C7a

Assembly Details

Assembly Time

Switzerland

Spain

EcoCocon panels can be assembled very quickly - at a rate of about 60 m2 of wall surface per day for 3 persons.

Note

- About 20 to 40 min assembly time per m2 of wall
- One story per day possible if crane is available on site
- Time for unloading and preparation needs to be accounted for separately

Case studies: Mounting with a crane

	M2 wall	Workers	Days	**Min/m2**
Switzerland	245	6	2.5	**29**
Spain	128	3	2	**22**

Panel project

The panel project is the basic document for production, but it also serves as an assembly guide. All panels are marked with a number and are colour-coded according to orientation.

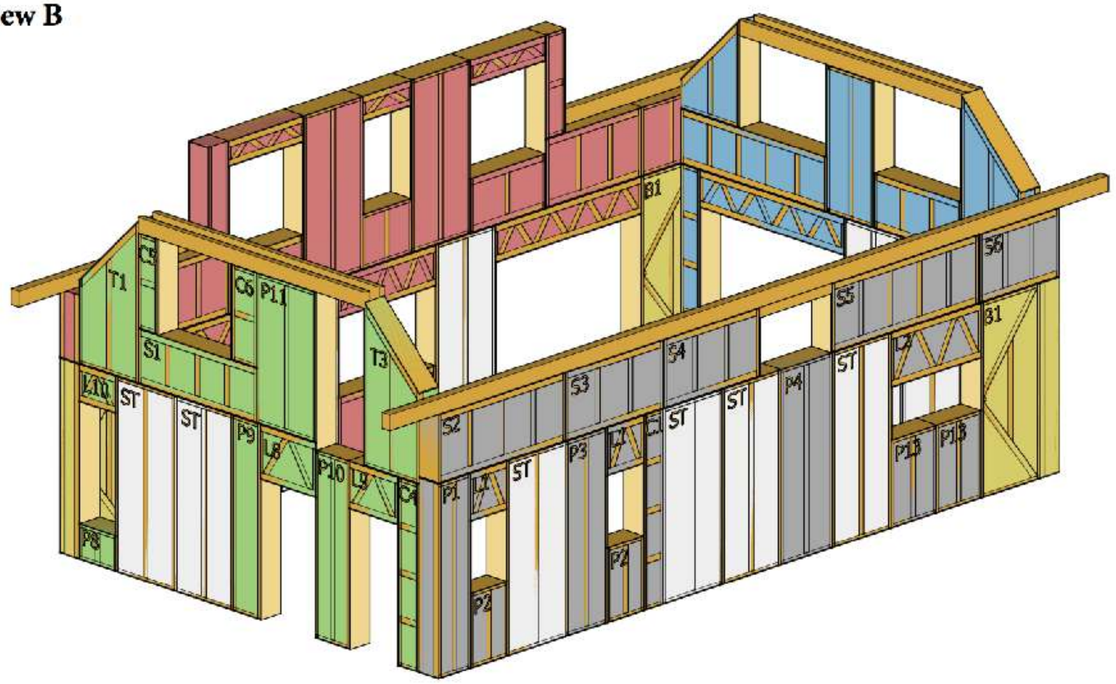
Before assembly, check the correct colour and number of each panel.

P = Standard Panel; B = Braced Panel; S = Sill; L = Lintel; C = Column; I = Inclined Panel

