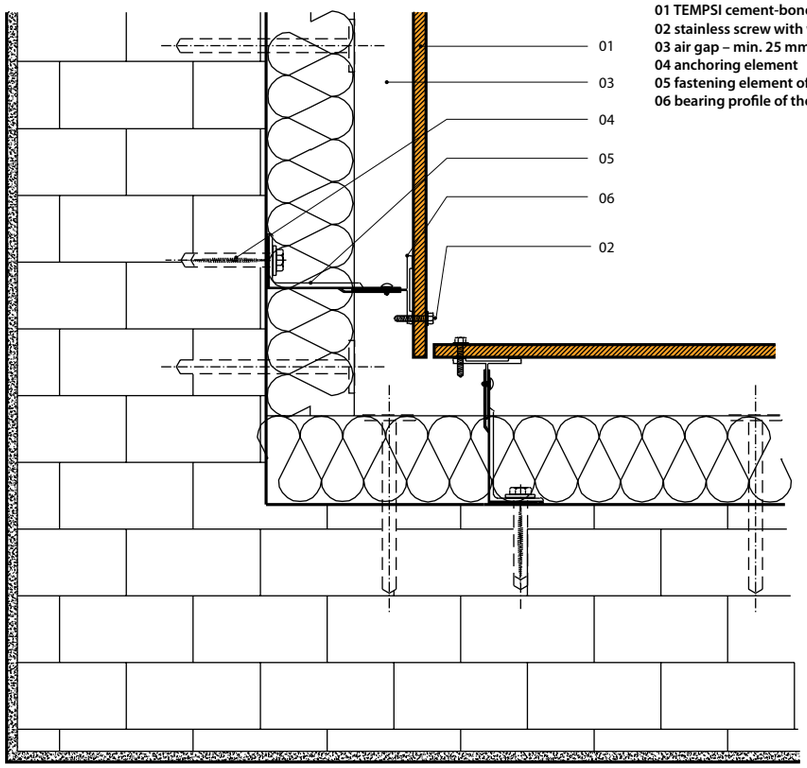


01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system
07 aluminium "L" section (a 500 mm)
08 thermal insulation

