SCHÖCK
Dependable by design

SCHÖCK ISOLINK® TYPE F

Energy-efficient façade solution.

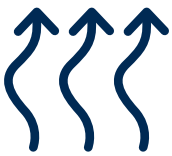
Composite fibreglass wall bracket
for theoretical thermal bridge-free attachment
of suspended back-ventilated curtain façades.

COMPONENT

Back-ventilated curtain façades.

The principle underlying suspended back-ventilated curtain façades (VHF) is a tried-and-tested principle that is popular amongst architects and developers as a system for aesthetic façade design. With their outstanding properties, VHF also open up ample design flexibility as a robust and low-maintenance construction system with high economic efficiency.

Benefits for you



Thermal protection
The combination of closed heat insulation and back ventilation ensures optimal heat thermal protection. Suspended curtain façade cladding functions like a shading system for thermal insulation, whereby the accumulated heat from solar radiation is directly removed in the ventilation gap. The Schöck Isolink® high thermal efficiency wall bracket helps to ensure compliance with high energy standards, even with comparably minimal wall insulation thicknesses.

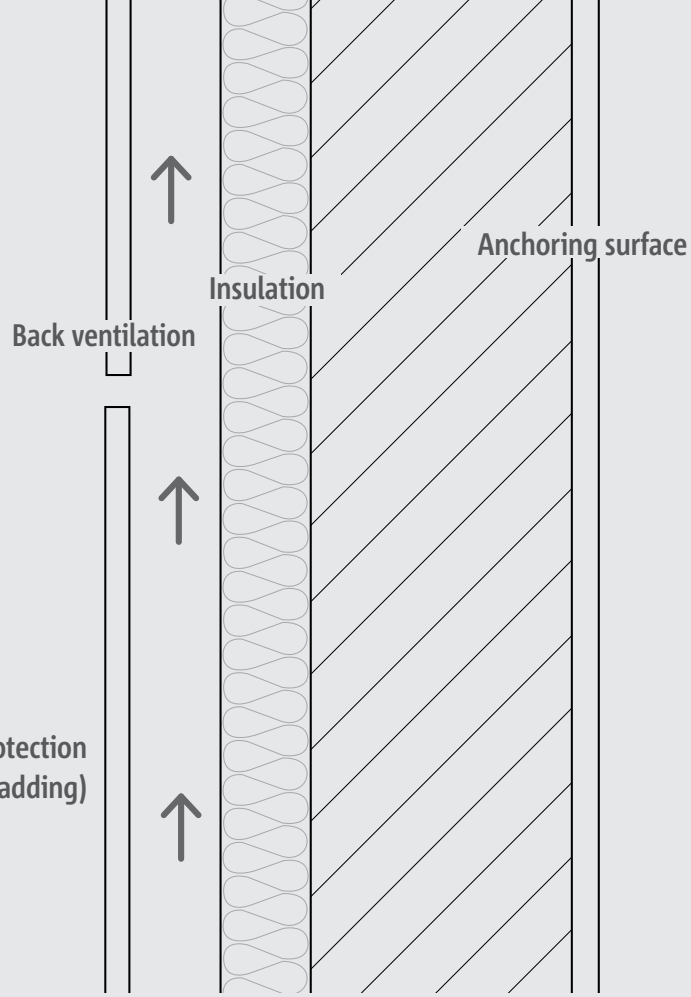
Moisture protection
The back ventilation of the façade ensures that the room and component humidity that accumulates through diffusion is more quickly dissipated than with homogeneous wall structures. At the same time, the back ventilation, in conjunction with the cladding, helps to safeguard the weather protection of the wall structure behind at all times of the year.