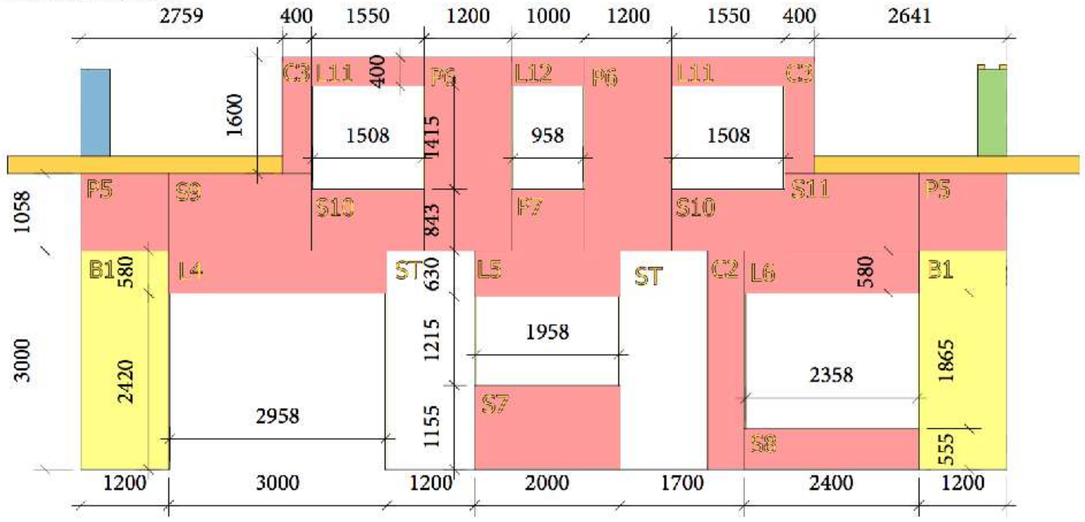
Note

- The elevations are referenced with measurements. The view is always from the exterior
- Measurements of openings are always from plywood to plywood

3D view B



South side view

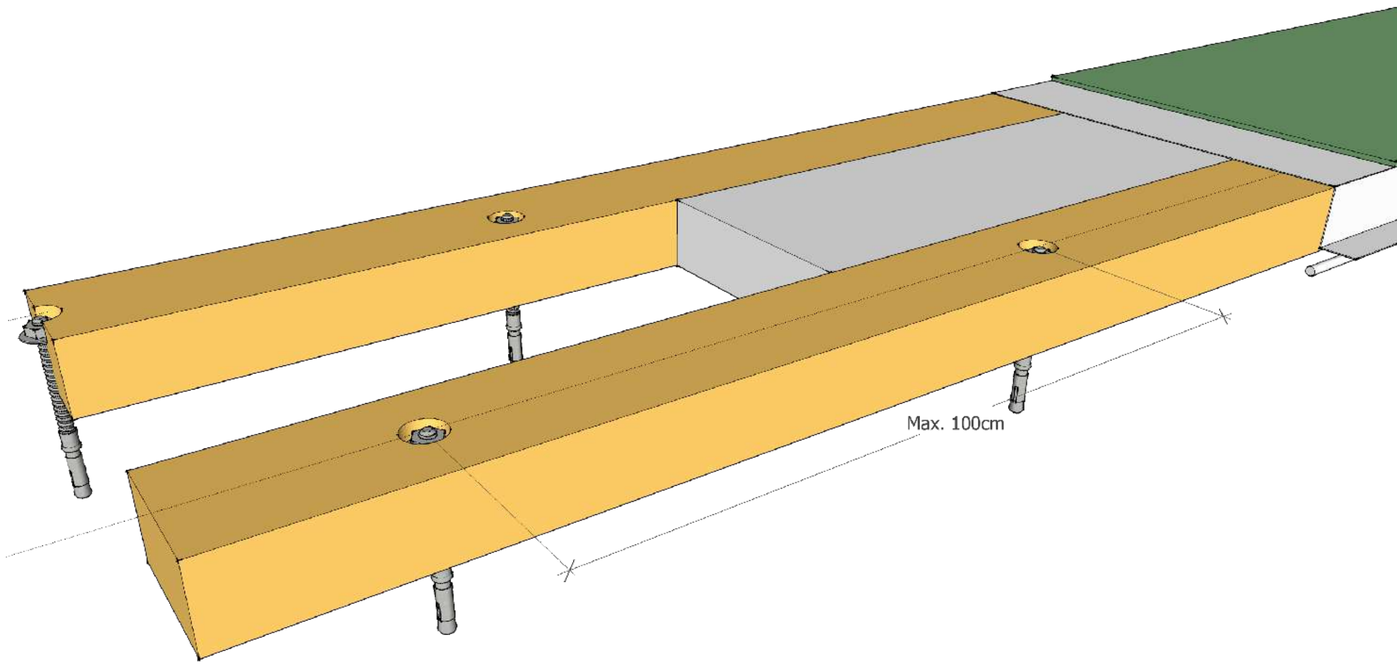


Base plate

It is very important the ring beam is absolutely level (+/- 2 mm over 5 m length). Any deviation of height will make assembly of the panels more difficult. Bolts must be tapered and spaced at a max. distance 100 cm.