Detail of inner corner, TEMPSI boards on system profiles

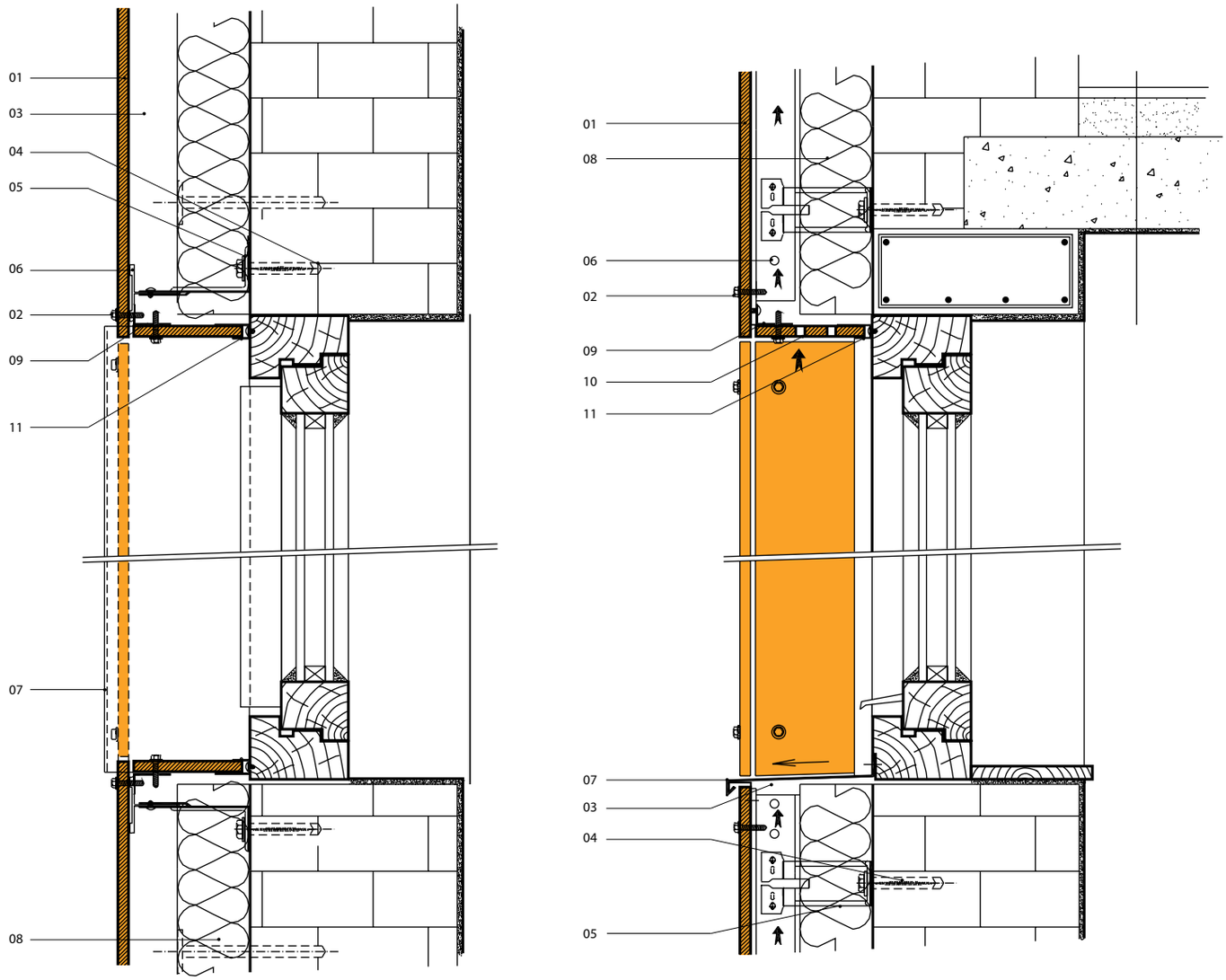
CLADDING system

horizontal cross-section



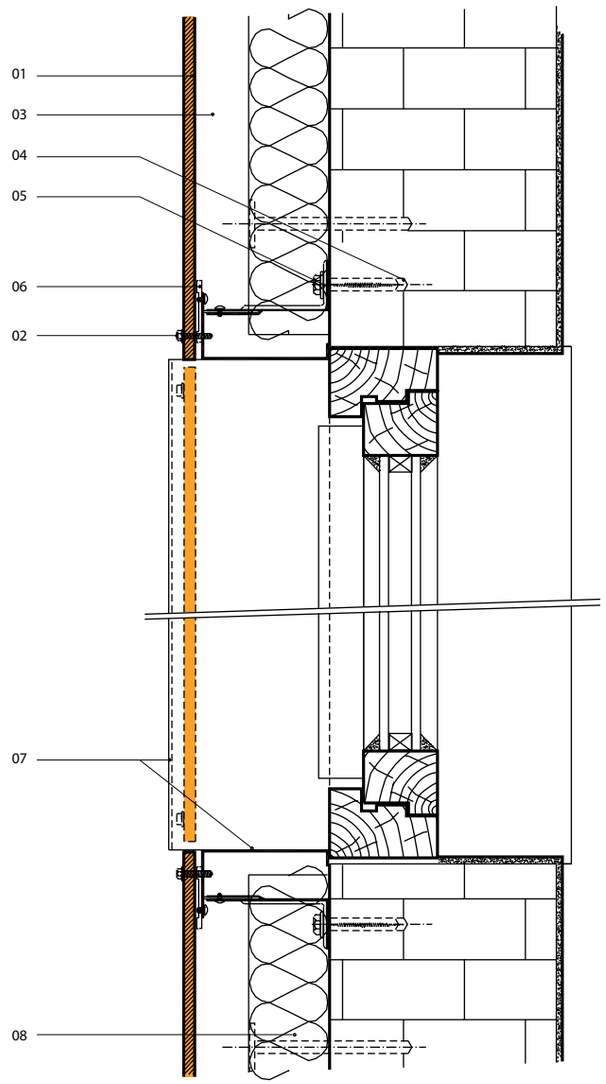
01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system

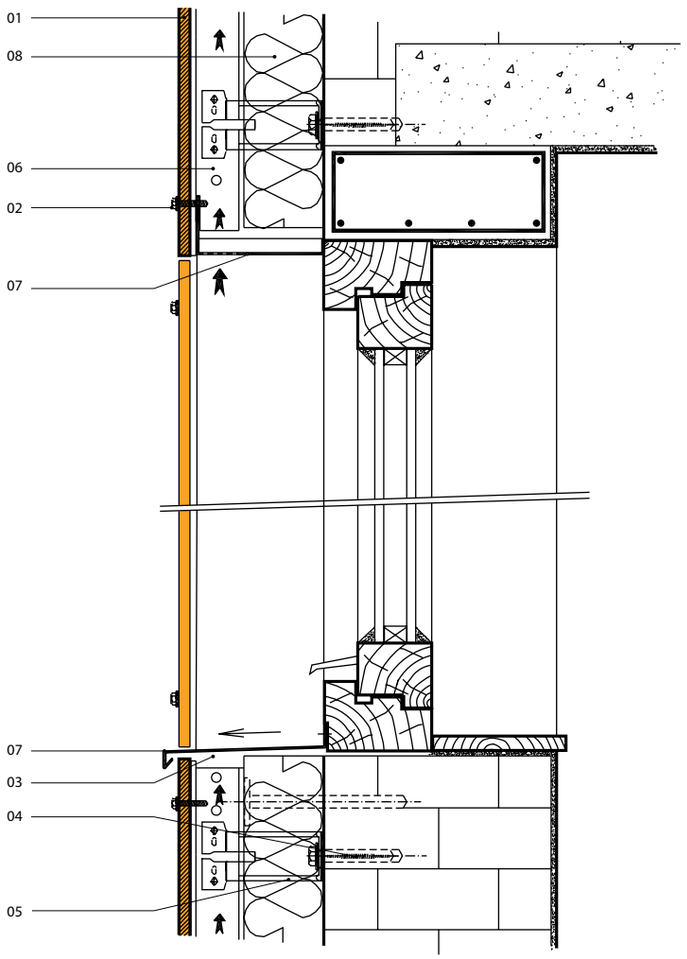
Detail of opening's case with metal plating, TEMPSI boards on system profiles
CLADDING system
horizontal and vertical cross-section



01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system
07 metal plating – tin work
08 thermal insulation
09 aluminum L-shaped profile
10 case (lining) – perforated TEMPSI board
11 ending profile

Detail of opening's case with metal plating, TEMPSI boards on system profiles
CLADDING system
horizontal and vertical cross-section



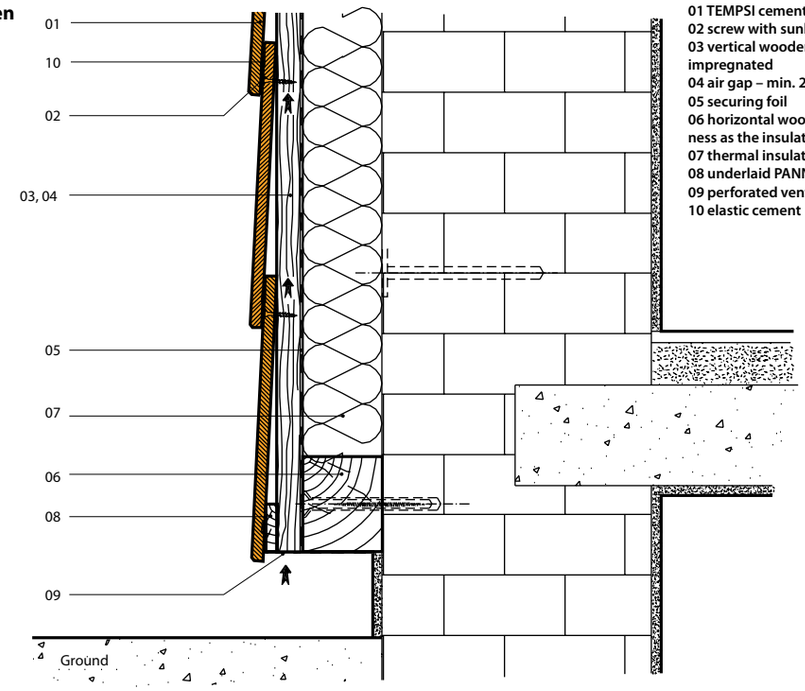


01 TEMPSI cement-bonded particleboard
02 stainless screw with washer
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system
07 metal plating – tin work
08 thermal insulation

