

Kalzip® FC rainscreen

Simple, flexible and economical



Refurbishment
Rostock & Roeger
Omnibus-Zentrum
GmbH, Koblenz (D)



Refurbishment Spiegels
GmbH, Nettetal (D)
Architect:
Engelbert Hanßen



Gewürzmanufaktur Spirit
of Spice, Willich (D)
Architect:
Architekturbüro
Dewey + Blohm-Schröder



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simple flexible and economical**

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KALZIP® FC RAINSCREEN - SIMPLE FLEXIBLE AND ECONOMICAL

Kalzip® FC rainscreen is a non-penetrative façade system that incorporates a fast-to-install lightweight flat rainscreen panel, suitable for both new build and refurbishment projects.

The main feature of the system is its flexibility which allows the installation of the profiles to be carried out in two directions, either from the top down or from the bottom up.

The choice of panel mounting direction is one of the unique benefits which enables not only easier and faster installation compared to conventional panel systems, but also allows scaffolding or subsequent construction work to be coordinated independently from the installation process. The system's innovative design and technical capabilities also allow individual panels to be removed and installed without compromising the adjoining panels or the overall integrity of the façade system.

Gries Deco Company GmbH
Niedernberg (D)
Architect: netzwerkarchitekten, Darmstadt

FC facade system - simple, flexible and economical

New building and refurbishment

Based on the versatile application options in combination with an easy construction design and the outstanding price/performance ratio, the attached and rear ventilated FC facade is the best construction-physical facade construction.

It offers the largest possible heat protection; the aluminum material protects the building reliably and sustainably against weather influences and it gives a unique character to the building.

The ventilation regulates the moisture balance, prevents a heat buildup and protects against moisture damages. This simple, sustainable facade concept, developed based on recycling needs, is for many reasons the solution for:

New construction

For a new construction, the system is especially attractive based on its combination variety uniqueness of colors and panel width. Different rasters of modular raster click rails for the substructure are available for this purpose.

Energetic facade restoration

With respect to the restoration of an existing building, simple and little plan-related efforts are required to adapt the energy balance of a building to the currently valid and requested energy standard. This dramatically reduces the CO2 emissions and the room climate will be improved.

The simplified design makes it possible to perform the adjustment exclusively through the substructure.



City Center St. Pölten (A), during installation
Architects: AHP Architekturhaus Planungs GmbH, Sankt Pölten (A)



City Center St. Pölten (A), complete restored house 3
Architects: AHP Architekturhaus Planungs GmbH, Sankt Pölten (A)

PRODUCT AND SYSTEM CHARACTERISTICS

The flexible FC rainscreen system made of aluminum with freely selectable installation direction and easy panel exchange

Sophisticated and leading installation systems

- Time-saving installation by latching the system components in - this is especially cost effective
- Freely selectable installation direction from top to bottom or from bottom to top as well as - surface related - independent of adjacent panels. The benefit: The installation is in sync with the construction progress, connections and fit components can be installed retroactively - for example, it is possible to delay entire facade fields in the traffic area until the outside systems have been completed.
- Easy latching in of the accessories for fixed point, bend part bracket, etc., in the raster click rail

- Suitable for the installation on all substructures - therefore always the most economic and constructions-physical best solution

Exchanging instead of complete dismantling

- Easy and fast exchange of damaged panels using the FC tool kit
- Removal of entire facade surfaces with low time and cost expenditures
- Guarantee of the optical appearance of the facade at any time

High design flexibility for expressive character

- Level geometric impression with delicate groove raster
- Multi-directional installation offers variable design options for architects and planners
- Optimized production tolerances based on advanced roll-forming technology.

- Maximum design flexibility due to a variety of construction widths
- Emphasizing the metallic building enclosure through expressive colors and surfaces
- As a standard, all panels with head bending at no extra costs

For a sustainable and economic planning

- Reduced material use through optimized panel geometry.
- If required, cost-saving exchange of individual panels - a benefit for the building insurance.



System options and components

General information

Standard construction widths PC panel

Profile type:	Kalzip FC 30/300	Kalzip FC 30/400	Kalzip FC 30/500	Kalzip FC 30/600	Kalzip FC 30/800
Profile thickness	1,0 mm 1,2 mm	1,0 mm 1,2 mm	– 1,2 mm	– 1,47 mm	– 1,47 mm
Micro lining	no	on request	no	no	no
Maximal 6.000 mm panel length for construction > 500 mm					

Intermediate construction widths FC panels (starting at 1000 m2 project size)

Profile type:	Kalzip FC 30/250	Kalzip FC 30/350	Kalzip FC 30/450	Kalzip FC 30/700
Profile thickness	1,0 mm 1,2 mm	1,0 mm 1,2 mm	– 1,2 mm	– 1,47 mm
Micro lining	no	no	no	no
Maximal 6.000 mm panel length for construction > 500 mm				

Fit panels/transition sheets (max. L= 6,000 mm)

Profile type:	FC 30/300	FC 30/400	FC 30/500	FC 30/600	FC 30/800
Fit panel - construction width	130–299 mm	130–399 mm	130–499 mm	130–599 mm	130–799 mm
Transition sheet - leg length	330 mm	430 mm	530 mm	630 mm	830 mm

Fit panels/transition sheets (max. L= 6,000 mm)

Profile type:	FC 30/250	FC 30/350	FC 30/450	FC 30/700
Fit panel - construction width	130-249 mm	130-349 mm	130-449 mm	130-749 mm
Transition sheet - leg length	280 mm	380 mm	480 mm	730 mm

Special construction widths on request..