The ring beam has to be properly supported. If the foundation is not flat, use special mortar to level the surface under the ring beam.

Add a layer of water resistant insulation (cork or EPS) between the ring beams. There might be rainwater on the foundation that will soak under the ring beam during construction or a water leak in the house at a later stage. The wood and the water resistant insulation will not take up a lot of water and dry out.

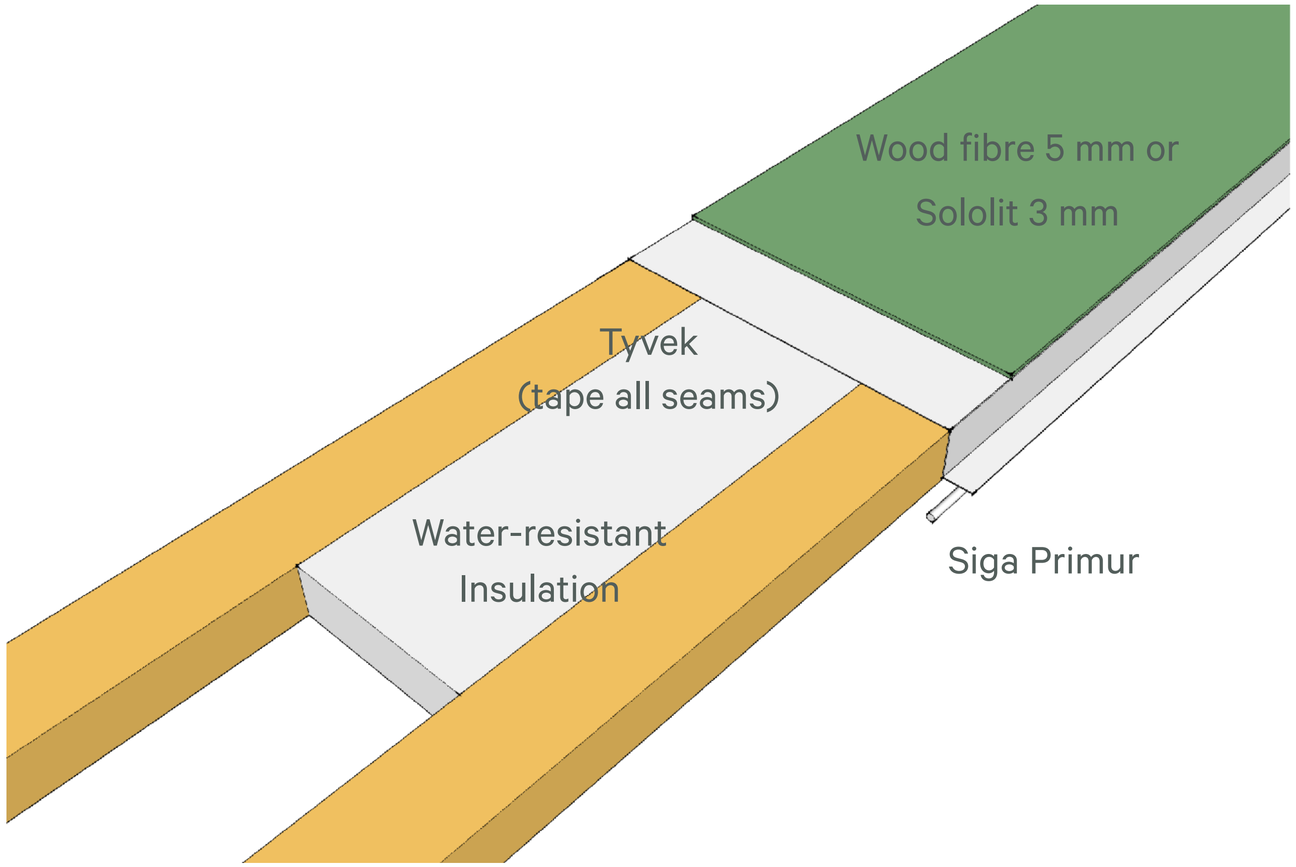


Note

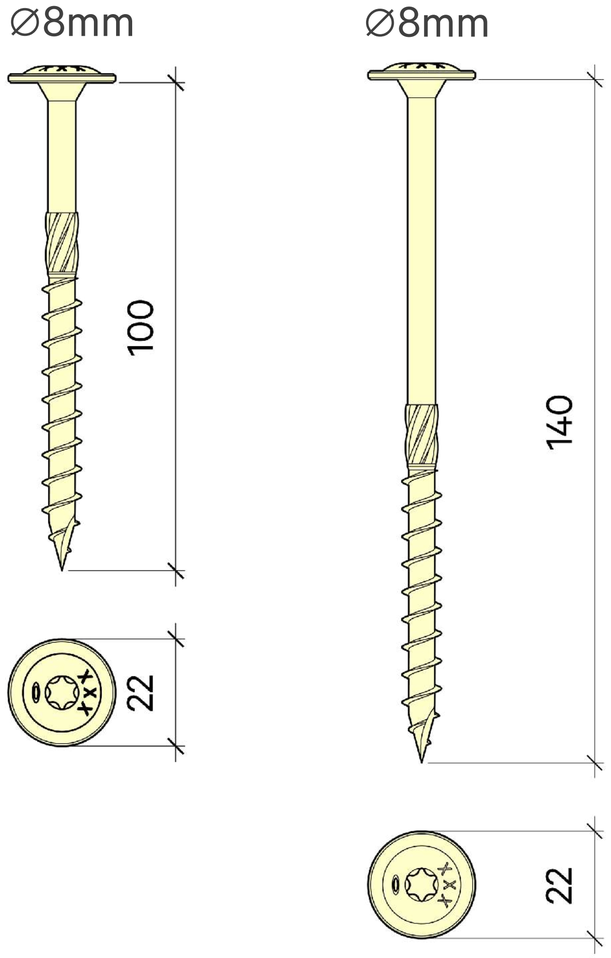
» Always use a waterproof layer between concrete and wood

