

HALFEN HIT INSULATED CONNECTIONS

Thermal insulation connections for balconies and structural components



Solutions and Applications



HALFEN
A CRH COMPANY



QUALITY. INNOVATION. DIVERSITY.

HIT Insulated connections for cantilevered structural components and balconies

As a designer, architect or building contractor you are fully aware that cantilevered structural components and balconies must be considered in the **design for the thermal insulation** of a building.

It is only in this way that the requirements of the Energy Saving Ordinance can be met and heat loss reduced.

With its HIT Insulated connections, HALFEN provides a versatile and innovative range of products. The connections not only ensure optimum thermal insulation, they also comply with the highest **fire safety requirements** and can be used in many different installation situations.

This brochure illustrates a range of possible applications. We are of course always available to assist in individual construction projects with custom solutions.

Choose quality and innovation with the HIT Insulated connections from HALFEN.



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THE HALFEN SHOW HOUSE

All applications at a glance

Welcome to HALFEN – sit back and enjoy the tour of our show house. This unique, virtual building contains numerous examples of our HIT Insulated connections in use. You can explore these applications in more detail on the following pages, from the insulated corbel brick support on the ground floor to the parapet on the roof.

We can also provide you with solutions specifically developed for your individual building projects. Contact us and find out more.



YOUR BENEFITS WITH HIT: OPT FOR QUALITY!

> OPTIMUM PLANNING SECURITY!

HIT Insulated connections meet the fire protection requirements of fire resistance class REI 120 and have approved construction Ψ -values for a standard-compliant detailed verification of thermal bridges.

> SAFEST POSSIBLE INSTALLATION

Thanks to the special shape of the new double-symmetrical CSB bearing, the HIT Insulated connections for cantilevered balconies (HIT-HP/SP MVX) are symmetrical. This means they can be installed regardless of the direction the slab or balcony runs.

> NO ADDITIONAL WORK!

All the necessary verification processes have already been taken into account.

> OPTIMUM INSULATION!

With the reduced tension rod cross-section, fewer penetration points and the continuous insulation thickness, HIT Insulated connections offer optimum properties for thermal insulation.

> VERSATILE FLEXIBILITY!

HIT Insulated connections provide the right solution for every application. With a wide range of products to choose from (from HIT-HP with 80 mm insulation and HIT-SP with 120 mm insulation) with numerous possible combinations.

> ECONOMICAL PLANNING!

The optimised cutting process in the HIT planning software ensures planning is particularly efficient and economical. Meaning the HIT Insulated connections can be installed quickly.

> SUSTAINABLE QUALITY!

HIT Insulated connections allow relative distortion / thermal expansion of the balcony slab to the building. This prevents cracking and costly repair work.

> SPACE-SAVING TRANSPORT!

Reliable transport thanks to the sturdy construction. Shipments can also be optimised because of the multi-part design and the optimal packing and delivery of lower parts, spacer and top boxes.