Detail of lower ending, TEMPSI boards on wooden grid

PANNELLO system

vertical cross-section

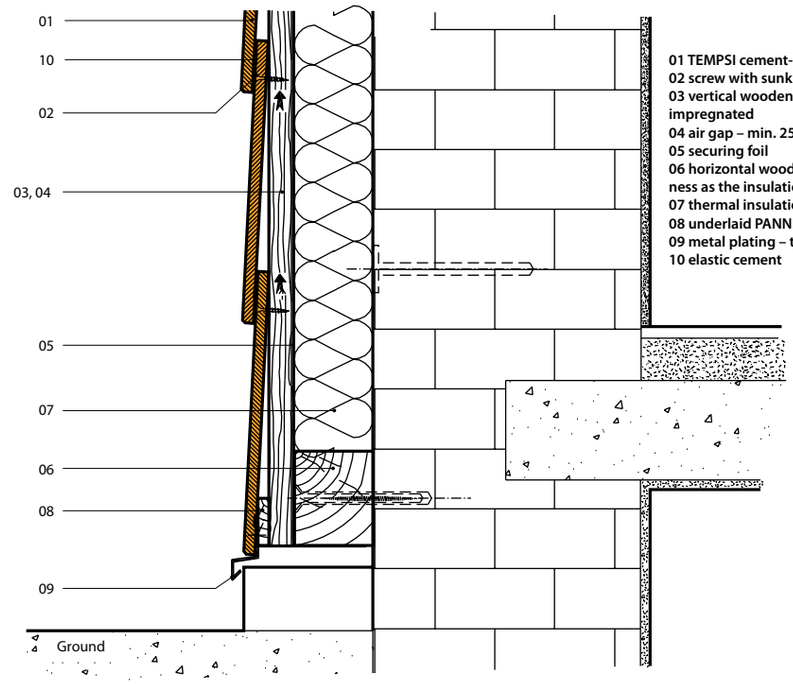


01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 underlaid PANNELLO
09 perforated ventilating profile
10 elastic cement

Detail of lower ending with metal plating, TEMPSI boards on wooden grid

PANNELLO system

vertical cross-section



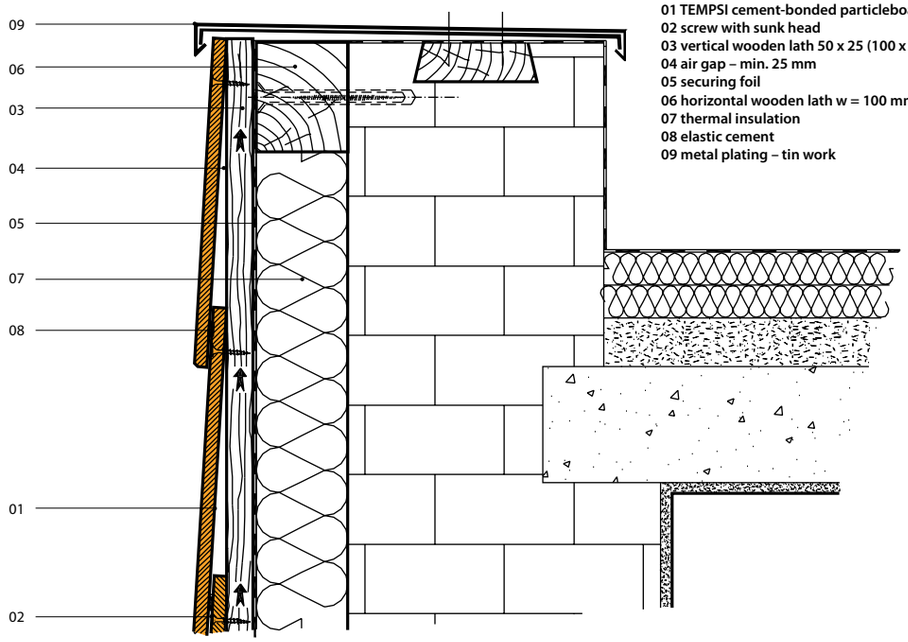
01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 underlaid PANNELLO
09 metal plating – tin work
10 elastic cement

Technological process of mounting in TEMPSI facade system

Detail of upper ending, TEMPSI boards on wooden grid

PANNELLO system

vertical cross-section

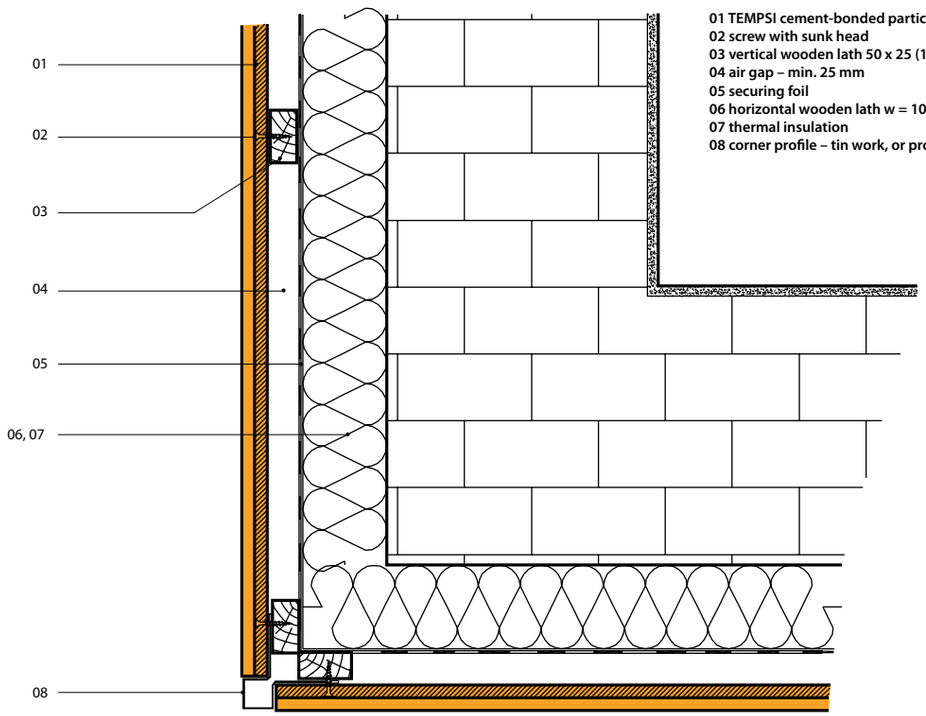


01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 elastic cement
09 metal plating – tin work