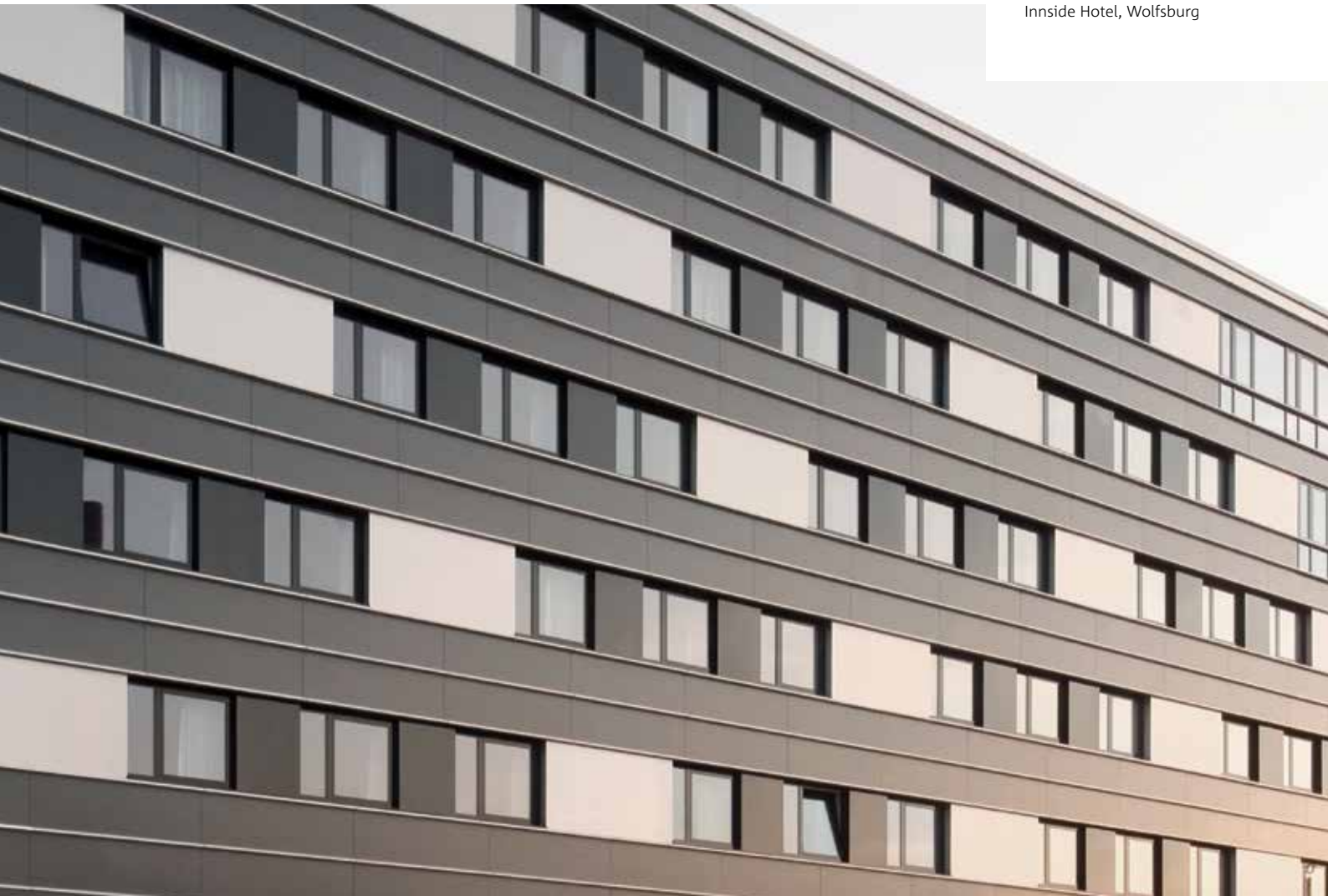
Weather protection
The suspended curtain façade protects the thermal insulation layer from both moisture and direct sunlight and heat so that its function is retained. Even driving rain that manages to penetrate the structure is immediately dried away in the ventilation gap.

Fire protection
Thanks to free selection of the system components, the suspended back-ventilated curtain façade satisfies all statutory fire protection regulations. The high level of fire resistance has been demonstrated across a wide range of systems.

Economic efficiency
Suspended back-ventilated curtain façades have a high degree of economic efficiency. Thanks to a lengthy service life and low maintenance requirement, an investment is also beneficial from an economic perspective – an attractive solution for representative objects, whose rentability and profitability needs to be preserved in the long term.

Diagram of a suspended back-ventilated curtain façade





Innside Hotel, Wolfsburg

PRODUCT

Energy-efficient attachment.

To achieve the optimal solution, it is important that energy efficiency and thermal protection requirements are satisfied and that the benefits of the suspended back-ventilated curtain façade are capitalized upon. This requires an optimal connection.

Isolink® Type F is authorized by the Deutsche Institut für Bautechnik (DIBt) (Z-21.8-2082).

The sustainability of the Isolink® has been certified by the Environmental Product Declaration (EPD).

Isolink® has been awarded the highest classification of phA+ for all weight classes by the Passivhausinstitut.

Isolink® Type has been awarded the German Innovation Award by the Rat für Formgebung for its role as an outstanding innovation.

Schöck Isolink®
Schöck Isolink® Type F has been developed for energy-efficient façade connection. It preserves the distance between the façade cladding and the shell and transfers all loads acting on the façade cladding. Isolink® reduces thermal bridges on the façade to a minimum. As a certified passive house element, it satisfies stringent thermal protection requirements.

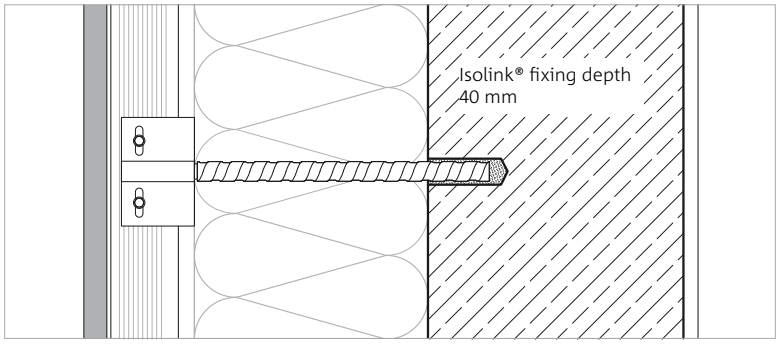
With a rod-shaped, composite fibreglass wall bracket, point thermal losses are so minimal that they are negligible and if using general calculation methods, it can be said that the structure is theoretically free of thermal bridges.
The Schöck Isolink® façade attachment satisfies the requirements of regional building regulations for building classes 1 to 5 and is generally authorized for use in highly flammable façades.

