

Architectural Facade Systems
CEME Division

Karrier system Assembly guideline



Vilnius Gediminas Technical University (VGTU)

Vilnius, Lithuania

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Product
Karrier + ceramic tiles



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Karrier: Introduction to the system

Karrier system is an advanced and versatile facade system based on a load-bearing sandwich panel with QuadCore® and IPN foam insulation core or K-Roc® mineral wool isolation core, designed and certified to transfer loads from the external façade cladding. Carrier system enables a complete external envelope to be completed quickly, regardless of weather conditions, compared to alternative solutions. It is a modern alternative to traditional ventilated facades.

System Highlights:

- Simple solution: alternative to traditional and multi-component ventilated façade systems.
- High load-bearing capacity: allows the installation of external claddings up to 40 kg/m².
- Design variety: allows the installation of many claddings, i.e. prefabricated aluminium cassettes Dri-Design, ACM, fibre-cement, ceramic and expanded mesh.
- Installation speed: the panels enable simple and quick assembly and reduce construction time.
- Design flexibility: installation of the system both vertically and horizontally.
- High insulation performance: minimise thermal bridges thanks to special locks and QuadCore®, IPN or K-Roc® core.



Karrier BK

Thickness:
80, 100, 120,
150, 170 mm

Width:
1000 mm

Length:
550 - 15 000 mm

Karrier BK QuadCore®

Thickness:
80, 100, 120,
150, 170 mm

Width:
1000 mm

Length:
550 - 15 000 mm

Karrier KL

Thickness:
100, 120, 150,
170, 200 mm

Width:
1000, 1150 mm

Length:
550 - 15 000 mm

Karrier KL QuadCore®

Thickness:
100, 120, 150,
170, 200 mm

Width:
1000, 1150 mm

Length:
550 - 15 000 mm

Karrier KT K-Roc®

Thickness:
80, 100, 120,
150, 175, 200,
220 i 240 mm

Width:
1000, 1150, 1200 mm

Length:
550 - 14 300 mm

System composition

Karrier is a modern architectural facade system with QuadCore®, IPN and K-Roc® isolation core. The Carrier system combines starter profiles, plinth profile, aluminium Omega and/or Z-profiles, sealing tapes and system screws. Carrier system allows you to build a weatherproof building envelope in a much shorter time compared to other to alternative systems.



Fujirebio GoCo office and laboratory building

Mölndal, Sweden

Product
Dri-Design Flat
Dri-Design Tapered

A variety of exterior cladding options

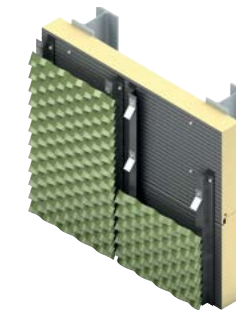
Kingspan rainscreen facade system provide a wide range of external claddings, both metallic and non-metallic, which can be fitted to the Karrier sandwich panel. Karrier panel is specifically designed and certified to transfer loads from external cladding. This concept combines freedom in façade design and excellent thermal efficiency.



Dri-Design
aluminium cassette system with
versatile design options



HPL/Fiber-cement



Expanded mesh



Ceramic tile



Granite



Glass



ACM

Assembly tools

It's strongly advised to use always heavy-duty, professional tools during the installation. There are several manufactures on the market. Please check the current situation and availability of the tools with your supplier. Detailing all the needed tools, measurement gage, etc. is impossible to list there. But basically, it needs to be considered the precision and performance individually for each job.

Levelling tools

It is commonly used during checking the sub-structure and cassette installation.



Spirit level



Laser

Cordless driller-screwdriver

A powerful screwdriver is needed when installing self-drilling screws, flashings or other sheet metal work. The screwdriver must have sufficient power for drilling and threading, as well as a torque limiter to facilitate precise tightening of screws in the panel.



Cordless riveting machine with rivet standoff nosepiece

A high-performance riveting hand tool is needed at cassettes and starting profile installation.