1 CANTILEVERED BALCONY

HIT-MVX | HIT-HT
HIT-MVX OU/OD

2 CANTILEVERED CORNER BALCONY

HIT-MVX COR | HIT-MVX | HIT-HT

3 BALCONY WITH SUPPORT ON THE FRONT SIDE OF THE BALCONY PANEL

HIT-ZVX | HIT-HT2 | HIT-HT3

4 BALCONY WITH SUPPORT – A SECOND VARIATION

HIT-ZDX

5 LOGGIA

HIT-ZVX without CSB bearing
HIT-DD

6 ROOF PARAPET

HIT-AT

7 WALL PARAPET

HIT-FT

8 CANTILEVER

HIT-OTX

CANTILEVERED BALCONIES



Modern charm in a Mediterranean setting: **CASA PORCHE, SPAIN**

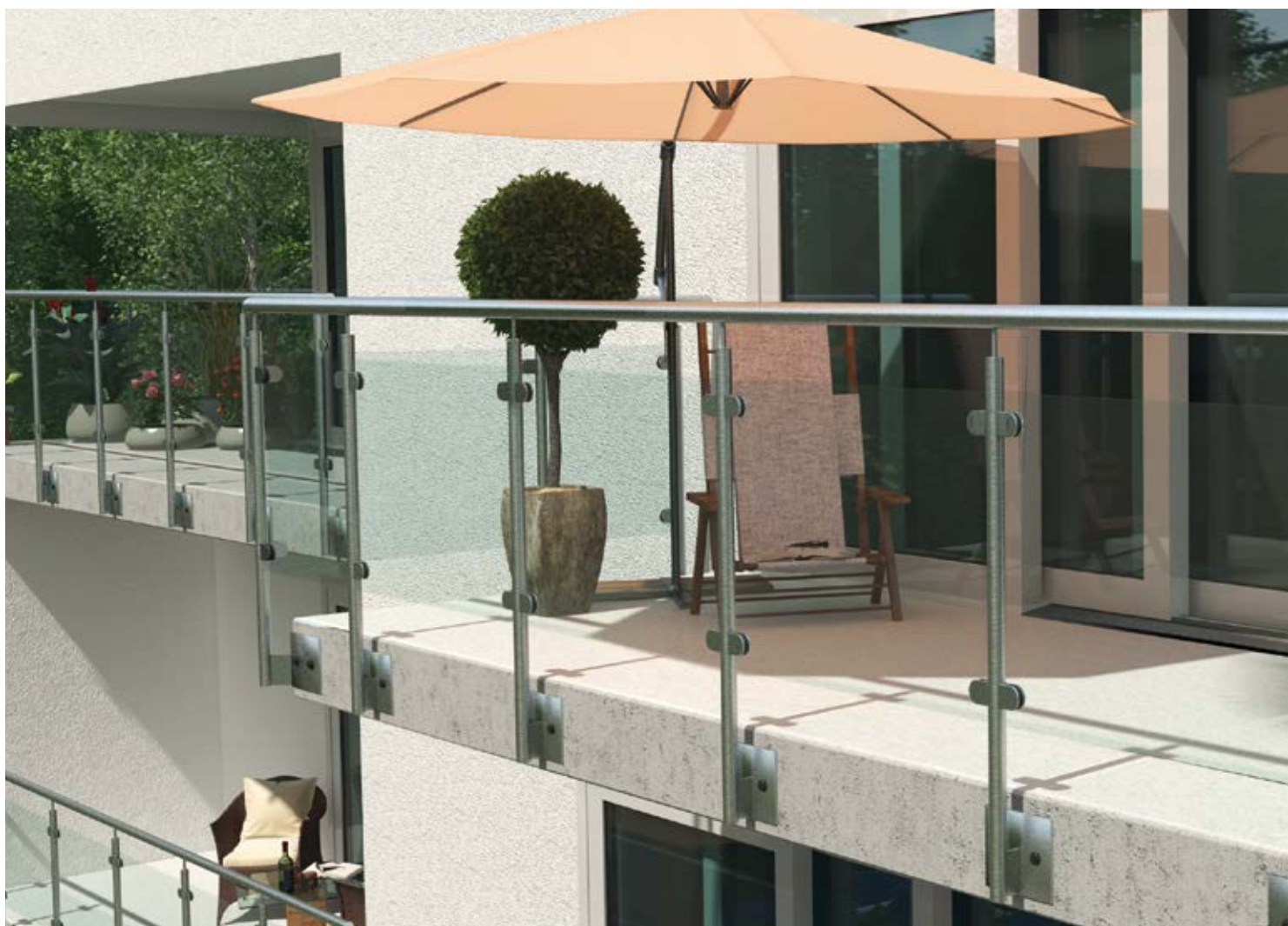
A dream in glass and concrete - in this minimalist house in the Morales del Vino, Spain, a glass façade visually draws the outdoor area into the interior of the building.