Schöck Isolink® Type F

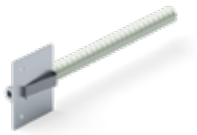
Perschmann Neubau, Braunschweig (© ALU-BAU Grabner GmbH)

Fixing depth

A considerable benefit of assembly is the very low anchoring depth of just h_v = 40 mm in concrete. As a result, reinforcement strikes on reinforcing steel while drilling are significantly reduced. Even the largest dimension with a nominal diameter of 20 mm can securely anchor the loads of the VHF with just 40 mm in the cracked concrete.

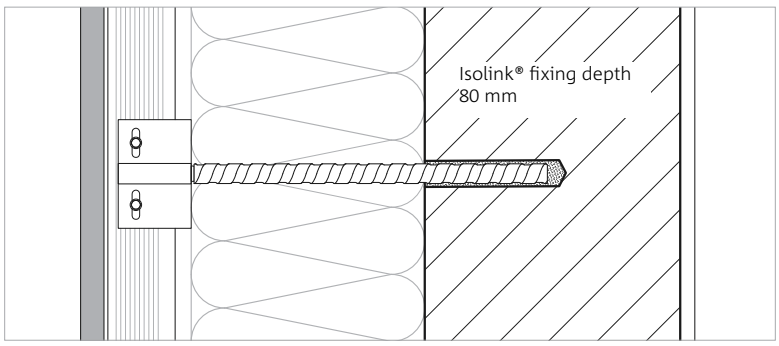


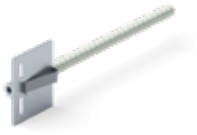
The VECO®-Isolink® façade substructure was developed in collaboration with façade specialist GIP GmbH and its VECO® wing adapter.



VECO®-Isolink® with fixed point

If the surface contains masonry, Isolink® is anchored in the stone to 80 mm. In the event of perforated brick, a metal sieve sleeve completes the anchoring.





VECO®-Isolink® with slide point

FAÇADE SYSTEMS

Individual solution.

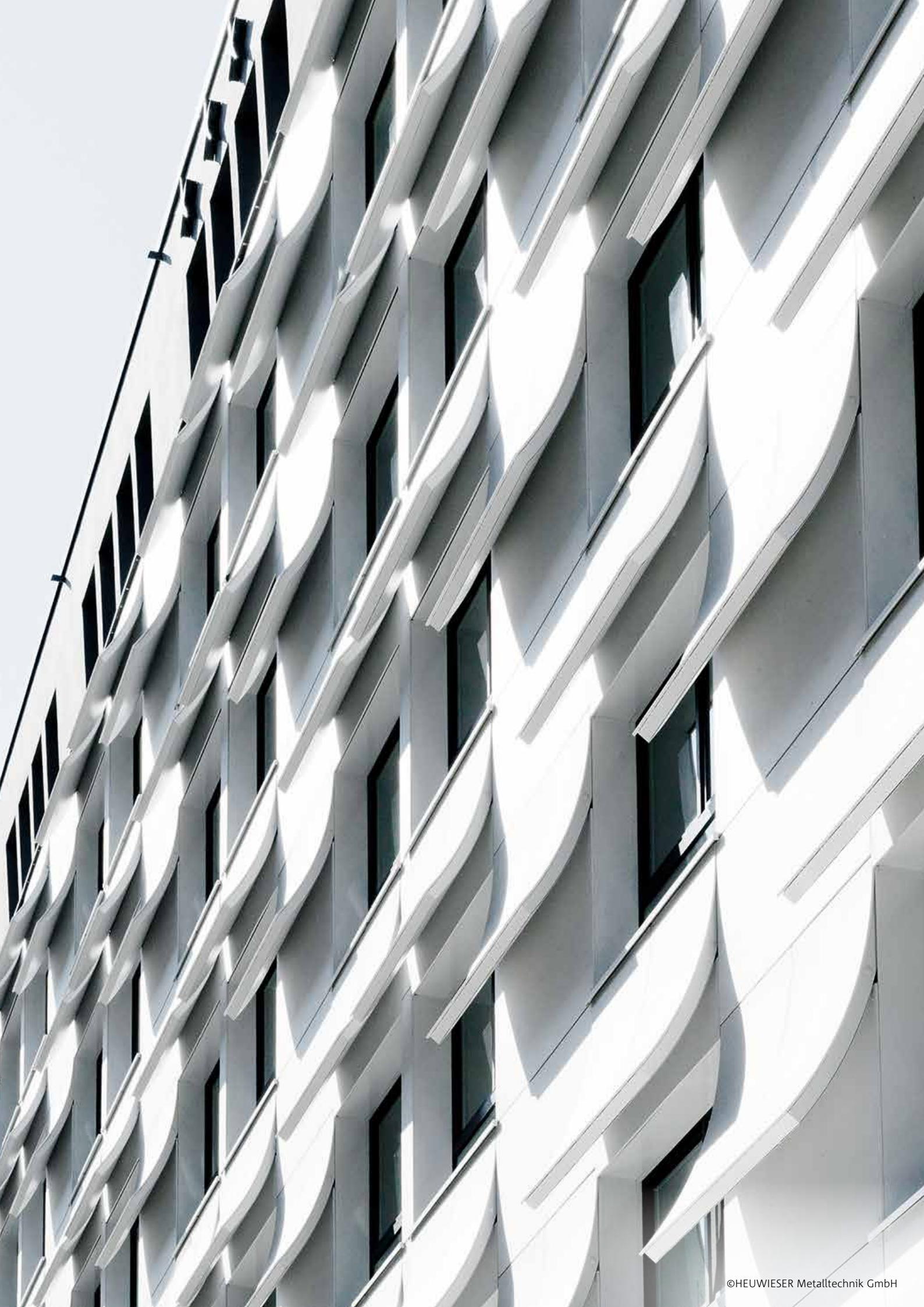
Suspended back-ventilated curtain façades are one of the world's most versatile façade systems. In addition to the divergent options available for architectural design, a VHF gives a building an aesthetic, structurally reliable, and low-maintenance façade. VHF systems have proven their work in both new-build and existing construction.