Detail of outer corner, TEMPSI boards on wooden grid with corner profile

PANNELLO system

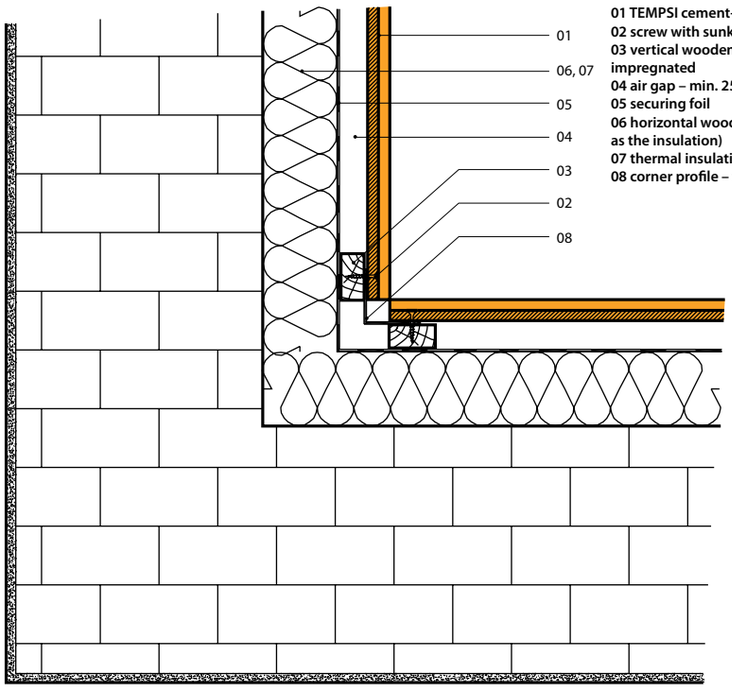
horizontal cross-section



01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 corner profile – tin work, or profile, eventually

Detail of internal corner, TEMPSI boards on wooden grid with corner profile, PANNELLO system

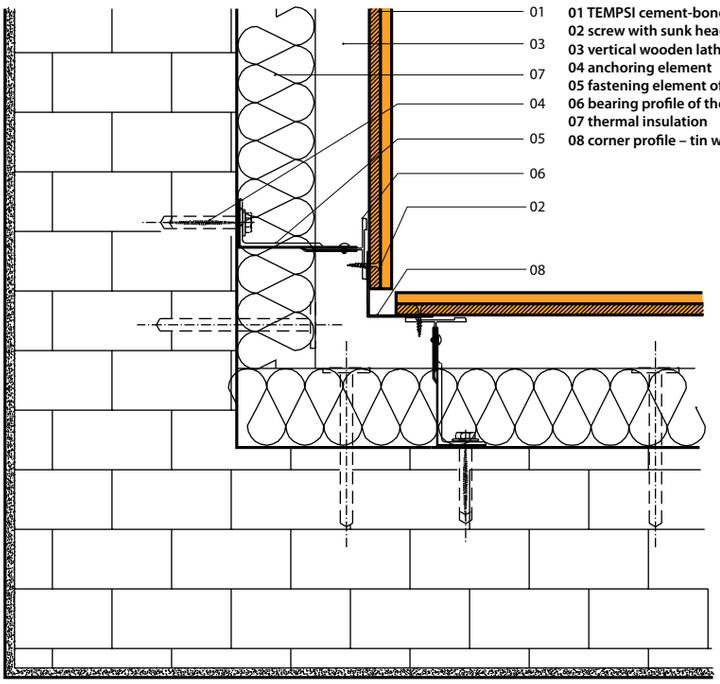
horizontal cross-section



01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 corner profile – tin work, or profile, eventually

Detail of internal corner, TEMPSI boards on system profile with corner profile, PANNELLO system

horizontal cross-section



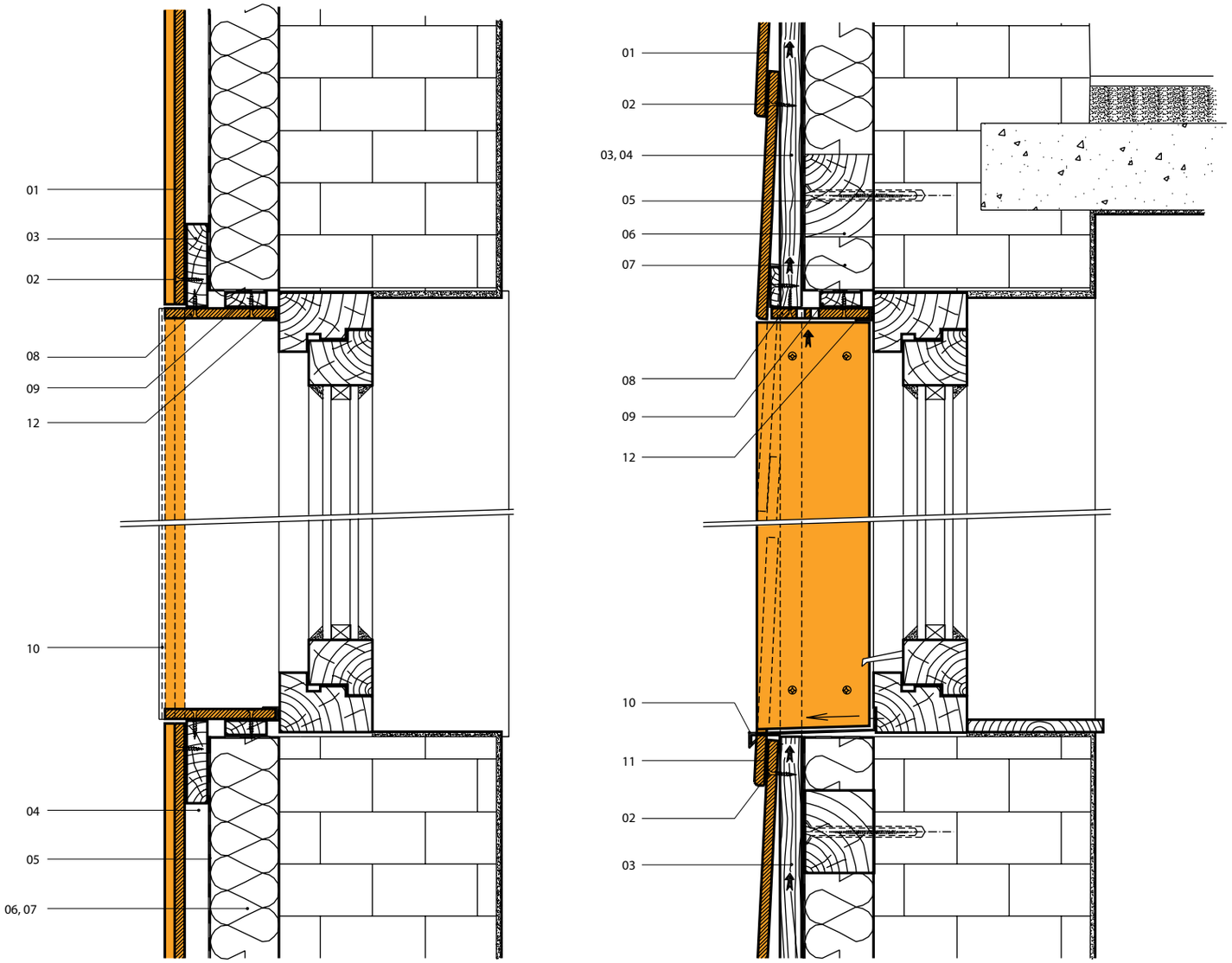
01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system
07 thermal insulation
08 corner profile – tin work, or profile, eventually