Profile examples

Kalzip FC Profile and fit panels with head bending



Kalzip FC Profile and fit panels without head bending



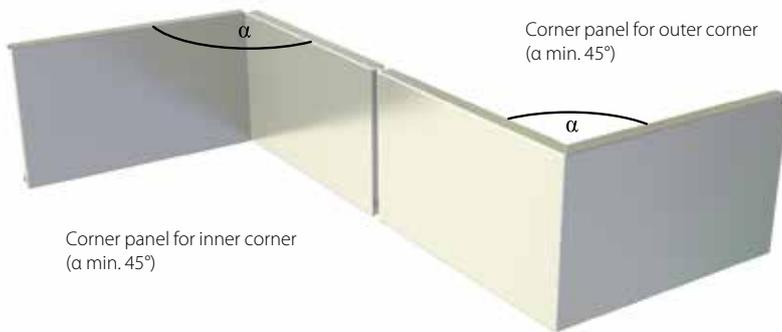
Transition sheets, upper hanging (left), lower hanging (right)



Corner panels

Corner panels can be produced as inner and outer corners with different angles.

Specification
Leg 1: min. 150 mm/max. 1,000 mm
Leg 2: min. 300 mm/max. 2,000 mm



Head bending

As a standard, FC panels are delivered with head bending on both sides at no extra costs. On request, panels can also be produced without head bending..



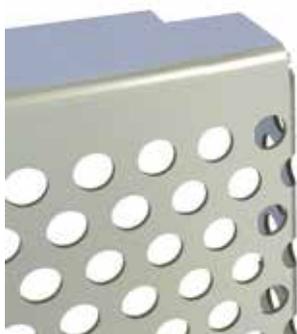
Spessart Forum (D), Architect: Planungsbüro Bensing & Partner, Bad Soden-Salmünster





Perforated panels

RV 6-8
Share of holes:
min. 44%, max. 48% depending on
the panel width
Perforation diameter: 6 mm



RV 3-5
Share of holes:
min. 29%, max. 31% depending on the panel
width
Perforation diameter: 3 mm



Micro-lined panels

Kalzip FC 30/400 with head bending and micro-lining
Approx. 20 mm from the upper or lower panel end.
Transition sheets without micro-lining



Deviating perforation on request..



Technical data

Colors and surfaces

■ Standard hues

HPC RAL 9006 30% gloss degree, thicknesses: 1.0 – 1.47 mm
HPC RAL 9007 30% gloss degree, thicknesses: 1.0 – 1.47 mm
HPC RAL 7016 3% gloss degree, thicknesses: 1.0 – 1.47 mm
Other RAL, NCS, HPC hues and special hues on request, minimum volume 300 m²
Anti-graffiti coating on request

■ Surfaces

AluPlusPatina natural aluminum, thicknesses: 1.0 – 1.47 mm
AluPlusPatina bronze B40, thicknesses: 1.0 – 1.47 mm
AluPlusPatina gold G12, thicknesses: 1.0 – 1.2 mm
minimum volume of additional color patina surfaces 1,000 m²

Note: As a standard, all surfaces are delivered with a protective foil.

Materials

EN AW-3004, EN-AW-3005 or EN AW-6025

Dimensions

■ Construction widths 250 mm – 500 mm

Length: min. 400 mm, max. 8,000 mm
other profile lengths on request

■ Construction width > 500 mm – 800 mm

as well as fit panels and transition sheets
Length: min. 400 mm, max. 6,000 mm

Carrying capacity values

Carrying capacity values as per Eurocode 9 and
as per building-authority approval by Deutsches Institut für Bautechnik
No. Z-14.1-581

Tolerances

Panel length: as per Kalzip internal standard

$L \leq 0,4 - 4,00 \text{ m}$ $+2/-2 \text{ mm}^*$

$L > 4,00 - 8,00 \text{ m}$ $+3/-3 \text{ mm}^*$

Rectangularity: as per DIN EN 508-2 a

0,5% of the nominal construction width

Cross arching: as per EPAQ – European quality directive for profiles:

to the outside ($+ 0.02^*$ panel width $\leq 10 \text{ mm}$)

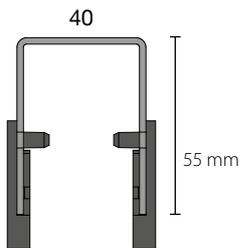
to the inside ($- 0.01^*$ panel width $< 10 \text{ mm}$)

*Temperature note: measured at 20°C

Penetration-free fastening on modular raster rail

Raster rail SE

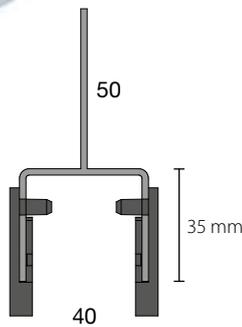
The raster click rail SE is a self-carrying rail, which can be used as a statically carrying profile and therefore it can be fastened at a substructure independent of the latch-in position.



System depth with raster click rail SE

Raster rail SEL

The raster rail SEL is also a carrying rail and it can be fastened directly at the L wall brackets by using the 50 mm long legs. An additional continuous profile is not required.