For new-build and renovation
One of the most typical features of suspended back-ventilated curtain façades is their different appearance in different situations. VECO® systems are ideally suited as façade substructures for both new-build and renovation projects, and offer standard solutions for the attachment of all types of façade cladding material. Special components which complement the standard system are carefully tailored to the respective project and individual VHF.

Used in conjunction with VECO®-Isolink®, you can easily satisfy stringent building physics requirements, even in the passive house standard.
The system also demonstrates its particular strength in renovation projects, as an aesthetic upgrade can drastically reduce both operating costs and maintenance costs at the same time. When renovating old systems, even a simple drill hole through the existing thermal insulation is all that is needed.

Materials of choice
When it comes to façade cladding and the VHF, there are virtually no limits on materials. Design planners have free choice of surface quality, colour, and format and can use their favourite materials to leave a real impression on the object.
Typical cladding materials include:

- Ceramic
- Brick
- Aluminium
- Aluminium composite
- Copper
- Fibre cement
- Natural stone
- HPL
- Zinc



SUBSTRUCTURE SYSTEMS

VECO®-1011-Isolink®

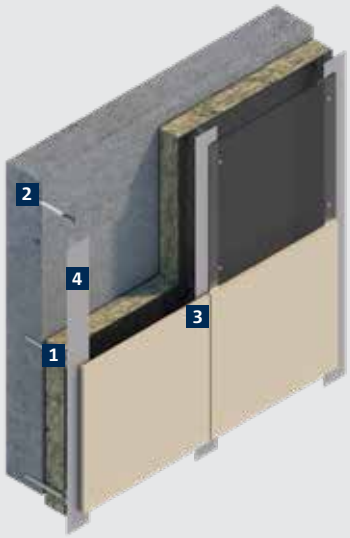
The façade panels in this system are visibly riveted and have a vertical aluminium substructure with L profiles and T profiles.

Cladding materials
Composite panels, fibre cement HPL (High Pressure Laminate)
Plain sheet plaster support panels, OSB panel

Attachment type
Visibly riveted, visibly screwed

Format
Large-format façade panels

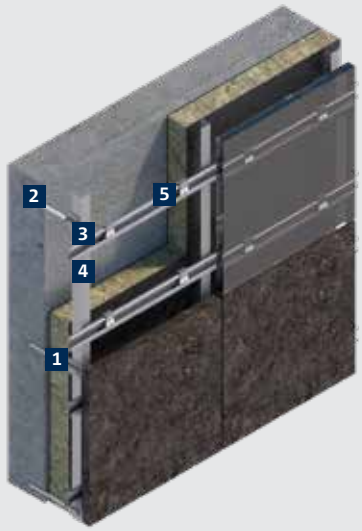
Surfaces, colours, and formats
In accordance with manufacturer's specifications



1 Wall bracket
VECO®-Isolink®
2 Anchoring
With injection mortar, in perforated bricks, additionally with metal sieve sleeve
3 Drilling screws
4 Vertical support profile
L profile and T profile

VECO®-2000-Isolink®

With this system, the façade cladding is fixed to a vertical aluminium substructure with L profile using undercut anchors and attached to horizontal agraffe profiles. No rivets are visible on the surface of the cladding.