Panel cutting tools

Mini-saw, saw, jigsaw ect. are used to cut panels on site.



Zagłębiowski Sports Park

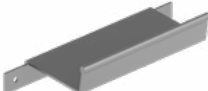
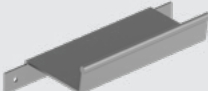
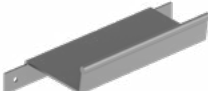
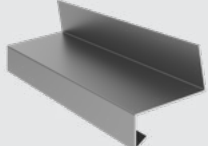
Sosnowiec, Poland

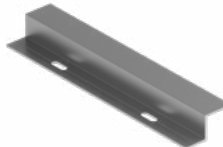
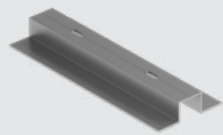
Product

Karrier + mesh



Elements for assembly

Picture	Code	Description	Unit
	BESJF3255X25E16	System fasteners JF3-2-5.5x25 + E16	500 pcs./box
	The type of screw depends on the type of substrate and the thickness of the board	Self-drilling screw	Quantity dependent on screw type
	The type of rivet should be selected according to the project requirements	Rivet	Quantity dependent on rivet type
	ALAZ03080X20XXX	Z03 starting profile, galvanised steel, for thicknesses of 80 mm	1 pc.
	ALAZ03100X20XXX	Z03 starting profile, galvanised steel, for thicknesses of 100 mm	1 pc.
	ALAZ03120X20XXX	Z03 starting profile, galvanised steel, for thicknesses of 120 mm	1 pc.
	ALAZ03150X20XXX	Z03 starting profile, galvanised steel, for thicknesses of 150 mm	1 pc.
	ALAZ03170X20XXX	Z03 starting profile, galvanised steel, for thicknesses of 170 mm	1 pc.
		Drip-flashing	

Picture	Code	Description	Unit
	BKPROFILZED30DR	Aluminum Z profile (unpainted, predrilled)	3 lm/pc.
	BKPROFOMEGA30DR	Aluminum Omega profile (unpainted, predrilled)	3 lm/pc.
	ATI030X020PEXX1	Sealing tape P16 PE 20x3 mm	30 lm/roll
	ATI050X020PEXX1	Sealing tape P17 PE 20x5 mm	15 lm/roll



Steel subconstruction

The local/regional regulations for fixing can be different. For example, some countries allow only stainless-steel screws, or don't allow a direct fixing into concrete. All the local rules must be considered by the architect.

While standard tolerances for tolerances for the steel construction are less restrictive for façade systems, they must meet more stringent requirements - particularly for Kingspan products such as Karrier. The Karrier system allows the perimeter closure of a building using external cladding. Any deviation in the installation of the Karrier panels will be visible on the finish cladding and could lead to a significant reduction in the aesthetics of the whole building.

For Karrier panels, the substructure must maintain deviations within tolerances in all three directions.

Deviation

The maximal allowed tilting of the subconstruction is depending on the height of the cladding but cannot exceed 8 mm in both directions (please see Fig. 1 - Deviation).

A deviation can cause difficulty or inability to properly prop the cladding in the corner, as there are two (a total of 3 perpendicular) planes in the corner that need to be aligned in one, two or all three directions to avoid problems.

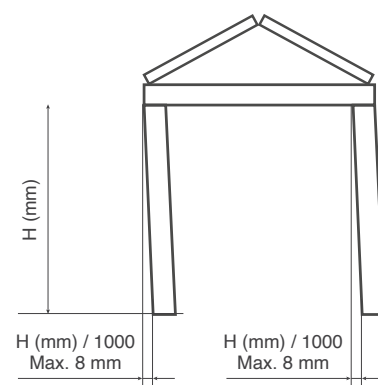


Fig. 1 - Deviation

Deviation to plane

The maximal deviation to the plane is in dependent to the distance of the column (please see Fig. 1 - Deviation to plane).

Since tilting and deviation to plane are in close relation, the maximal limits cannot be added together. It means that the assembly surface generally cannot be out from two limit planes as border which are 8 mm far away and back of the ideal plane.