System depth with raster click rail SEL

Distance caliper

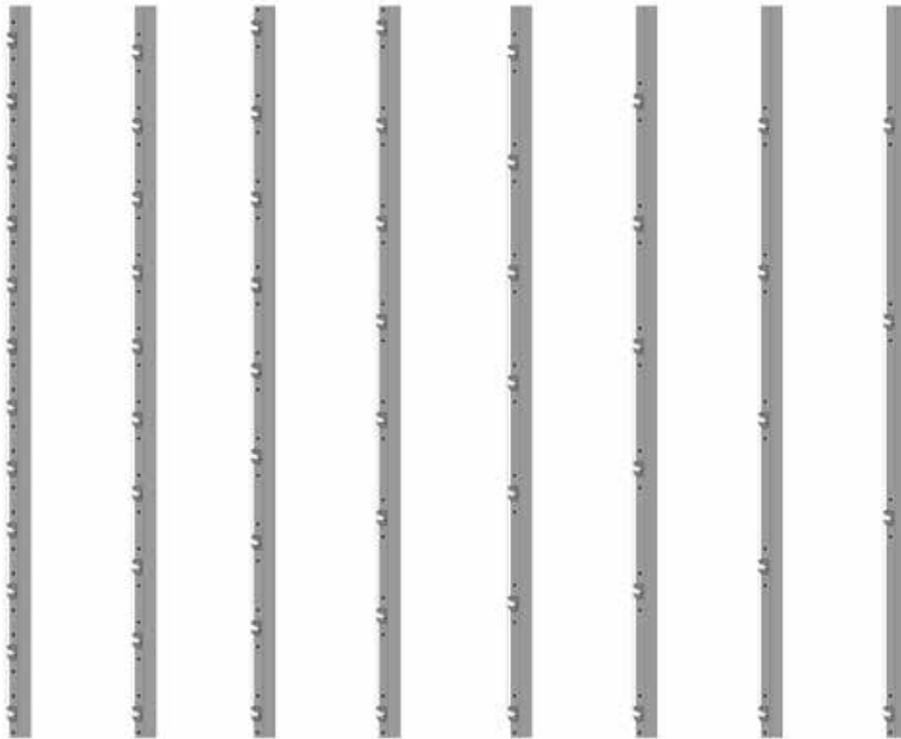
Using the distance caliper, raster click rails, which must be installed on top of each other, can be adjusted and installed accurately fitting to the construction width of the FC panels without the need for additional measurements. The tool can be adjusted to the required construction width with a few hand movements.





Fitness Center, Portland (UK)

Raster click rails (SE, SEL), standard lengths



Type	250	300	350	400	450	500	600	800
Standard length short in mm	2.985	2.985	2.985	2.985	2.985	2.985	2.985	2.985
Number of hanging points	12	10	9	8	7	6	5	4
Standard long short in mm	5.935	5.935	5.935	5.935	5.750	5.935	5.935	5.935
Number of hanging points	24	20	17	15	13	12	10	8

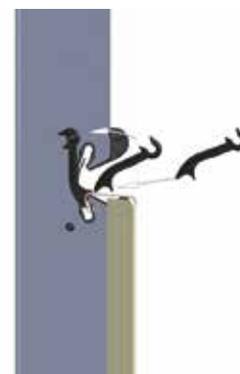
Sophisticated system accessories for a perfect result

Fixed-point clamp

To guarantee a uniform vertical joint pattern, each panel must be fixated in its defined position by a system-related fixed-point clamp. The fixed-point clamp can be re-released and fixated again after the installation and alignment of the panel, using an Allen wrench, if required, even through the horizontal panel joint.

Guidance snapper

The guidance snappers ensure a steady gap between the panels and therefore guarantee an even joint pattern. The use of guidance snappers is mandatory for very short panels and corner panels as well as for vertical overhead installations. Information can be found in the installation guideline.





Bend part bracket

A bend part bracket pluggable on the raster rails is available for an easy and quick fastening of bend parts (lisene, corner, soffit and connection profiles).

The brackets latch into the provided perforation and offer - without additional adjustment - a level surface for the reception of the bend parts.



Number and arrangement for the fastening of lesene: approx. 1.5 units/m (arranged offset)

Adapter for SE and SEL rail

The FC adapter permits a simple installation of FC fit panel widths from 130 mm up to the used panel construction width (see page 6) in the pedestal and attic area as well as above and below of openings within the facade surface (e.g. doors and windows). The FC adapter is delivered with 2 complete plastic inlays and therefore, it can be used for the upper as well as the lower connection.



FC adapter for SE rail
Length 94 mm, depth 53 mm
without inlay, 3 holes, hole
diameter: 5.2 mm



FC adapter for SEL rail
Length 94 mm, depth 33 mm
without inlay, 3 holes, hole
diameter: 5.2 mm

HYBRID FC facade – the innovative facade solution

Design and economic feasibility

The combination of energy efficiency, economic feasibility and highest design versatility makes the HYBRID FC facade the most innovative facade solution for industry and business construction. It was developed as a joint product of the two companies Fischer Profil und Kalzip®. It combines the strengths of both brands - the economic design and the high aesthetic claims.

The HYBRID FC facade, which is approved by the construction authorities, consists of a clamshell wall cover: The FischerTherm steel sandwich element is connected to the attached, rear ventilated FC aluminum facade by Kalzip®. The FC panels on the sandwich element is installed by using the SE raster click rails and a newly developed fastening material.

The rail is in this case only fastened at the outer shell - it does not penetrate the sandwich element. A substructure is therefore not required



Fast economic installation of the FischerTHERM sandwich elements with DUO sealing.



Direction-dependent installation of the Kalzip FC panels..

Discover the benefits at a glance!

■ Outstanding heat insulation:

The hybrid facade reduces the energy consumption for heating and cooling

■ **Highest joint tightness:** You save energy efficiently thanks to the DUO sealing

■ **Easy installation** without additional substructure

■ **Efficient planning:** The facade panels are available digitally for the planning with BIM

■ **Protection against corrosion:** The sandwich elements are additionally protected by the attached FC facade and the PE coating

■ Cost effective overall concept

In comparison to cassette constructions and other designs, such as gas concrete

■ **Dual service** by Kalzip® and Fischer Profil

■ **Dual benefit with respect to warranty** by two strong brands

■ Extension of the warranty by especially developed **system components**

■ With comprehensive design details and **specification service**

■ **Request for quote support** and texts

Hoteliere du Rail, Rennes (F)



Design options for the implementation: Horizontal or vertical, parallel or offset.