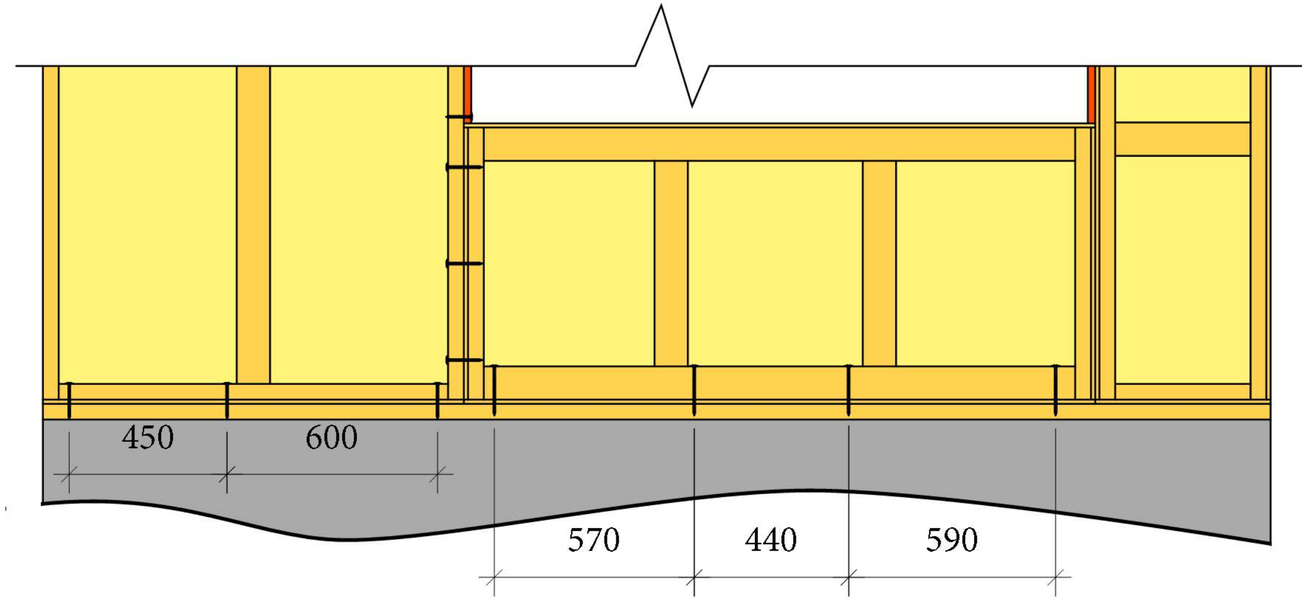
Base plate cover

- Cover the ring beam with a 60 cm wide Tyvek membrane (length wise). Let the Tyvek stick over the inside of the ring beam, so that it can be sealed to the foundation with the Siga Primur sealing provided with the panels. Let the rest stick out along the outside of the foundation.
- We recommend to staple the Tyvek to the Ring beam, to keep it less prone to damage during construction.
- In the corners and joints tape the overlapping Tyvek at the seams to ensure an airtight layer.
- Cover the ring beam with a thin layer of 5mm wood fibre or sololit board. Staple the wood fibre boards in place. You can staple through the membrane, it does not compromise airtightness. If you pull any staples out later, be sure to tape the holes in the membrane.



Connection: Panel – Foundation Ring Beam





Panel placement

Mark the width and number of the separate panels along the base plate, so that you are sure to keep to the measurements when placing them.

Start by placing the first two panels to make one complete corner, then proceed with extending the walls out from the corner.

Note

- Sometimes the wall might be a few mm longer than planned (some gaps add up quickly and there is a +/-2 mm tolerance for each panel).