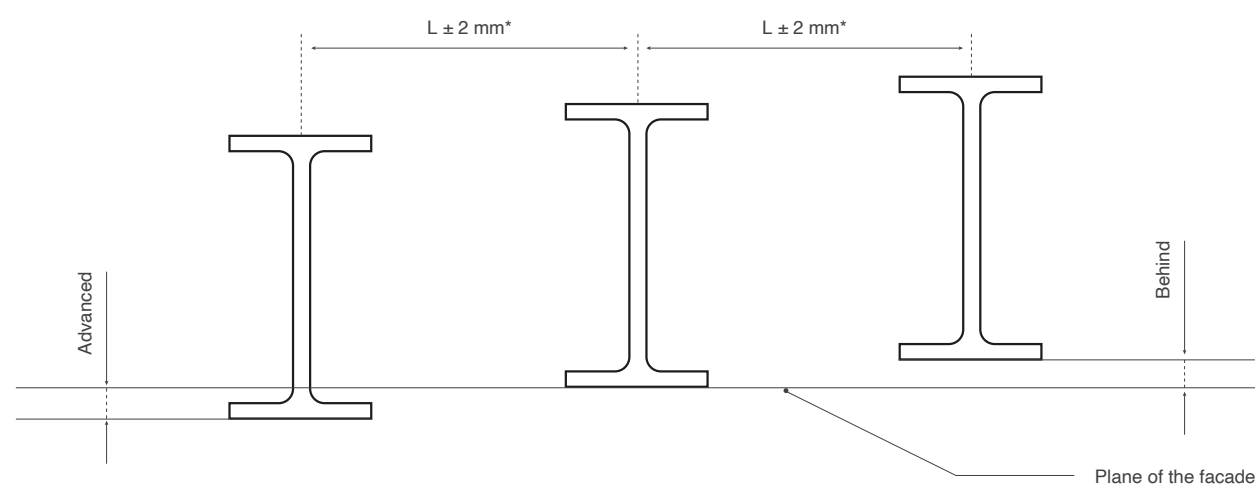


Fig. 1 - Deviation to plane

Deviation in front view of facade

Vertically is the most important for the cladding because Kingspan Facades products require certain position of the fixing on the column (please see Fig. 1 - Deviation in front view of façade). In front view of the façade there are two deviations to be considered.

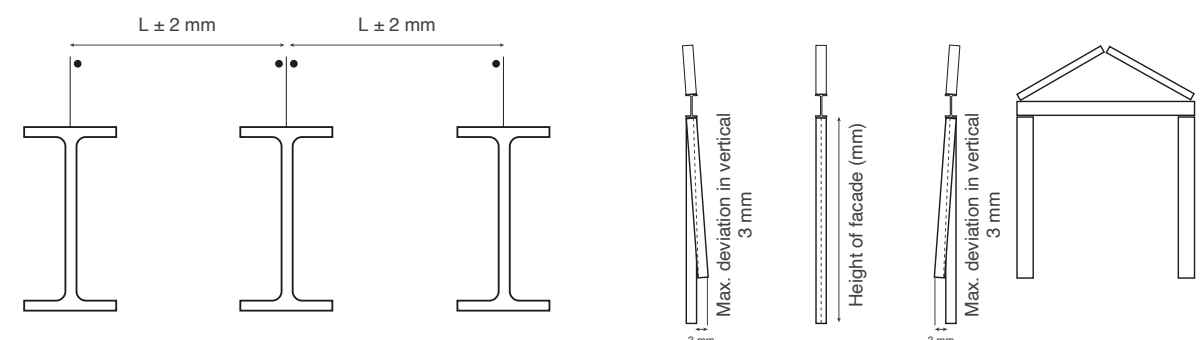


Fig. 1 - Deviation in front view of facade

Fig. 2 - Deviation in front view of facade

First is the deviation of the distances of columns. Tolerance to apply +/- 2 mm must be measured both on the bottom and on the top of the columns.