1 Wall bracket
VECO®-Isolink®
2 Anchoring
With injection mortar, in perforated bricks, additionally with metal sieve sleeve
3 Drilling screws
4 Vertical support profile
L profile
5 Horizontal agraffe support profile

Cladding materials
Fibre cement
HPL (High Pressure Laminate)
Ceramic
Natural stone

Attachment type
Not visible, with undercut anchors

Format
Large-format and small-format
Façade panels

Surfaces, colours, and formats
In accordance with manufacturer's specifications

©AS Fassaden

VECO®-4040-Isolink®

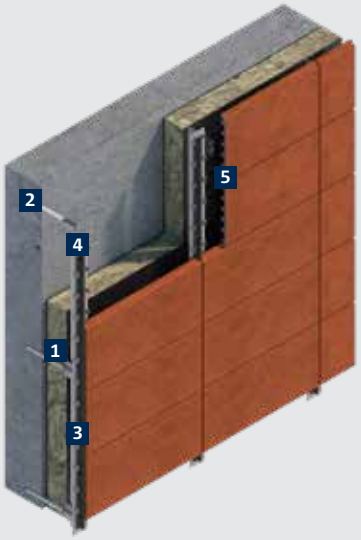
The vertical aluminium substructure of the VECO®-4040-Isolink® has L profiles and T profiles as well as a vertical system rail or panel holder. The façade tiles are suspended from this substructure system.

Cladding materials
Clay façade bricks

Attachment type
Not visible, suspended

Format
Large-format and small-format
Brick slabs

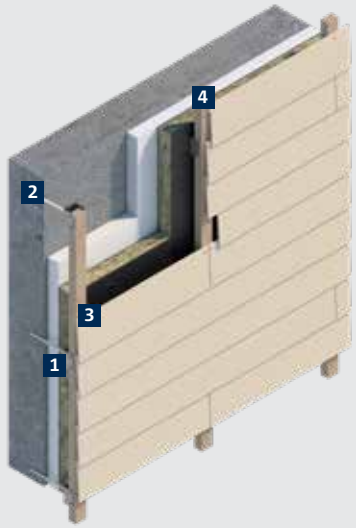
Surfaces, colours, and formats
In accordance with manufacturer's specifications



1 Wall bracket
VECO®-Isolink®
2 Anchoring
With injection mortar, in perforated bricks, additionally with metal sieve sleeve
3 Drilling screws
4 Vertical support profile
L profile and T profile
5 Vertical system rail or panel holder

VECO®-Timber-Isolink®

VECO®-Timber -Isolink® is a wooden substructure that can be used for horizontal or vertical alignment.



1 Wall bracket slide point
VECO®-Timber
2 Anchoring
With injection mortar, in perforated bricks, additionally with metal sieve sleeve
3 Screw
4 Vertical support profile
Wood profile

Cladding materials
- Wood
- Fibre cement
- HPL (High Pressure Laminate)
- Metal

Attachment type
Not visible, screwed

Format
Horizontal or vertical panels

Surfaces, colours, and formats
In accordance with manufacturer's specifications

MATERIAL

Innovative mixture.

The special feature of passive house-certified Schöck Isolink® is the extraordinary material that it is made of, giving it unique properties when compared to other façade attachments.

Schöck Combar®
The rod-shaped façade anchor comprises a stainless steel double bolt and the pultruded fibre composite Schöck Combar®, which has outstanding material properties to reflect the current state of the art and state-of-the art construction.
The glass fibres are bundled over a matrix, unidirectionally aligned, and permanently coated with a vinyl ester resin. With a very high glass content of 88 per cent, Combar® is authorized for the requirements of a flame-retardant façade. With project-related type approval or project-related approval on a case-by-cases basis,

Isolink® has pre-authorization for façades where the fire protection concept requires a non-combustible façade.
The length of the connecting piece is determined using the static, building physics, and structural requirements – Isolink® type F is available up to a length of 500 mm. In addition, the quality of the anchoring surface, weight of the façade cladding, and distance between the façade and bearing wall also play an important role. A dedicated structural analysis is, therefore, required for each construction project.

Material properties		Aluminium	Stainless steel	Schöck Combar®
Characteristic tensile strength	f_{tk} [N/mm²]	215	460 - 650	≥1000
Modulus of elasticity	E_{ten} [N/mm²]	70,000	200,000	60,000
Thermal conductivity	λ [W/(m · K)]	160 - 200	13 - 15	0.7
Specific weight	ρ [g/cm³]	2.75	8.0	2.2
Material fire class		Non-combustible	Non-combustible	Highly flammable

The outstanding properties of the composite fibreglass Schöck Combar® make it superior to aluminium and stainless steel.

Roving spools and fibre guide (© Fiberline Composites A/S)

Own manufacturing processes

As a first step, pultrusion, a continuous process bundles high-strength glass fibres as densely as possible before drawing them through a tool in which they are coated with resin. In the second step, profiling, the ribs are ground into the hardened rods.

The rods are then end-coated.
The result: a reinforcement material with unique static, physical, and chemical properties.

The manufacturing process for Schöck Combar® has been optimized to the requirements of reinforcement rods and produces a reinforcement material with unique properties.