Technological process of mounting in TEMPSI facade system

Detail of opening's case, TEMPSI boards on wooden grid

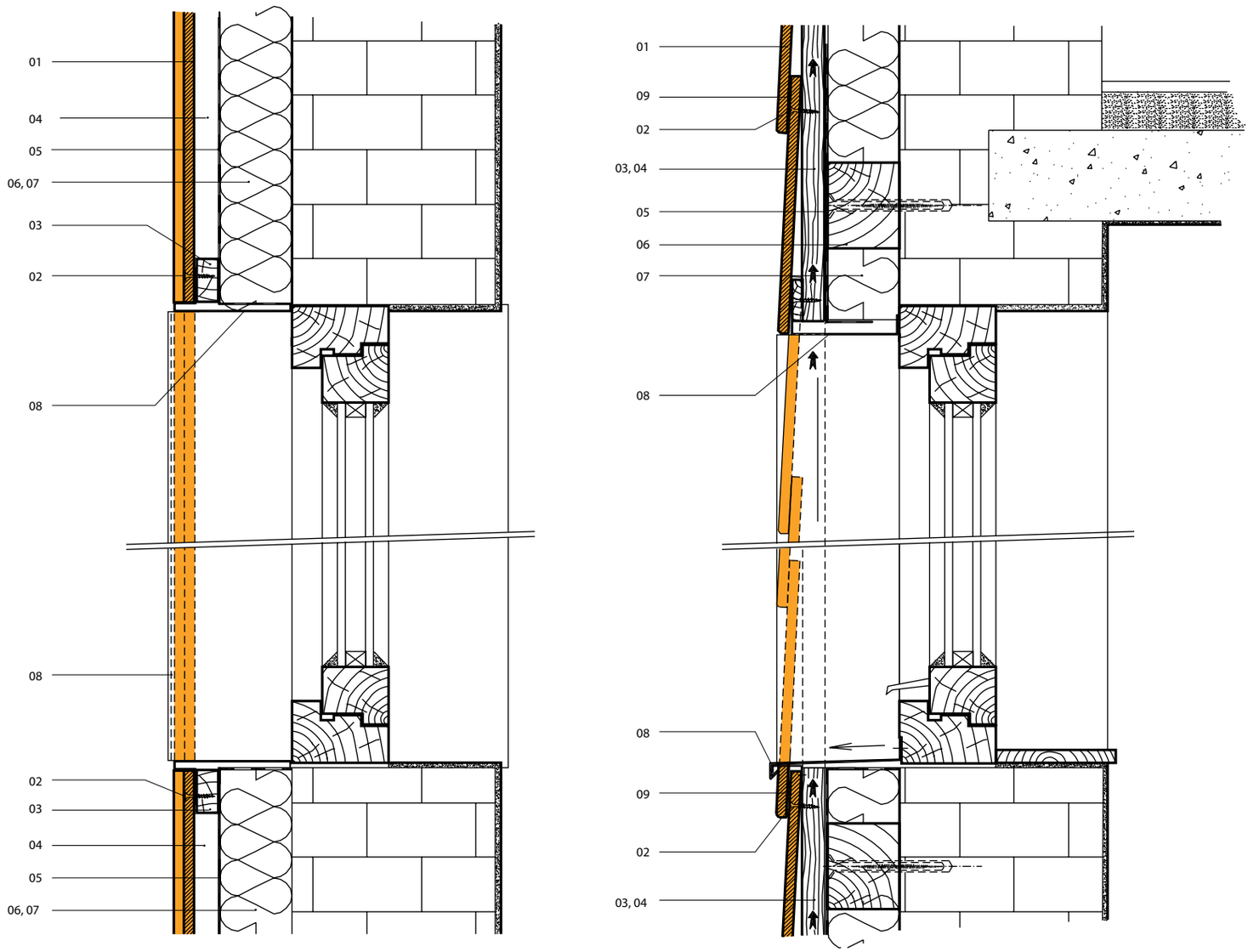
PANNELLO system

horizontal and vertical cross-section



01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 case (lining) – perforated TEMPSI board
09 wooden PANNELLO, 18 mm thickness
10 metal plating – tin work, or profile, eventually
11 elastic cement
12 ending profile

Detail of opening's case with metal plating, TEMPSI boards on wooden grid
PANNELLO system
horizontal and vertical cross-section



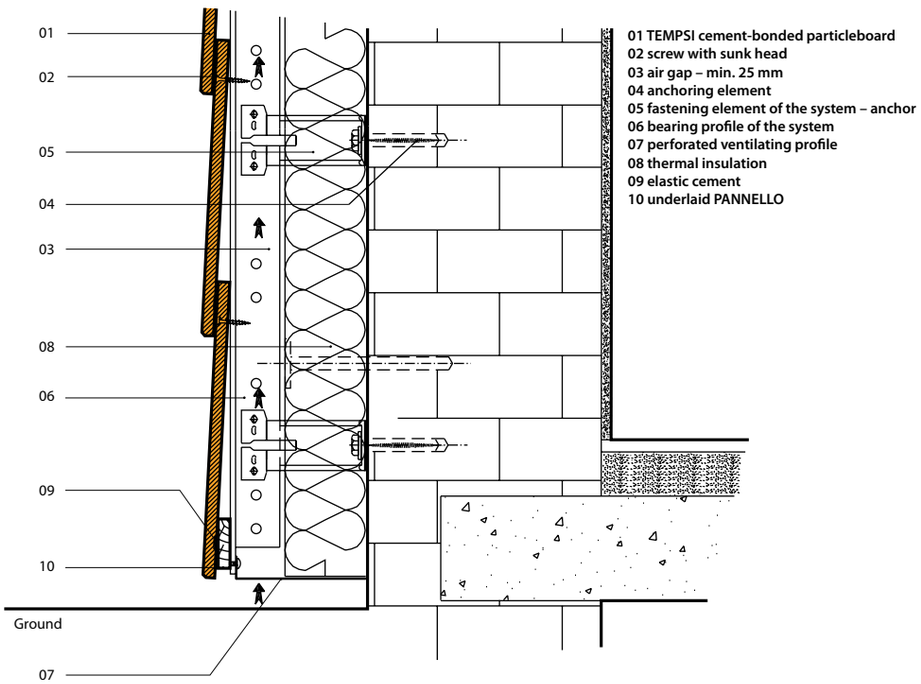
01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 vertical wooden lath 50 x 25 (100 x 25) mm, impregnated
04 air gap – min. 25 mm
05 securing foil
06 horizontal wooden lath w = 100 mm (thickness as the insulation)
07 thermal insulation
08 metal plating – tin work, or profile, eventually
09 elastic cement