Industry aesthetics 2.0

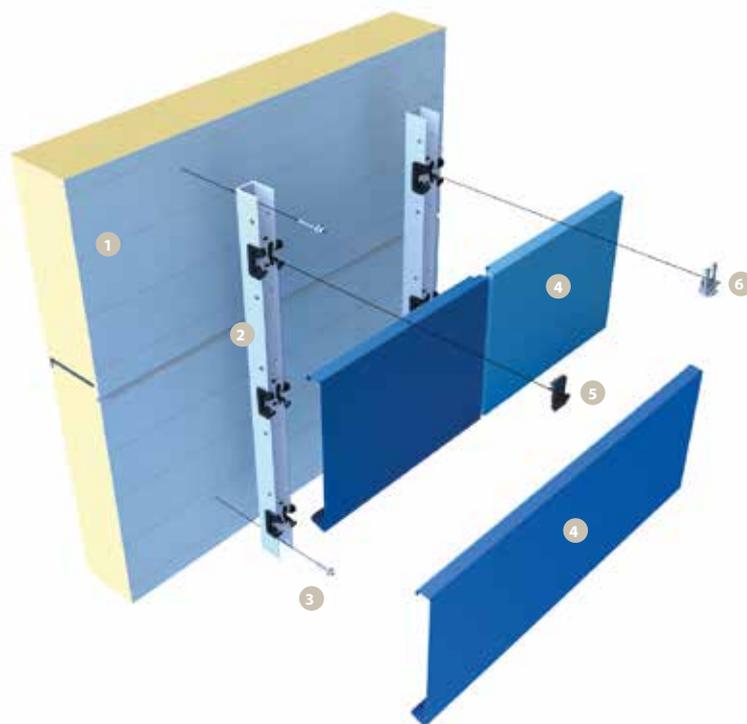
Using the hybrid FC facade gives you a variety of design options: The attached panels are available in different construction widths. They can be placed horizontal and vertical with the standard head bending. This is supported by a large selection of colors and surfaces as well as individual design options with printed and perforated panels.

New options for design and aesthetics:

- Surfaces and colors: In contrast to conventional sandwich designs, a large number of surfaces and colors can be combined with each other when using the hybrid FC facade.
- Highest design variety: The FC panels can be printed based on requirements - all options are open to you.
- Corporate architecture: Integrate your brand in the design!
- Design solutions: Cover the wall openings through perforated panels!

Schematic design

The hybrid FC Facade system with all system components.

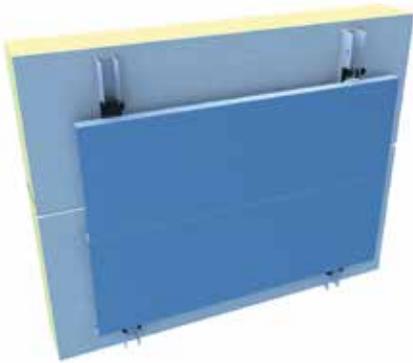


1. FischerTHERM composite panel
2. Kalzip SE raster click rail
3. System fastener SFS SLG/2-5-S-6,5x20 EJOT JF3-2-5,5*25 with disk Ø 16 mm