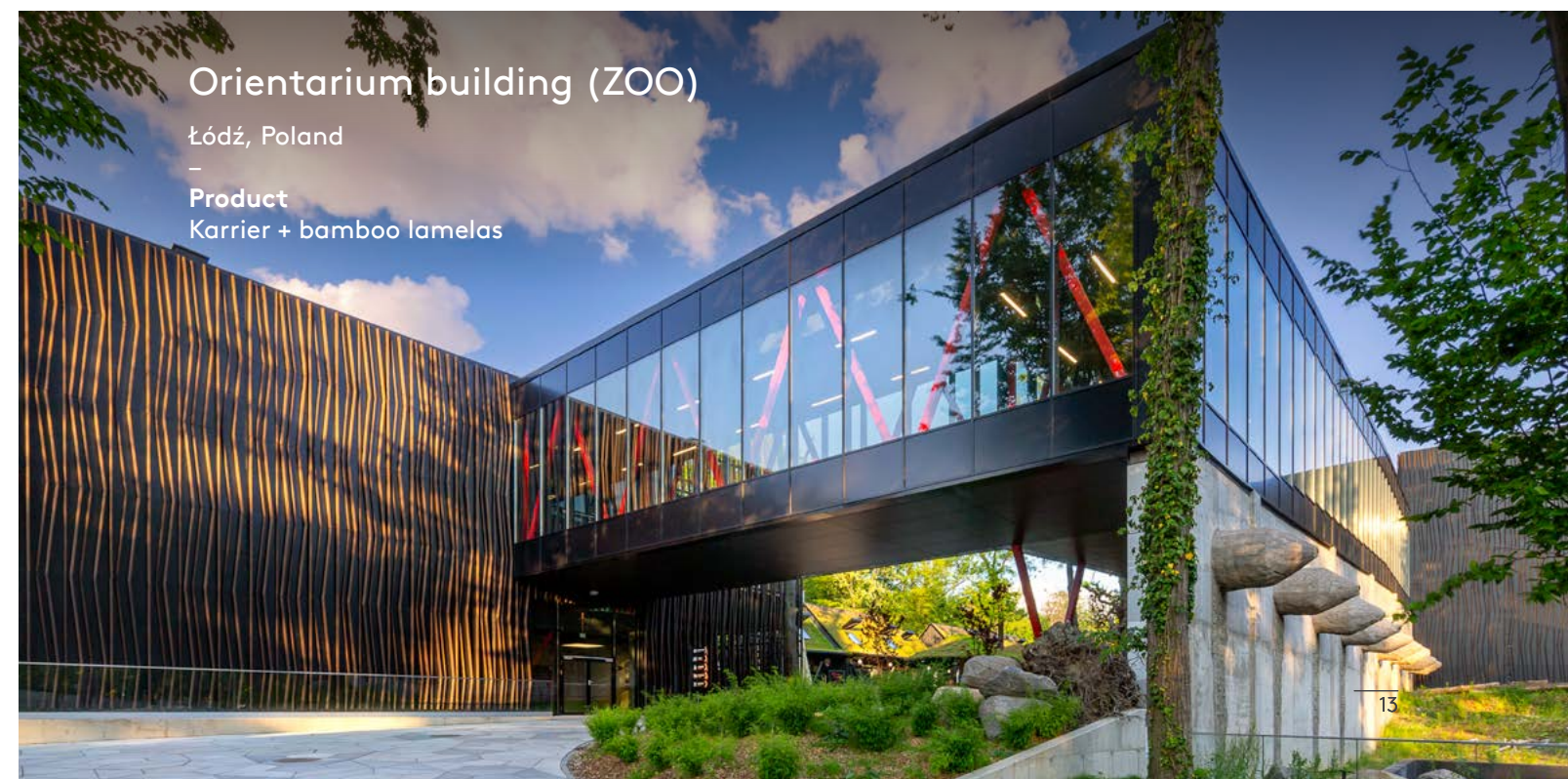
Second is the angular column. It is measured in mm between the points of top and bottom columns. Limitation is 3 mm. The minimal support width is 100 mm (IPN and QuadCore® foam) and 150 mm (mineral wool) for 2 screwed panels. It is calculated for high precise installation. As the façade is high and/or has several numbers of the columns, it is advised to use wider supports (please see Fig. 2 - Deviation in front view of facade).