A flat roof made from reinforced concrete forms a cantilevered canopy area. The thermal-bridge from the inside to the outside is particularly challenging in technical terms, but the HIT Insulated connections provide optimum thermal insulation properties.

Location: Morales del Vino, Spain

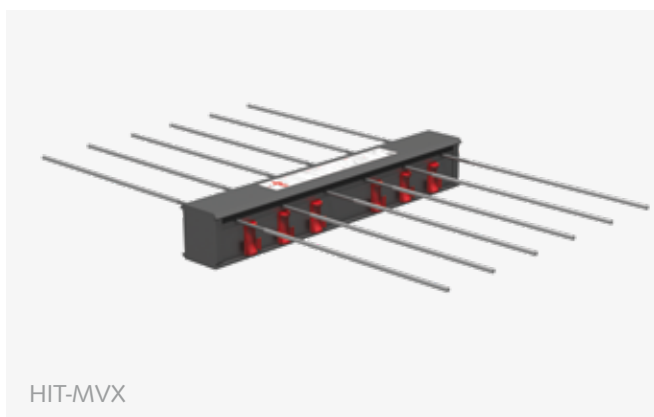
Architects: Julio Pérez Domínguez, Daniel Fernández-Carracedo





System solutions for every building situation

Whether the height is offset or not, the construction is straight or runs around a corner, the HIT Insulated connections offer the optimum solution for every cantilevered balcony. Thanks to the versatile system, you can also combine various connection elements, which take into account the anticipated horizontal forces including all transverse forces or moments, and transfer them safely to the main slab.





FEATURES

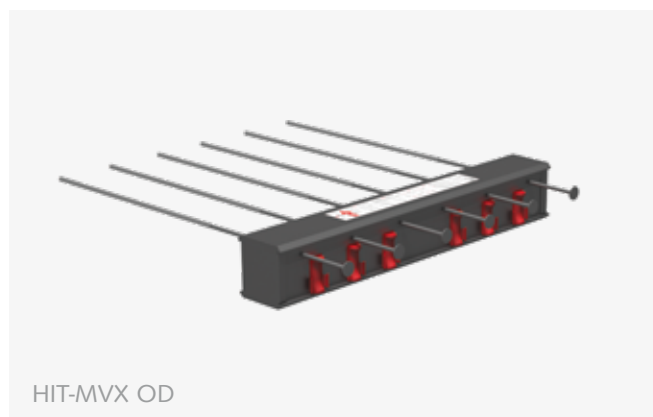
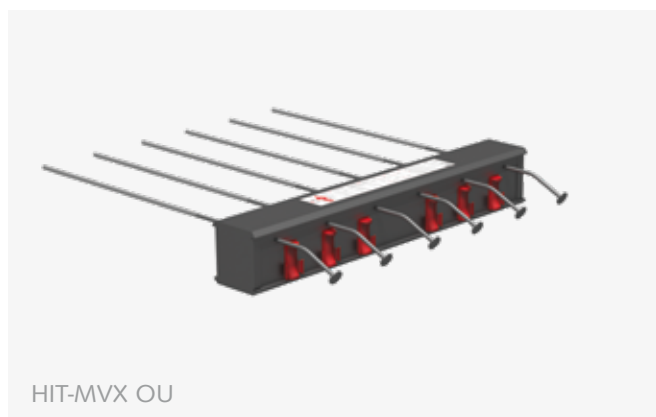
- › Fire protection class REI 120 (F120)
- › European Technical Assessment ETA-18/0189
- › Insulation thickness: HIT-HP 80 mm, HIT-SP 120 mm
- › Insulation material: non-flammable mineral wool
- › HIT-M VX – symmetrical balcony connection with shear force transfer up to ± 192 kN/m for slab thickness from 16 cm
- › HIT-M VX OU – balcony connection with an angled anchor head and shear force transfer of up to ± 192 kN/m for a slab thickness from 16 cm
- › HIT-M VX OD – balcony connection with straight anchor head and shear force transfer of up to ± 155 kN/m for slab thickness from 16 cm
- › Because they can be supplied in two part, all HIT-M VX types can be used in precast slabs