4. Kalzip FC panel
5. Kalzip FC guide snapper
6. Kalzip FC fixed point clamp



Hybrid FC panel on composite panel: horizontal, parallel



Hybrid FC panel on composite panel: vertical, offset



Hybrid FC panel on composite panel: horizontal, parallel

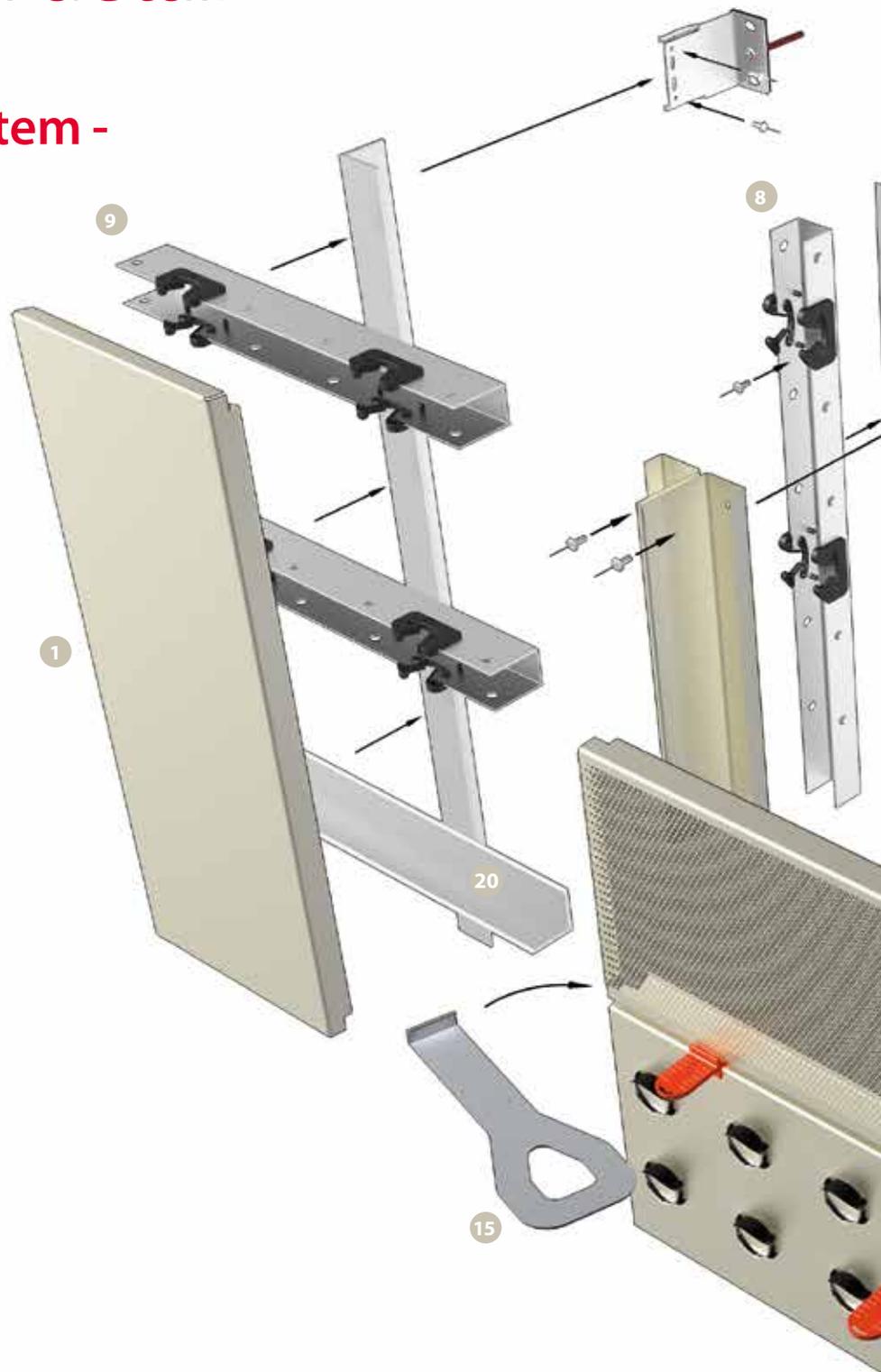


Hybrid FC panel on composite panel: vertical, parallel



The system in detail

Kalzip FC Facade system - the components



Panels

Delivery options

- 1 FC panel
- 2 FC corner panel
- 3 Surface micro-lined (only 30/400)
- 4 Perforation Rv 3-5
- 5 Perforation Rv 6-8
- 6 FC panel luminaire

System substructure

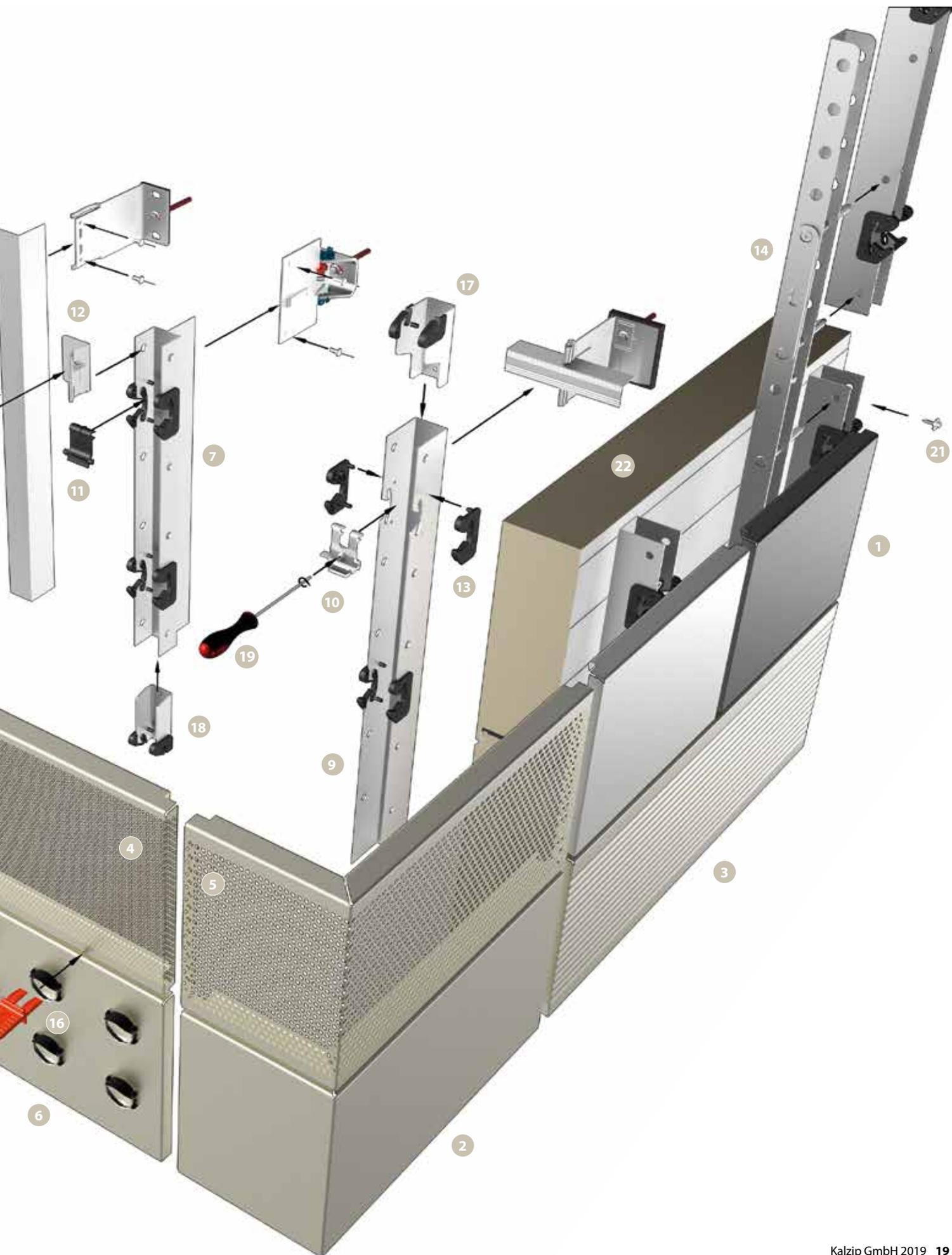
Variants

- 7 Raster click rail SEL
- 8 Raster click rail NE (only a.A.)
- 9 Modular click rail SE