*Max deviation to plane: $L (mm) / 1000$
Max. 8 mm

Orientalium building (ZOO)

Łódź, Poland

Product
Karrier + bamboo lamelas



Assembly of panels

Check the subconstruction

Check the subconstruction to meet all the requirements. In case of deviation take actions to repair it. Make sure that the plinth is already finished (any work after cladding is risky from damages point of view).

Make your own assembly plan

Create your own plan for cladding and consider the installation sequence and prepare the required panels nearby. The most important which is needed to be followed by designer and the installer is that all connections must:

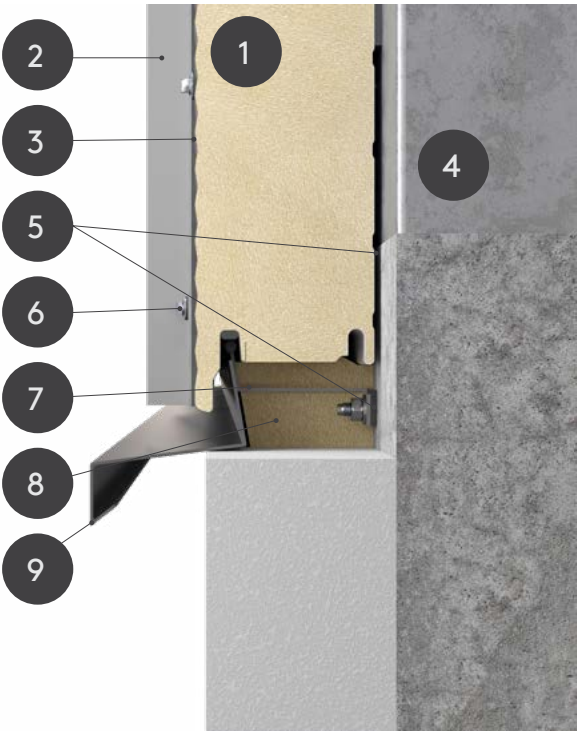
- have good insulation,
- avoid thermal bridges,
- be waterproof,
- be done by materials and solutions to fulfill static requirements.

Start of assembly base

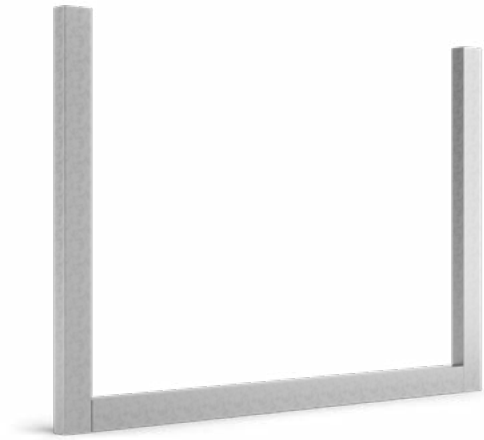
There can be several different solutions available for the plinth and panel connection which is always defined by architect. Hereby there is the most common detail to describe the installation steps.