YOUR BENEFITS

- › **SYMMETRICAL HIT-M VX ELEMENTS:**
Thanks to the symmetrical shape of the new HIT-MVX it can be installed in any direction. This avoids installation errors and simplifies the assembly considerably.
- › **IMPROVEMENT OF THE PHYSICAL STRUCTURAL CHARACTERISTICS:**
By further optimising the shape of the CSB bearing, the number of support elements can be significantly reduced. This improves the physical structural characteristics by 30%.

Limited space or offset height?

Situations where the walls are narrow or the main slab construction is vertically offset require short balcony connections that are still suitable for the load. The HIT-MVX OU and HIT-MVX OD elements have an anchor head bar, which makes a connection between the main slab and a 175mm wall possible.



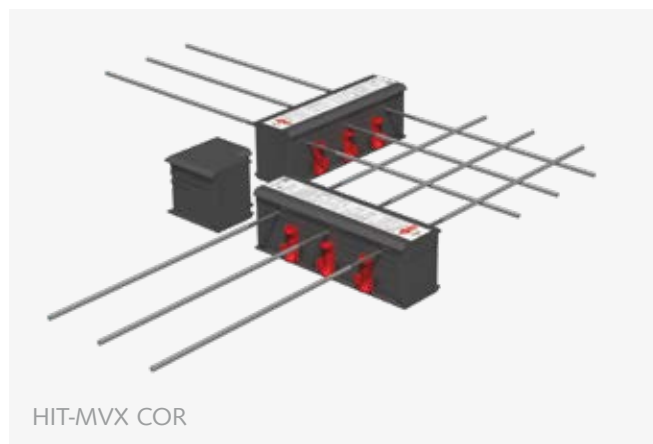
CORNER BALCONY





Designed for corners!

From a structural point of view, the reinforced concrete slab projecting around the corner is a potentially critical point as high shear forces concentrate at the corner. HALFEN also offers an HIT solution for this.



FEATURES

- › Fire protection class REI 120 (F120)
- › European Technical Assessment ETA-18/0189
- › Insulation thickness: HIT-HP 80 mm, HIT-SP 120 mm
- › Insulation material: non-flammable mineral wool
- › HIT-MVX – symmetrical connection with shear force transfer of up to ± 192 kN/m for a slab thickness from 16 cm
- › HIT-MVX COR is ideally suited for use in precast slabs

YOUR BENEFITS

- › **VERSATILE SYSTEM:**
Unusual building situations can also be realised with the combination of various HIT elements.
- › **DESIGNED FOR CORNERS:**
Even precast cantilevered corner balconies can be designed and build with HIT elements.

SUPPORTED BALCONIES



In the Chicago style of the 1900s: **TERRACE EAST, CANADA**

With its clearly structured stone façade and the large, three-part windows this six-storey building in Moose Jaw, Saskatchewan is unmistakably reminiscent of the Chicago-style of the 1900s. The 36 apartments all have spacious balconies (5.30 m x 5.55 m and 5.30 m x 3.10 m).

The panels incorporated as interior corners are connected with heat-insulating HIT Insulated connections.

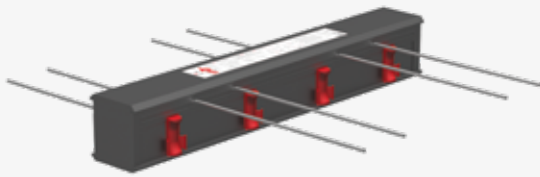
Location: Moose Jaw, Canada

Architects: Anton Tangedal Architect Ltd., Robinson Residential



Reliable connections – always

Balconies on supporting columns vary in their needs; for those with supports on the outside, one connection element with shear force transfer in one direction is sufficient in most cases. Slabs that project further out than the columns may require an element with positive and negative shear capacity. With the HIT-ZVX there are two variants: straight or curved bars.