System accessories

Components and assemblies

- 10 Fixed point clamp
- 11 Guidance snapper
- 12 Bend part bracket
- 13 Plastic inlays (pre-assembled)
- 14 Distance caliber
- 15 Disassembly tools
- 16 Plastic shims
- 17 Adapter SE
- 18 Adapter SEL
- 19 Allen key for fixed point clamp
- 20 Supporting angle
- 21 System fastener
- 22 FischerTHERM composite panel





Substructure

Modular click rail SEL on mono click bracket

The SEL raster click rail is a combination of carrying rail and raster rail. In combination with wall brackets, it can be used directly as a complete substructure. Since this system only consists of two components, it is a very economic system with respect to material use as well as installation times. Experienced installers should perform the alignment and adjustment of the rail.

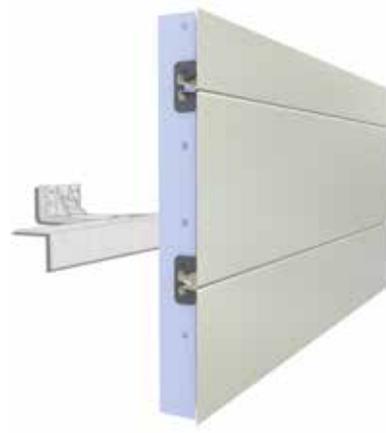
SE raster click rail on U wall brackets

This system consists of a statically carrying raster rail and U wall brackets. Since this system only consists of two components, it is a very economic system with respect to material use as well as installation times. Experienced installers should perform the alignment and adjustment of the rail.

Modular click rail SE on horizontal substructure

Based on the constructional conditions (e.g. in case of offset panel installation or in the area between window bands), it can be more economical to use a horizontal substructure.

In combination with the carrying raster click rail SE, this provides an economic and easy to adjust system.





Rosen Technology & Research Center Lingen (D), Architect: Architekturbüro Dreyer

SE raster click rail on cassette profile

The carrying raster rail SE can also be used on steel cassettes. The distance of the rails depends on one hand on the permissible support width of the FC panels and on the other hand on the requirements of the steel cassettes. The vertical loads must be supported by suitable measures. The steel cassettes must be installed level. Bend parts are normally required to compensate for distances.



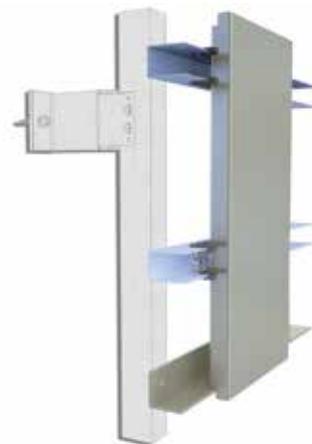
SE raster click rail on sandwich element

The FC panel of the HYBRID FC facade is fastened through the SE raster click rail with a special system bracket, the guide snapper and the fixed-point clamp without penetration on the FischerTherm sandwich element. A separate substructure is not required. In addition, the warranty period is extended by the use of especially developed system components.



SE raster click rail on vertical substructure

The raster click rail is fixated and aligned vertically on the substructure. For a horizontal installation, the panels can be installed - independent of the direction - from right to left, from left to right or from the surface. The vertical load (own weight of the panel) is supported by a bearing angle. The fixed-point clamp is installed on the lowest rail. Depending on the panel length, one or more guidance snappers must be provided in the upper panel area.



Design of the FC facade system

Design variants

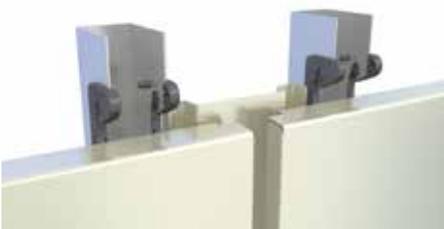
A Narrow bend parts



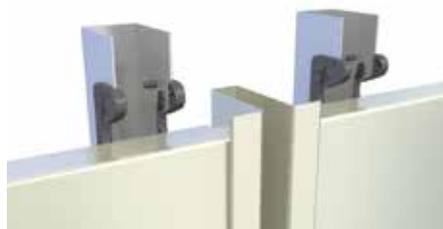
B Wide bend



C Without protruding bend parts



D Overlapping bend



Detail numbers

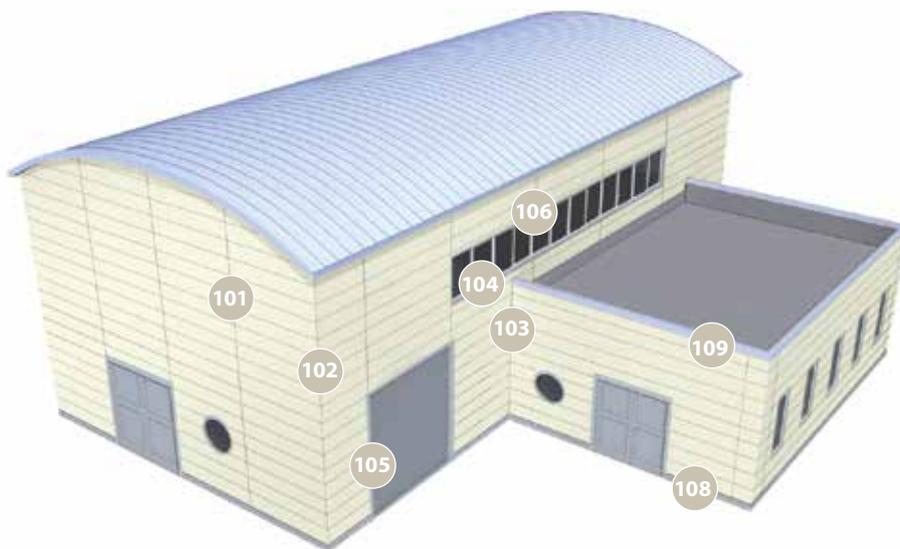
As a matter of principle, the FC facade system can be used with all existing carrying systems and wall constructions. To simplify the planning, 10 standard details with 4 different design variants were developed exemplary for 6 different substructure variants. They are available in the technical download on www.kalzip.com as PDF or dwg files.