Technological process of mounting in TEMPSI facade system

Detail of lower ending with overrun, TEMPSI boards on system profile

PANNELLO system

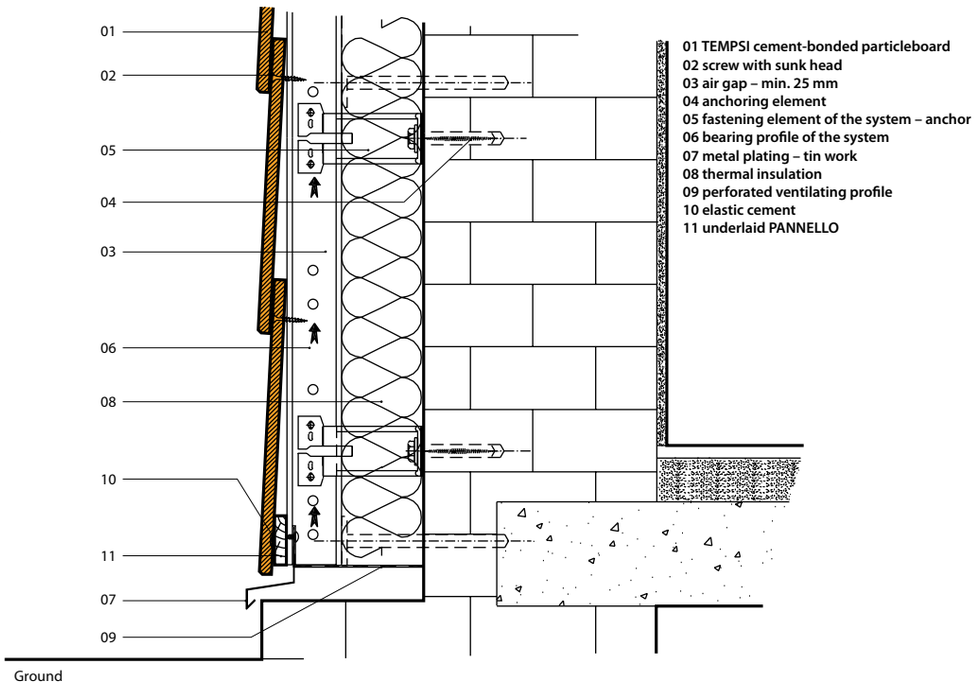
vertical cross-section



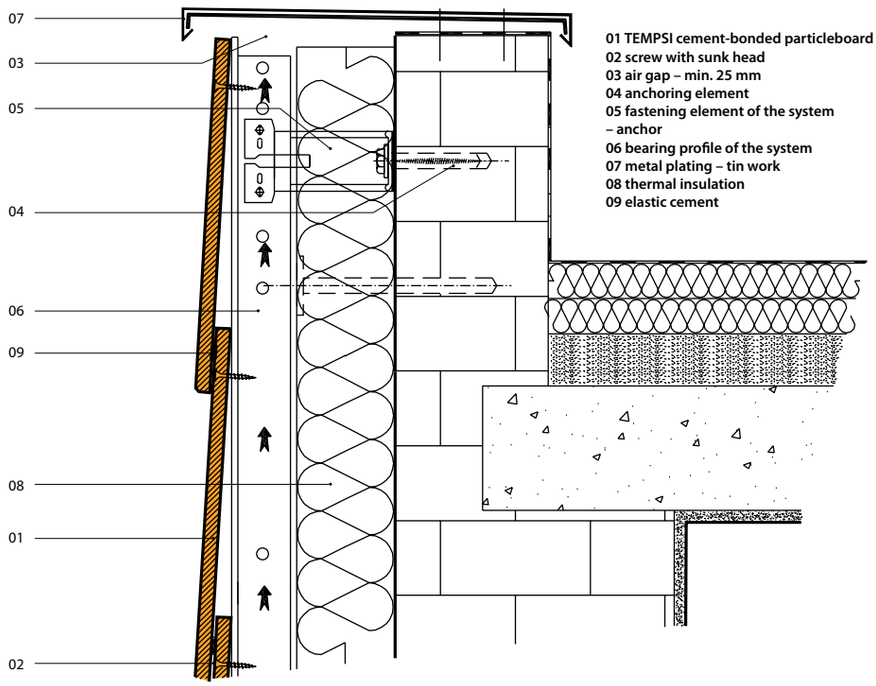
Detail of lower ending with metal plating, TEMPSI boards on system profile