Base detail

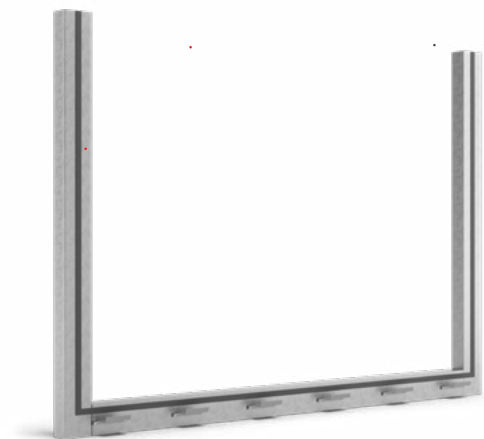
1. Karrier panel with IPN insulation core (horizontally laid)
2. Aluminum Z or Omega profile
3. Sealing tape P16
4. Substructure by others
5. Sealing tape
6. System screw
7. Z03 starting profile
8. Site applied insulation
9. Drip-flashing



Do not begin installing Karrier panels until the main structure or adjustable rails are properly adjusted. Assembly can only be started after appropriate measurements and checking the position of the structure. For this operation, it is recommended to use a spirit level with a length of min. 1.5 m.



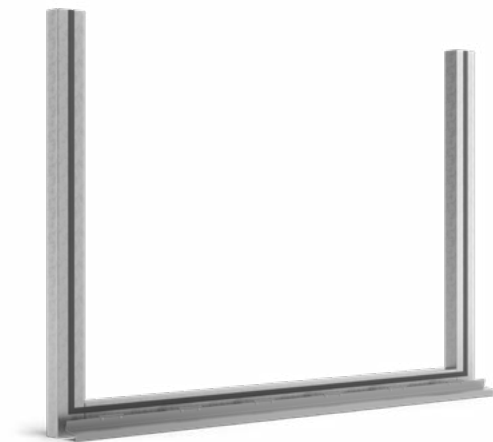
Using a spirit level with a length of min. 1.5 m, the exact place of mounting the Z03 starting profiles should be marked on the structure. Z03 starting profiles should be attached to the lower horizontal element of the supporting frame using self-drilling screws. The Z03 profile is the first support for Karrier panels and must be leveled very carefully before installation. The maximum distance between the Z03 starting profile and the end of the facade panel is 150 mm. Z03 profiles are not intended to support the Karrier panel against long-term loads and should not absorb vertical loads after the panels are installed.



NOTE

Z03 starting profiles should be attached at maximum every 500 mm to reduce possible deflections in the plinth area, where any deflections are easily visible and may affect the final aesthetic effect.

The lower drip-flashing should be attached with rivets to the most protruding part of the Z03 starting profile at the height indicated in the project (each drip-flashing is specific to the facility, therefore the solution may be different for each project).



Holding the Karrier panel in the appropriate position, place it on the Z03 starting profile and then attach it to the supporting frame with self-drilling screws. The length of the screws and their number should always be confirmed with the Kingspan Technical Department, because in addition to the loads acting on the Karrier board, they must also take the weight of the cladding.



The Karrier panel is installed with screws through and through (through the entire thickness of the board) placed evenly along the width of the panel. Each time you should check whether the size of the screw washers complies with the specifications. Only screws with vulcanized EPDM washers should be used.



The next Karrier panel should be installed above the previously installed panel. The height of the horizontal joint and its uniformity throughout the panel must be checked. During installation, the position of the panels should be verified using a spirit level. The panel is attached to the supporting frame in the same way as the bottom panel.



When installing subsequent Karrier panels, proceed in the same way as when installing the first panel.



After installing the Karrier panels on the wall, you can start installing the system substructure made of Kingspan Omega/Z profiles. These profiles are an integral part of the Karrier system. Before starting the installation, please read the drawings showing the arrangement of individual types of profiles on the façade.