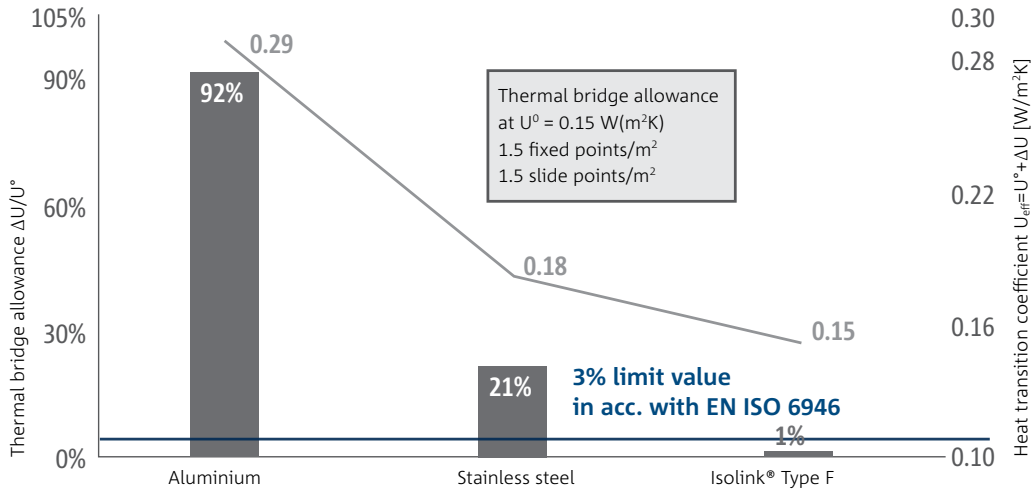
BUILDING PHYSICS

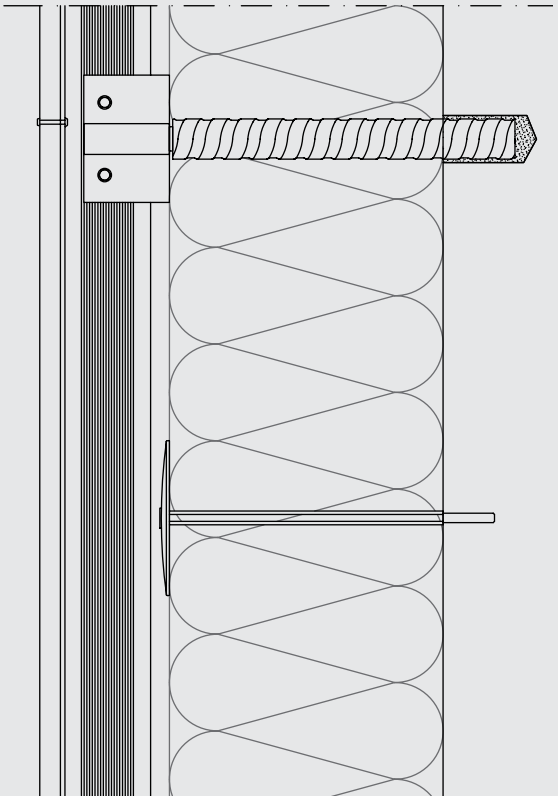
Energy efficiency in detail.

Thermal protection requirements are demanding. When calculating the heat transition coefficient of the outer wall, point thermal bridges in accordance with DIN EN ISO 6946 are as important as the wall structure.

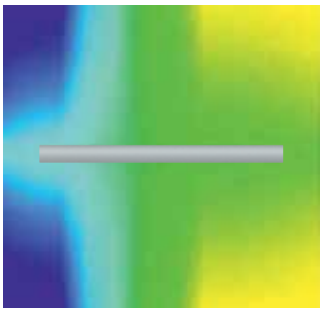
Lower thermal conductivity
The wall brackets in a VHF are comparatively compact, but due to their high quantity, they can lead to high energy loss, depending on the material. The composite fibreglass Combar®, which is used for Isolink®, has extremely low thermal conductivity – approx. fifteen times lower than that of stainless steel and nearly 300 times lower than that of aluminium.
The additive approach of the heat transition coefficient (U^0 value) of the undisturbed, insulated wall and a correction value (ΔU), which includes the point thermal bridges, applies.
The U-value (U_{eff}) that needs to be applied is, therefore, the energy loss through the undisturbed wall (U^0) and the energy loss through thermal bridges (ΔU):
$U_{eff} = U^0 + \Delta U$.
If the wall brackets of aluminium and stainless steel are compared with Isolink® for an insulated wall with a U^0 value of 0.15 W/(m²K), it is evident that the U values for aluminium (approx. 92%) and for stainless steel plates (approx. 21%) deteriorate considerably (see figure) – even with only three wall brackets per square metre. Only Isolink® is significantly below the permissible three per cent limit and does not, therefore, need to be considered in the verification in accordance with DIN EN ISO 6946. Consequently, it is theoretically free of thermal bridges.