PANNELLO system

vertical cross-section

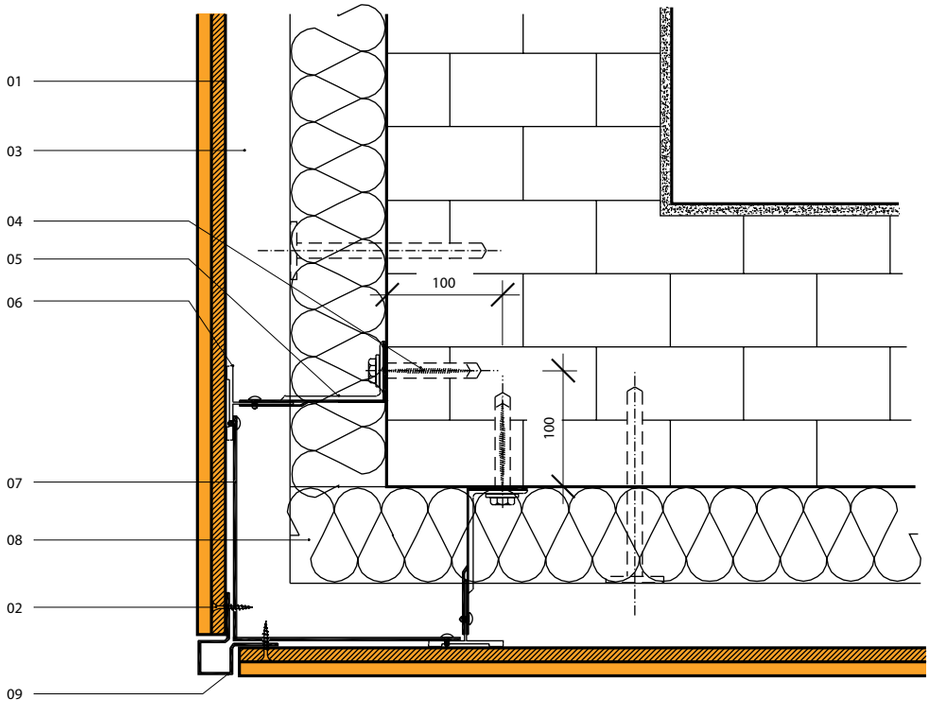


Detail of upper ending, TEMPSI boards on system profile
PANNELLO system
vertical cross-section



01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system
07 metal plating – tin work
08 thermal insulation
09 elastic cement

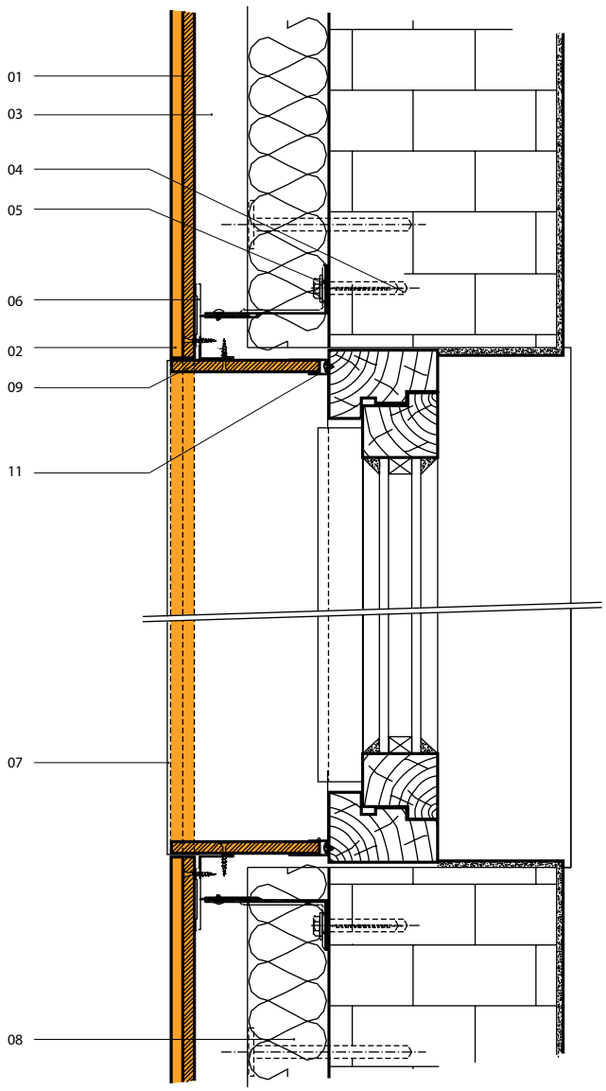
Detail of outer corner, TEMPSI boards on system profile
PANNELLO system
horizontal cross-section

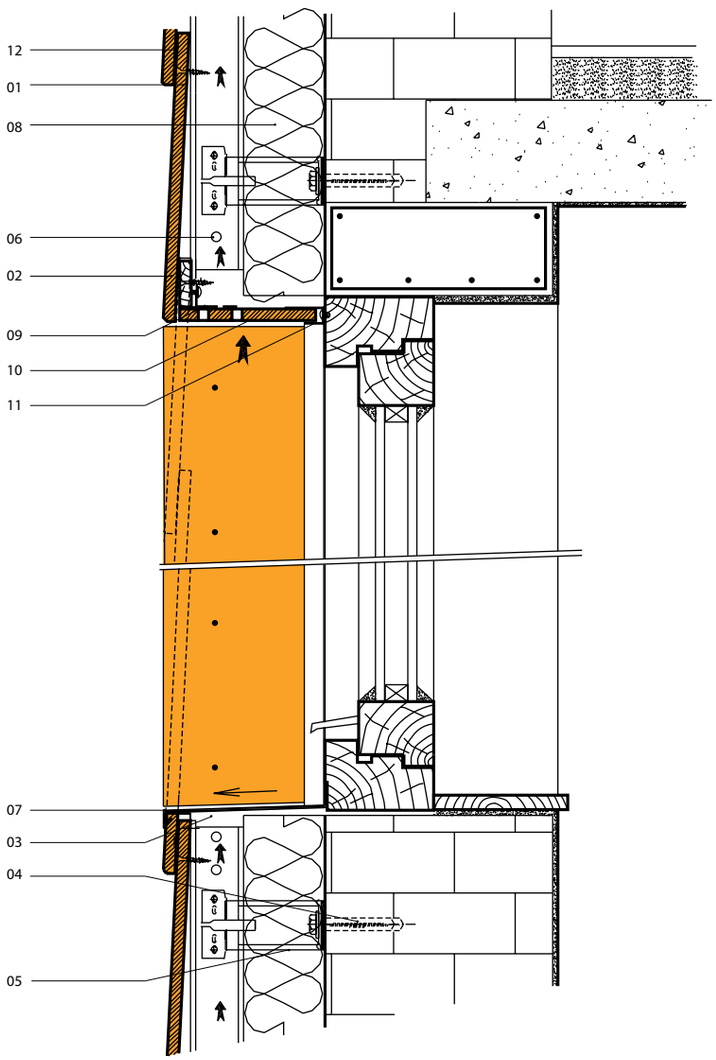


01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system
07 aluminum L-shaped profile
08 thermal insulation
09 corner profile – tin work, or profile, eventually