HIT-ZVX with straight bars



HIT-ZVX with curved bars

FEATURES

- › Fire protection class REI 120 (F120)
- › European Technical Assessment ETA-18/0189
- › Insulation thickness: HIT-HP 80 mm, HIT-SP 120 mm
- › Insulation material: non-flammable mineral wool
- › HIT-ZVX – shear force transfer of up to 356 kN/m for a slab thickness from 25 cm taking into account verification of the concrete compression brace
- › HIT-ZVX – element load-bearing capacity of up to 409 kN/m
- › Cantilevered shear force bars in the main slab with a short anchoring depth (from 175 mm)

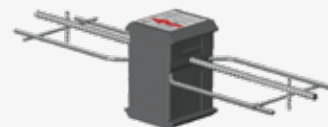
YOUR BENEFITS

- › **GUARANTEED TO TAKE THE LOAD:**
Playing it safe with the extremely high load-bearing capacities of HIT-ZVX.
- › **HELPING YOU SAVE TIME:**
All the necessary verification processes have already been provided.
- › **SIMPLE COMBINATIONS:**
If horizontal forces are anticipated, you can selectively add to the HIT-HT elements.

HIT-HT Series for absorbing concentrated loads



HIT-HT2



HIT-HT3

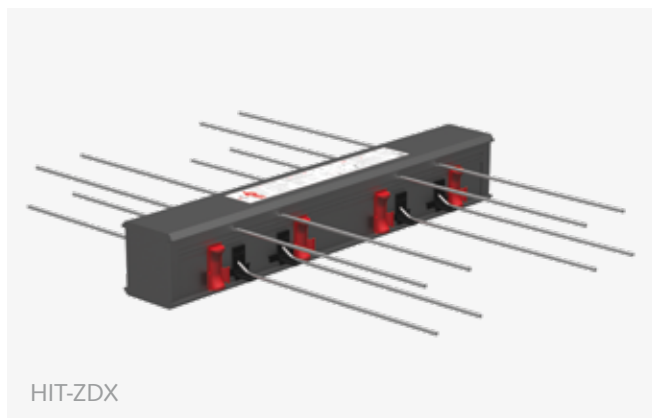






Balcony with supporting columns – a second variant

For balconies with supports in the middle of the balcony slab, the slab is connected to the wall with the HIT-ZDX element.



FEATURES

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- › Insulation thickness: HIT-HP 80 mm, HIT-SP 120 mm
- › Insulation material: non-flammable mineral wool
- › HIT-ZVX – shear force transfer of up to ± 356 kN/m for a slab thickness from 25 cm taking into account the verification of the concrete compression brace
- › HIT-ZVX – element load-bearing capacity of up to ± 409 kN/m
- › Cantilevered shear force bars in the main slab with a short anchoring depth (from 175 mm)

YOUR BENEFITS

- › **HIGH LOAD BEARING CAPACITY:**
The high load bearing capacity of the HIT ZVX ensures a reliable and safe connection.
- › **PROVEN SUPPORT:**
All required proofs are provided. This provides planning reliability and saves time during the planning phase.

LOGGIA



The solution for continuous slabs

Unlike cantilevered balconies, a loggia is setback into the building. This means that the balcony is part of the continuous slab and is not penetrated by a wall. To prevent heat loss through the slab that runs out to the exterior of the building, the HIT Insulated connections HIT-DD and HIT-ZVX are installed without CSB bearings.



FEATURES

- › Fire protection class REI 120 (F120)
- › European Technical Assessment ETA-18/0189
- › General building approval No. Z-15.7-309
- › Shear force transfer of up to ± 243 kN/m
- › Insulation thickness: HIT-HP 80 mm, HIT-SP 120 mm
- › Insulation material: non-flammable mineral wool

YOUR BENEFITS

- › **CLEVER COMBINATIONS:**
The HIT Insulated connections can be combined depending on the installation. This opens up a world of possibilities.