The selection is based on the following approach:

1. Selection of the suitable substructure (p. 20/21)
2. Selection of the design variant
3. Selection of the required details

Example

SE raster click rail on horizontal substructure = 5 (see p. 21) wide bend parts = B
Detail windowsill = 104 Detail No. 5 - B - 104



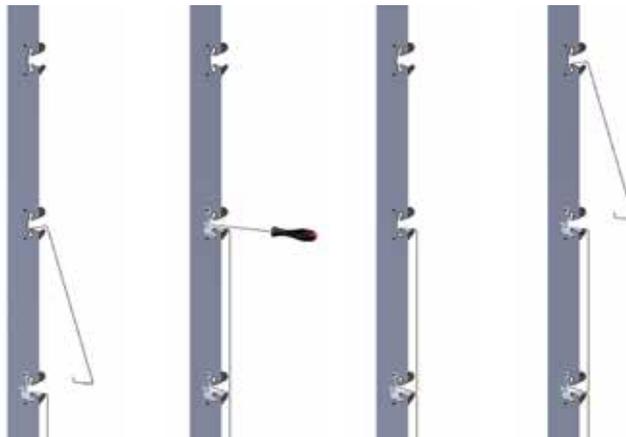
Details

Number	Description
101	Lisene
102	External corner 90°
103	Internal corner 90°
104	Window sill
105	Door/gate/window soffit
106	Door/gate/window lintel
108	Pedestal
109	Attic

The bi-directional panel installation

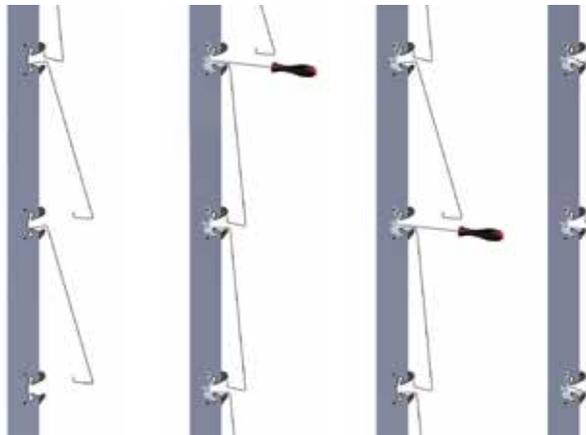
From bottom to top

- Step 1 Attach panel
- Step 2 Latch panel in
- Step 3 Latch fixed point clamp in, adjust panel, tighten fixed point clamp.
- Step 4 Install next panel



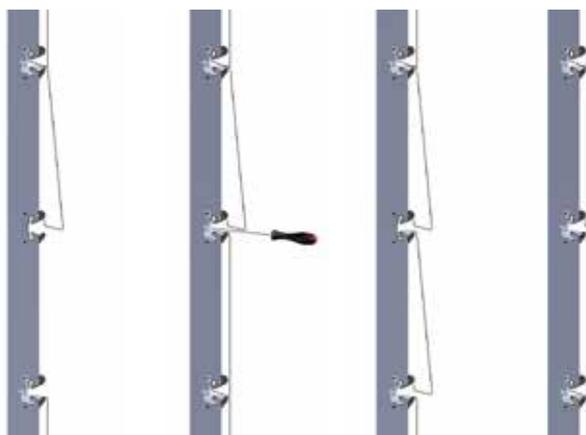
From top to bottom

- Step 1 Attach panels
- Step 2 and 3 The lower attachment must be pulled forward slightly for the installation of the fixed-point clamp. Latch fixed point clamps in, adjust panels tighten fixed point clamps..
- Step 4 Latch panels in



Centered on the surface

- Step 1 Hang panel (only lower attachment) above the panel to be installed.
- Step 2 Attach panel
- Step 3 Latch panel in above
- Step 4 Latch fixed point clamp in, adjust panel, tighten fixed point clamp.
- Step 5 Latch panels in



Dismantling of panels



In case of damages, the FC facade enables the exchange of individual panels without the need to dismantle the entire wall cover. The dismantling of a panel can be performed fast and easy by using the especially developed tools of the Kalzip FC tool kit.

The tool will be inserted in the joint and pushed up to the first raster rails and the panel will now be loosened. Repeat this action at each rail



More detailed information can be found in the FC installation guide.

5 reasons to plan with Kalzip FC



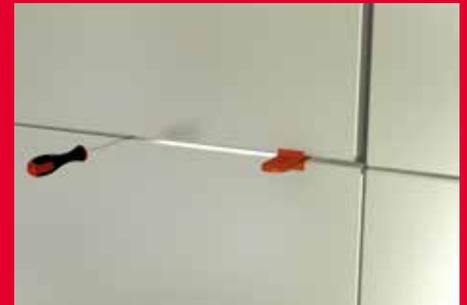
1. Innovative click system

The entire alignment of the facade of the FC facade system is performed in the substructure. The facade panels must now only be attached and latched in and their position must be secured using the fixed point clamp.