NOTE

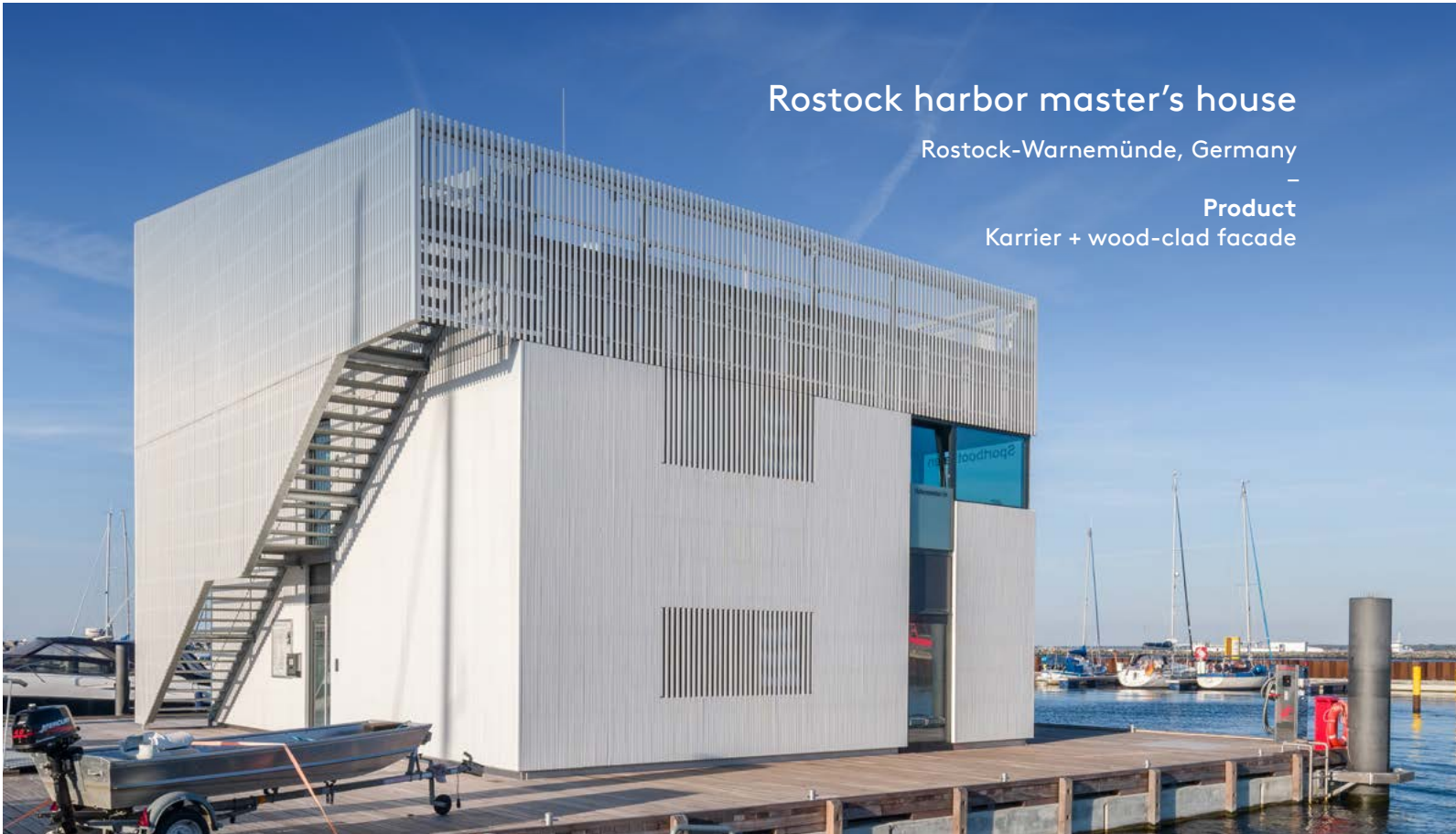
Before installing Kingspan Z profiles, attach the P16 separation tape to the back of the profiles. The P16 separation tape is designed to protect against direct contact between steel and aluminum.

In the next step, attach the Kingspan Z profiles to the Karrier panels using JF3-2-5.5x25 + E16 system fasteners. Installation should be carried out using JF3-2-5.5x25 + E16 system fasteners, mounted at a spacing of 242 mm consistent with the spacing of the factory bean holes.



NOTE

Please note that only one system fastener should be placed at the top of the Kingspan Z profile bean hole (fixed point). The remaining screws should be placed centrally in the bean hole.



Rostock harbor master's house

Rostock-Warnemünde, Germany

Product

Karrier + wood-clad facade

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