- Try to make the last wall so that it can extend a few mm over the ring beam.

Dowels

Each panel has at the bottom and top dowels that will fit into a hole opposite - this helps to keep the panels aligned. Add dowels to the elements before assembly.

Pulling panels to each other

The straw sticks out on the short sides - this ensures a tight fit of the insulating layer at the connections. The last 1-2 cm the panels need to be pulled tight - this can be done with the help of different tools. Place one on each side at the bottom, pull together and set screws when wooden elements are flush. Continue upwards in the same process.

If you cannot use the tools, pull the panels to each other with the help of pulley. It helps to pull the panel as tight to each other as possible over the whole height before adding the screws.

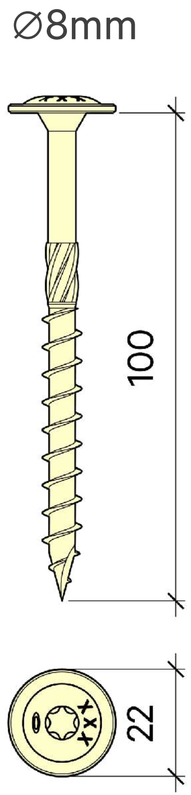
The last few mm of the gap can usually be pulled close by the force of the screws.

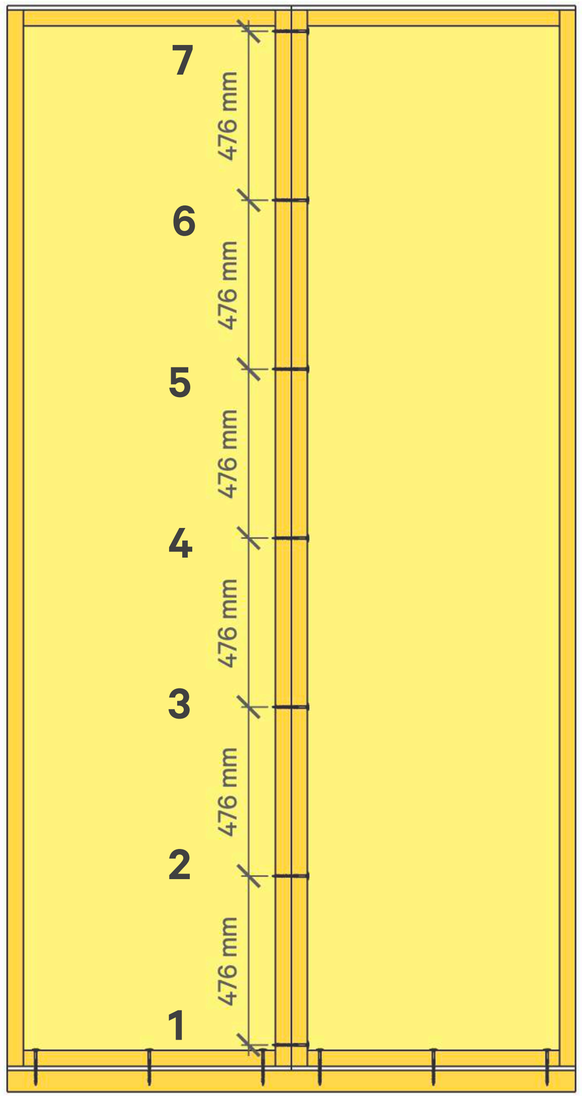
Sequence of tightening the screws

Panels can be pulled to each other through the sheer force of the screws

Start with screwing at the bottom, then proceed upwards

You can partly tighten all screws first, and then tighten them in sequence at the end.