2. Variable installation

In areas in which the panels cannot be installed directly - due to scaffold anchors, missing panels or for other reasons - they can be installed retroactively without any additional effort. The construction progress is not impaired and material costs due to longer scaffold usage time will be prevented.



3. Ease of installation

If the joint pattern should - after the completion of the work - not be in accordance with the requirements of the builder or the architect, then the panels can be adjusted retroactively in the installed condition (through the joint).



4. Flexible system

Different panel widths, bent special panels or special joint panels can be integrated in the system and they do not need separate substructures or fasteners. This makes the FC facade system especially flexible for planners and implementers.



5. Easy dismantling

A special feature is the option to dismantle and subsequently reinstall individual FC panels in a nondestructive manner, without the need to dismantle the entire facade surface. This means that elements which need maintenance from time to time can be integrated.

General information

Substructure

Two-part, adjustable substructures are recommended. Depending on the selected FC fastening system (raster rails SE or SEL).

The distances, profile thicknesses and fastening materials must be dimensioned in accordance with the static requirements and must be professionally installed.

Heat insulation materials

As a matter of principle, the insulation material (outer insulation of the wall behind the ventilation, WAB) should have water repellent characteristics as per DIN 18165.

Based on the valid construction laws, only those heat insulation materials may be installed that are approved and monitored for this application and that fulfill the exclusion of liability criteria of the Ordinance on Hazardous Substances. Adherence to the fire protection regulations of the individual State construction

regulations is required; as a matter of principle, non-flammable insulation materials as per DIN 4102-1 must be used for high-rises.

The insulation provides a heat storage of the inner areas and prevents large heat losses during the cold seasons.

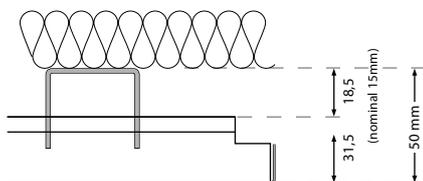
During the warmer seasons, a large part of the heat volume that is radiated onto the cover will be reflected, an additional part will be discharged through the convective air exchange in the ventilation space.

Bosch Dresden (D)
Architect: Architekturbüro
Müller + Schwerda, Dresden

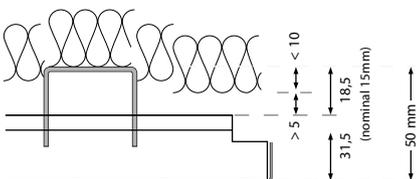


Rear ventilation

The FC facade system should be designed as a rear ventilated facade system. The insulations and cover components are structurally separated from each other in this system of attached, rear ventilated facades. The facade cover is the visible part and it fulfills - in addition to the aesthetic claim - the protection of the building against weather influences, especially rain. The insulation fulfills the functions of the cold and heat protection and, if required, the fire protection.



The rear ventilation space is located behind these two components. It is used for the discharge of the construction or usage moisture and must be dimensioned accordingly. Ideally, the insulation should be placed directly behind the raster rails. A free cross section of 18.5 mm exists when using the SEL raster click rail.



In accordance with DIN, adherence to a minimum distance of 5 mm is required in the areas of the rear bending. A theoretical value for the rear air space of 15 mm is achieved if the possible tolerances (10 mm) for the installation of the heat insulation are incorporated.

An upper or lower facade end can be provided by ventilation grates, the free rear ventilation cross section should in this case be at least 200 cm²/m. The use of these ventilation grates can be waived for the slide sunroof system if at least 3 FC panels (equivalent to the to 4 open joints) are installed on top of each other. This was confirmed through analyses by the I.F.I. Institut für Industrieaerodynamik GmbH (institute at the advanced technical college Aachen European notified test, monitoring and certification body No. 1368).

Statics calculation

The characteristic resistance values for the FC facade panels as well as the statically effective raster click rails (SE and SEL) can be found in the general building-authority approval of the Kalzip FC facade system. These, as well as the load span tables for panels, are available for download under www.kalzip.com. A project related, verifiable calculation for the FC facade system can be generated on request by the application system in Koblenz.

Fire protection

As part of the sample list "Technical construction regulations" in the appendix of DIN 18516-1, adherence to special technical fire protection precautions is required for rear ventilated outer wall covers with cross floor hollow spaces. This is divided in horizontal and vertical fire barriers (shown as excerpts in the following).

Horizontal fire barriers

Fire barriers must be installed on every other floor in the rear air gap between wall and cover.

In case of a fire, these elements must be dimensionally stable for at least 30 minutes. A steel sheet $t \geq 1.0$ mm can be used. The size of the openings in the horizontal firewalls must be limited to a total of 100 cm²/running meters of

wall

The openings can be arranged as evenly distributed individual openings or as a continuous gap.

The installation of a horizontal fire barrier between the insulation material and the FC panels is adequate in case of an outside heat insulation, assumed that the insulation material in case of a fire is dimensionally stable and has a melting point of $> 1000^{\circ}\text{C}$. Horizontal fire barriers are not required:

- For outer walls without openings
- If a fire cannot spread in the rear air gap due to the placement of the windows, e.g. in case of continuous window bands or cross-floor window element
- If opening soffits in case of a fire are closed dimensionally stable for at least 30 minutes (e.g. due to a circumferential steel sheet $t \geq 1,0$ mm)

Vertical fire barriers

They are only required in the area of fire walls and must be at least as thick as the fire wall. The rear air gap must not be routed longer than the fire wall

In this case, the insulation must use a dimensionally stable insulation material (melting point $> 1000^{\circ}\text{C}$).

Please refer to the brochure **Kalzip® FC facade details**, Design suggestions, page 67.

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