Attachment without thermal bridges in accordance with DIN EN ISO 6946

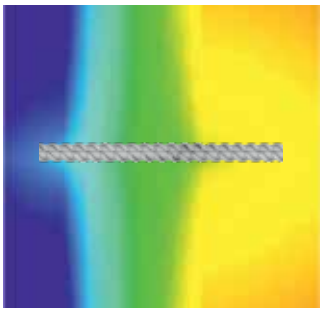




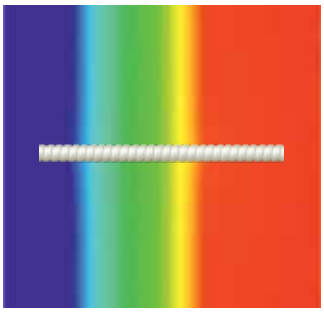
Influence of the materials on the U value



Isotherms with
Aluminium: 160 - 200 W/K



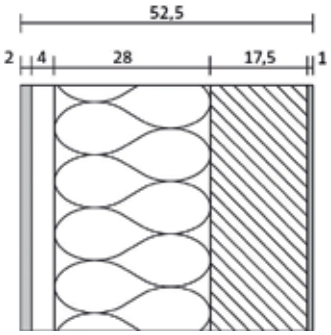
Isotherms with
Stainless steel: 13 - 15 W/K



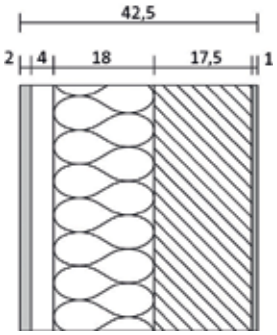
Isotherms with
Combar®: 0.7 W/K

Point thermal bridges
An example calculation for a required U value of $U_{erf} \leq 0.24$ W/(m²K) with three wall brackets illustrates the difference: Use of theoretically thermal bridge-free Isolink® façade anchors can help to reduce the requisite thermal insulation thickness by half when compared to aluminium versions.

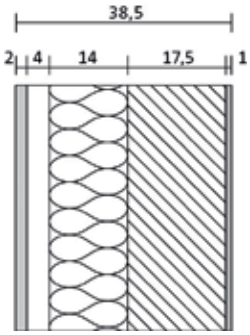
Influence of the materials on the wall structure



Wall structure with
3 aluminium wall brackets and 28 cm mineral wool WLG 035



Wall structure with
3 stainless steel wall brackets and 18 cm mineral wool WLG 035



Wall structure with
3 Isolink® wall brackets and 14 cm mineral wool WLG 035

Measurable space gain
A delicate wall structure also means: more space inside. For a building with external dimensions of 10 x 10 cm, there is a gross area of 100 m². Taking into account a wall structure of 38.5 cm with Schöck Isolink® or an exterior wall of 52.5 cm with aluminium wall brackets, this can mean a space gain of 6.4% usable area.

INSTALLATION

Straightforward installation.

As a perfect VHF system, VECO®-Isolink® offers impressive facts and figures and proves its worth in practical situations thanks to straight-forward installation with connecting element.

New-build

Installation is carried out according to the principle of a bonded anchor. To ensure proper installation of the wall bracket, a drill hole is firstly made and cleaned. This is then injected with an approved dual component composite mortar before Isolink® is positioned. The clamping causes the Isolink® to transfer both the tensile and compressive forces from wind load and shear forces from the net weight of the façade. No additional bracing is required.