COVERED WALKWAY

The alternative to a standard stairway

A covered access walkway connects multiple living units via an external, open corridor and therefore offers an alternative way of directly accessing the home instead of via a standard stairway. The main advantage to this alternative is the safety of the residents in the event of a fire. The outdoor access corridor serves as a primary escape route. The standard version of HIT Insulated connections fulfils the requirements of fire protection class REI 120.

The HIT Insulated connections used to connect the walkways differ depending on the design. Supported access levels are connected to the building using the HIT ZDX or the HIT-ZVX.



DESIGN ELEMENTS



Simple elegance in Bremerhaven: **OCEON 1, GERMANY**

The office building "Oceon 1" is in Bremerhaven, in a new district with office and residential buildings. The buildings are grouped around an historic loading crane and link the history of the New Harbour with modern architecture.

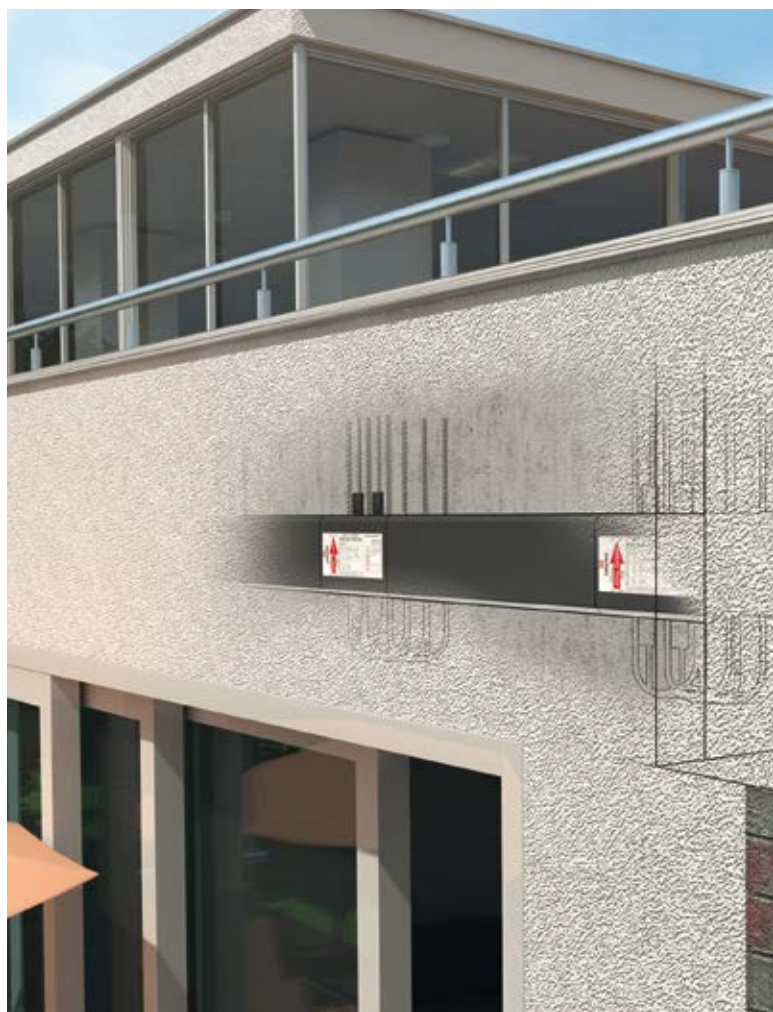
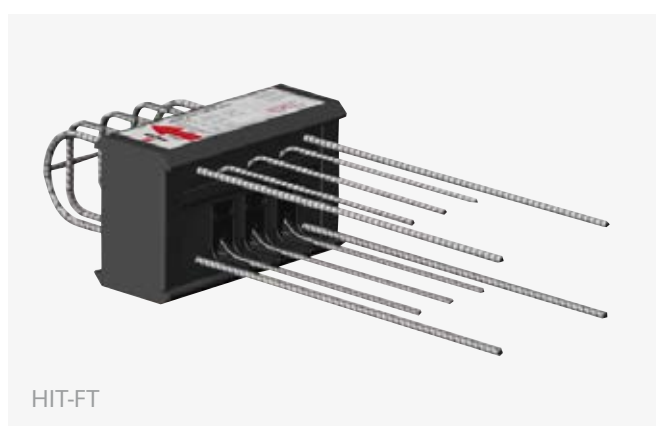
The façade of the first office building "Oceon 1" is divided into evenly spaced floor to ceiling windows and sculpturally modelled façade elements made from light white concrete with different surface structures. These elements synchronise particularly well with the brass-coloured anodised aluminium profiles of the windows.