Technological process of mounting in TEMPSI facade system

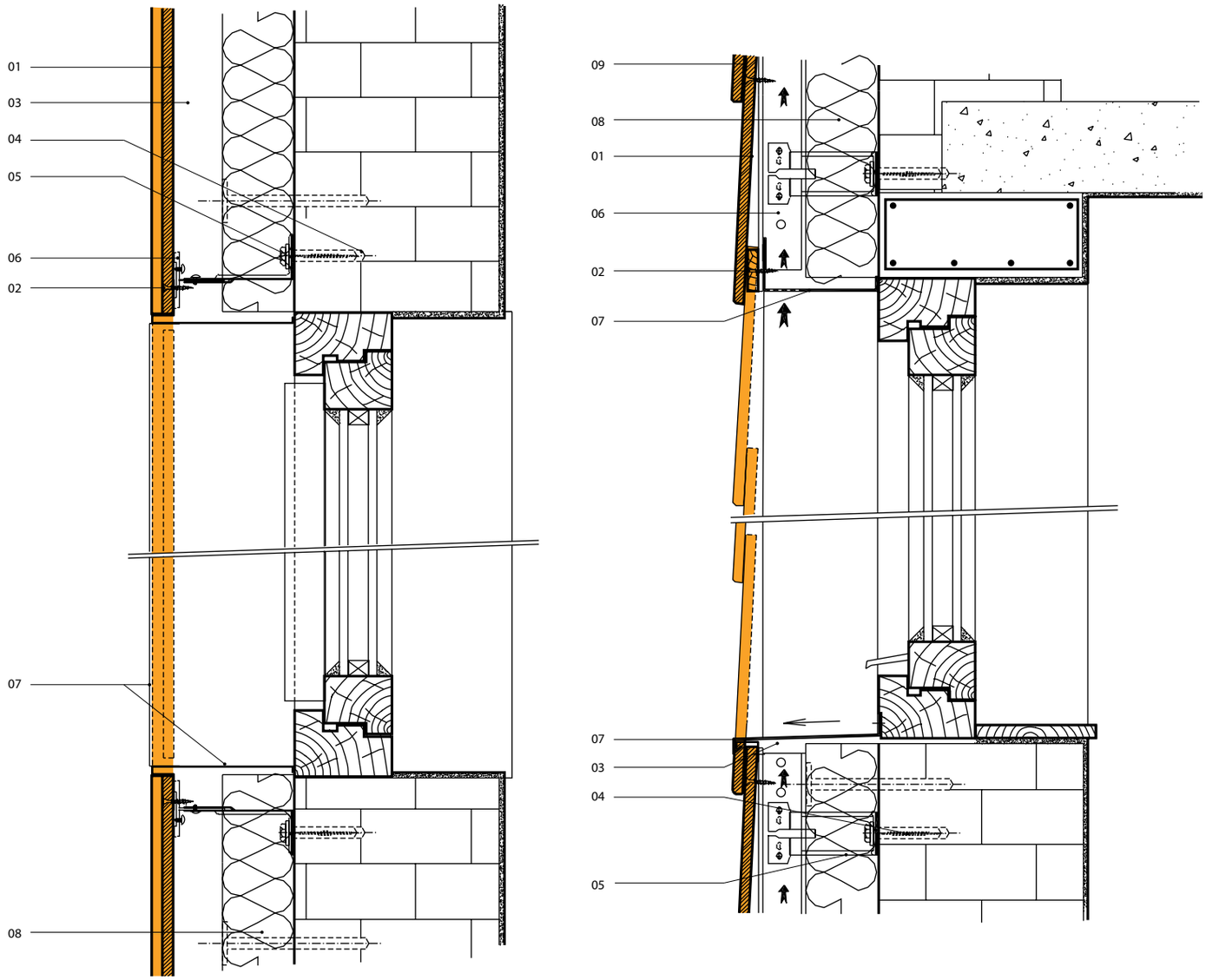
Detail of opening's case, TEMPSI boards on system profiles
PANNELLO system
horizontal and vertical cross-section



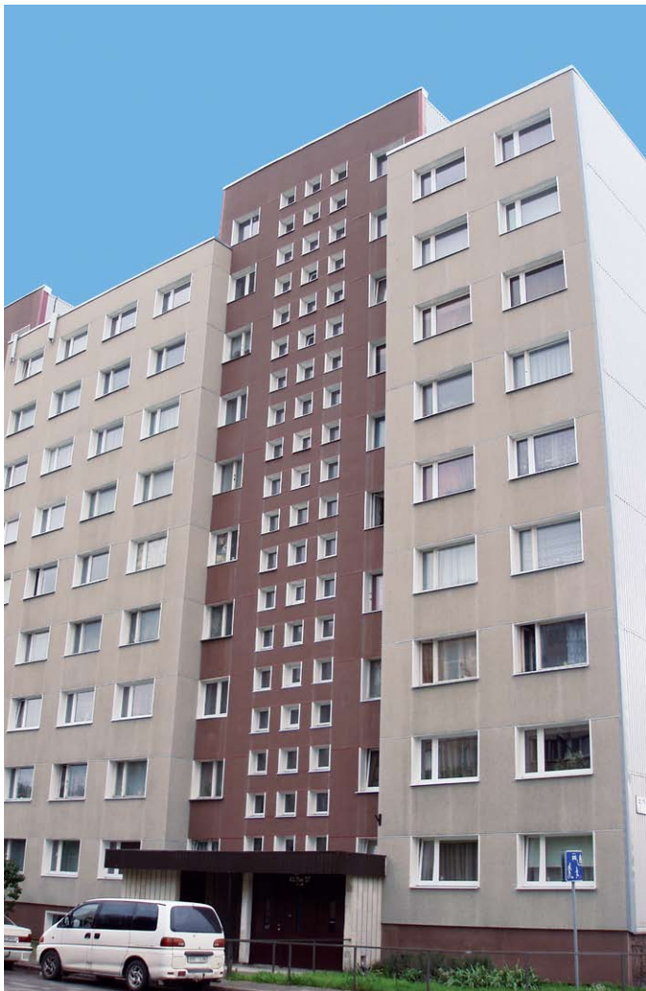


01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system
07 metal plating – tin work
08 thermal insulation
09 aluminum L-shaped profile
10 case (lining) – perforated TEMPSI board
11 ending profile
12 elastic cement

Detail of opening's case with metal plating, TEMPSI boards on system profiles
PANNELLO system
horizontal and vertical cross-section



01 TEMPSI cement-bonded particleboard
02 screw with sunk head
03 air gap – min. 25 mm
04 anchoring element
05 fastening element of the system – anchor
06 bearing profile of the system
07 metal plating – tin work
08 thermal insulation
09 elastic cement



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