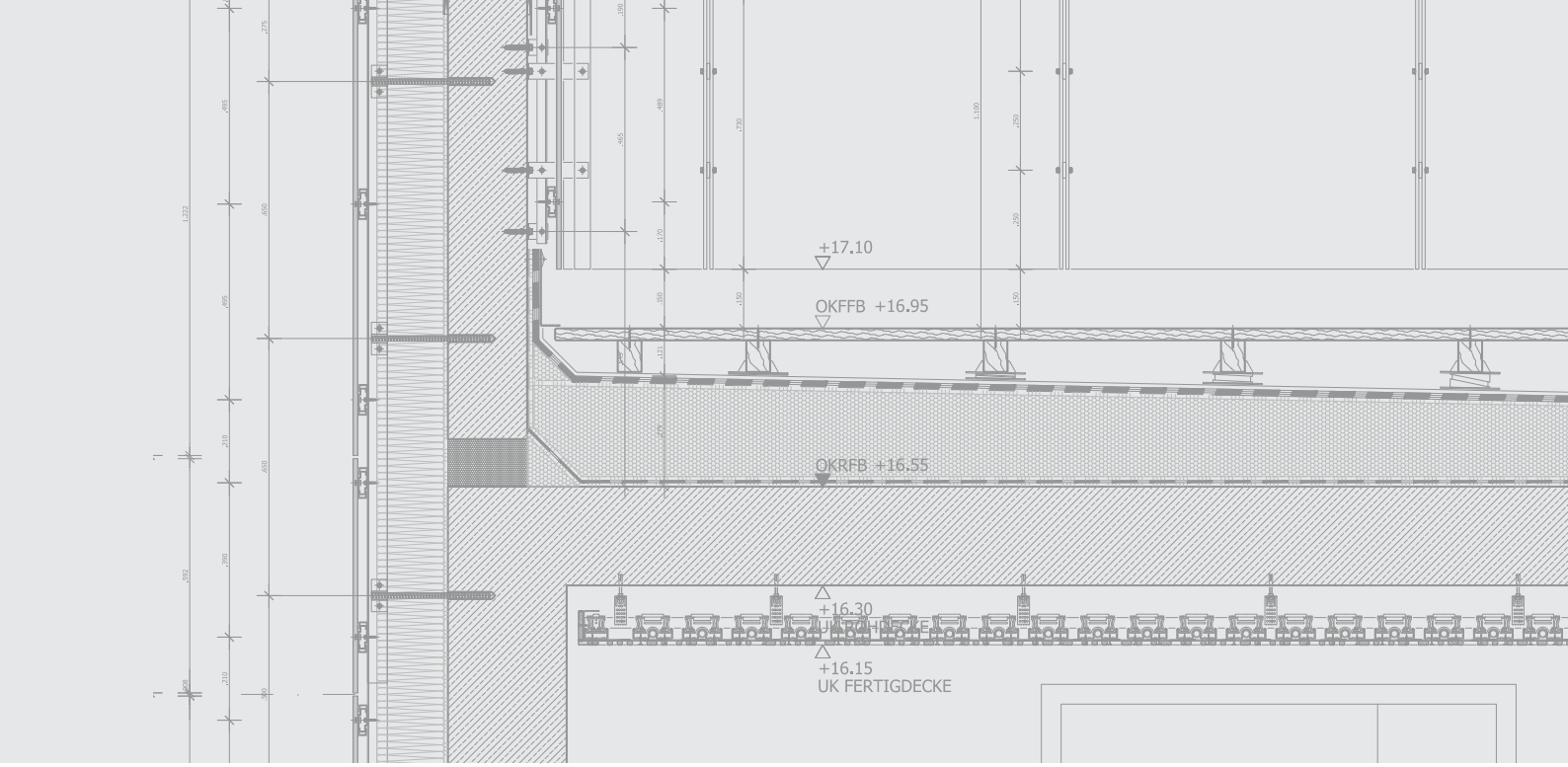
Composite mortar typically cures after 30 minutes to one hour.

The mineral heat insulation is then simply pressed over the anchor – with no piercing – without the need for a special tool.

The heat insulation is positioned over the entire service of the wall and with no hollow spaces.

The adapter plate is then screwed into place and the substructure can then be bolted or riveted.

The profile and cladding material can now be attached to the wing adapter.



Renovation

Installation of the VHF with Schöck Isolink® is just as quick and straightforward when renovating a composite thermal insulation system. In this case, the insulating layer can be retained. The figures show an example of a wooden substructure with VECO®-Timber adapter from GIP and façade panels from Cedral. In addition, other cladding materials and substructures made of aluminium can also be used in renovation projects.

The drill holes must firstly be made in the anchor grid.

Schöck Isolink® is bonded into place.

After fixing the insulation panels, the insulation holders and VECO®-Timber adapters from GIP are screwed to the façade anchors.

The VECO®-Timber adapters are then aligned for the substructure.

The wooden substructure is attached to the adapters.

The façade panels from Cedral are screwed to the substructure, which is coated with EPDM film.

RELIABLE

Sustainable for customers and the environment.

The reliability of Schöck is reflected not only in the engineering performance of specialist construction solutions. It also encompasses environmentally responsible and service-oriented action.

Our contribution to climate protection

As part of the international Schöck Group, Schöck Bauteile GmbH places particularly emphasis on innovative developments with maximum benefit in terms of building physics. This includes products for the prevention of thermal bridges, for the reduction of impact noise, and reinforcement technology for special requirements. But, it's not only about Schöck products – sustainable materials and production processes are increasingly front and centre. Environmentally responsible fleet management is supplemented by state-of-the-art technologies such as photovoltaics, heat recovery, and combined heat and power plants to save energy. Schöck Bauteile GmbH has received an award for its pioneering role in climate protection and operational energy efficiency and can officially refer to itself as a 'climate protection company'.

Our service

CAD detailed drawings
Our Detail Centre provides design details for planning in common CAD file formats. www.schoeck.com

Installation video
Installation videos allow you to follow every detail of the installation process. www.schoeck.com

COMPREHENSIVE COMPETENCE

Reliably the right solution

With future-focussed product solutions and systems, we satisfy all building physics, static, and structural requirements of the respective applications in new-build and existing construction. We focus on reducing thermal bridges, impact noise insulation, and reinforcement technology in particular.

Balcony, pergola Canopy

Wall, support

Roof structures

Façade

Ceiling

Stairs

SCHÖCK
Dependable by design

Sales and technical advice
HauCon A/S
Lægårdsvej 30
DK-8520 Lystrup
Tel.: +45 86 22 93 93
ta@haucon.dk
www.haucon.dk

Manufacturer
Schöck Bauteile GmbH
Schöckstraße 1
76534 Baden-Baden
Germany
www.schoeck.com

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