Note

» Use a very strong impact screwdriver

» The screws have a self drilling point

Use a long bit extension and impact screwdriver

A long bit extension is crucial to achieve a flat angle on the screw.

Start the screw about 15 mm to the inside of the straw.

Note

» Use an impact screwdriver, otherwise the high torque can lead to injuries!

Installations

If an installation goes through the foundation, just cut out a piece of the wood in the baseplate.

Note

» Make sure you do not disturb any critical load-bearing elements.

Lintel mounting

The Lintels are supported by the 21 mm thick plywood boards added to the sides of the window opening.

There are two possible approaches:

1st approach:

» Add wooden sticks at the right height and slide the lintel in place.
» Screw the lintel to the panels and remove the sticks
» Add the plywood flush with the Lintel

2nd approach:

» Add the plywood to the sides of the panel. Ensure correct height of the top of the plywood
» Slide the lintel in place on the plywood

Airtight membrane sd<0.2 m

We provide you with a 1.5 m wide Tyvek Pro membrane as standard.

You can also use other membranes with a larger width of 3 m, if that makes installation easier.

These are membranes used for external sealing of roofs or facades.

Note

» The airtight membrane must have a sd<0.2 m (diffusion-open)

Examples:

» Proclima Mento 1000 or 3000
» Isocell Omega Light
» Siga Majcoat

Installing the airtight membrane

Cover the panels with the airtight layer before adding the ring beams!

The plywood strips are tacked to the wooden frame to hold the membrane in strong winds.

Note

- The airtight membrane must have a sd<0.2 m (diffusion-open)
- You can staple or screw the membrane trough the plywood strips, this does not impact airtightness

Cover windows

Pull the membrane over the windows to protect the inside.

Fix the membrane with the plywood strips to protect it against the wind.

Note

» Before adding plywood, make sure you have taped all the connections

Ring beam

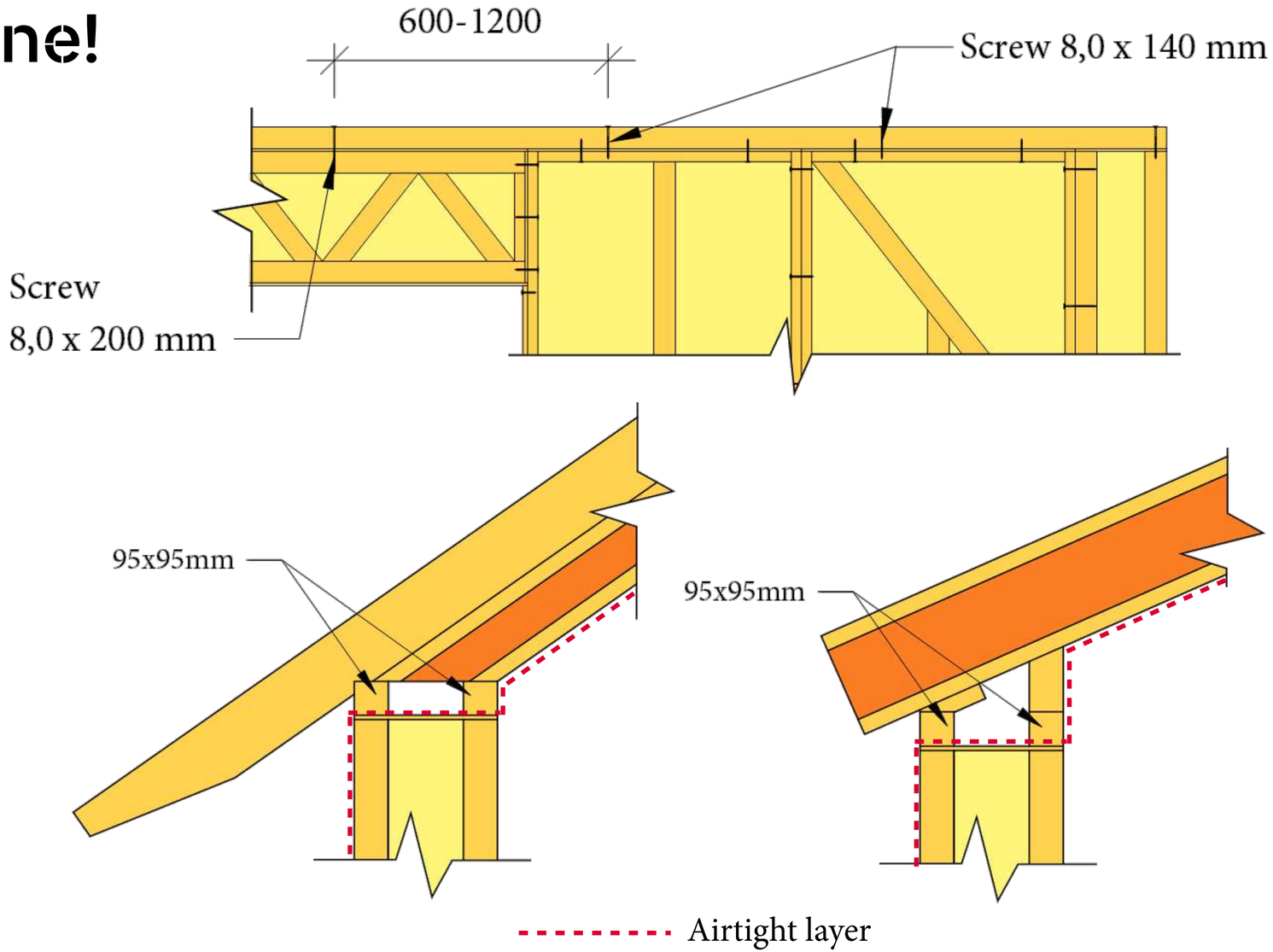
The ring beams can be 60x100 mm non-load-bearing timber.

Load-bearing ring beams have to be screwed to the panels with long screws.

Note

» The airtight membrane should be continued on the inside, so leave some of the membrane sticking out to the inside you can connect to later

Ring beam - ensure airtight connection of membrane!



Outside: Adding wood fibre board

The plywood strips compensate for the straw sticking out from the wood and provide a level surface.

Use staples to fix the wood fibre boards to the wooden construction.

Note

» If windows are installed level with the outside, cover frame with the wood fibre board

Installing windows

The windows should be installed flush with the wood fibre board (if now shading device is installed).

Wood fibre board can be extended over the frame of the window.

Note

» Use an EPDM membrane to ensure water protection at the sill (usually done by the window installer)

Inside: Wood fiber strips

The plywood strips compensate for the extra thickness of the straw sticking out from the wood and provide a level surface before plastering

Use staples to fix the wood fibre boards to the wooden construction

Apply the clay plaster layer in a continued layer from straw over wood fibre board to straw.

Note

» Use a mesh in the base coat to ensure there is no cracking of the plaster

Hung ceiling

With a ring beam along the wall, you can add Steico Joists for a ceiling. The ring beam is directly screwed to the vertical posts of the EcoCocon panels. Steico Joists can be placed with a spacing regardless of the spacing of the posts.

Note

» Use standard connectors (Simpsons) to connect Steico joists to the ring beam

Roof

- Ensure the connection of the Inside Roof membrane (vapour control layer) with the outside diffusion open membrane
- You can use blown-in insulation or any type of wool insulation.

Note

- Use standard connectors (Simpsons) to connect Steico joists to the ring beam

Use of delivered materials

Inside:

» 5 mm wood fibre strips stapled to wood

» Clay plaster (3 layers)

Inside roof membrane:

» Vapour control layer SIGA Majpell 5, 1.5 m width - Sd=5 m

» Air sealing tape SIGA Sicrall 60 mm width

Outside roof membrane:

» Breathable membrane SIGA Majcoat 1.5 m width (Can also be used under ring beam and part of outside wall as it is stronger than Tyvek and more weather resistant - Sd=0.1m)

Outside materials:

» Tyvek, Proclima Solitex Mento or Isocell Omega light

» Air sealing tape SIGA Wigluv 60 mm

» Plywood strips

» Wood fibre board Steico Protect

» Plaster system certified for Wood fibre board