The horizontal locking elements are connected to the ceilings with insulating HIT corbels.

Location: Bremerhaven, Germany

Architects: WESTPHAL ARCHITEKTEN BDA, Bremen





Roof parapets, parapets and cantilevers

Architectural details such as wall parapets, cantilevers or roof parapets must be integrated in the concept for the thermal insulation. The insulating building envelope should be completely sealed. The HIT Insulated connections offer solutions with exact connections even for small-sized components.

FEATURES

- › **Fire protection class REI 120 (F120)**
- › **European Technical Assessment ETA-18/0189**
- › **Insulation thickness: HIT-HP 80 mm, HIT-SP 120 mm**
- › **Insulation material: non-flammable mineral wool**
- › **HIT-AT – available in two variants:
with short (19 cm) or longer (27 cm) rods**
- › **HIT-FT – available in two versions with shear force
transfer in one or both directions**
- › **HIT-OTX – available for two cantilever depths:
from 155 mm and from 195 mm**

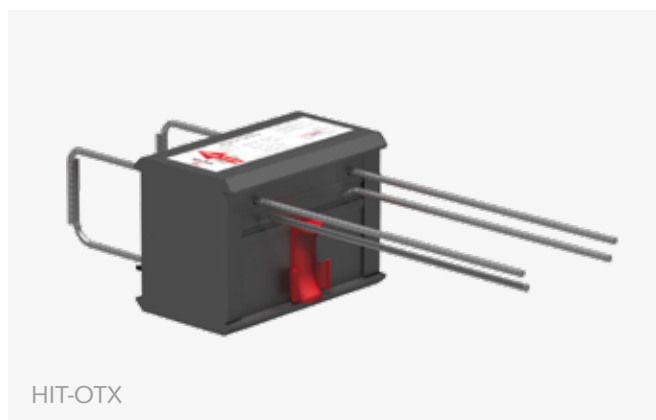
YOUR BENEFITS

- › **FOR CREATIVE ACCENTS:**
With the HIT Insulated connections your project can benefit from maximum creative freedom, even down to the smaller sized highlights.
- › **HALFEN QUALITY STANDARD:**
High load-bearing capacities and the reliable quality of HALFEN are typical of all HIT Insulated connections for installation situations from the top (parapet) to the bottom of a building (base).



CANTILEVERS

High-lights of the building envelope



FIRE PROTECTION WITH HIT INSULATED-CONNECTIONS

On the safe side!

Since 2016, fire barriers have been an integral part of fire protection measures in External Thermal Insulation Composite Systems (ETICS) made of expanded polystyrene foam (EPS). The fire barrier must therefore be incorporated in the planning of buildings containing thermal insulation made of EPS. The new regulation also states that "accessible external areas cantilevered on the façade", e.g. balconies and walkways, can act as a fire barrier.



Installation example: HIT-HP and HIT-SP Elements

The following applies to fire barriers in the balcony area:

Elements for connecting balconies that fulfil fire protection class REI 30, as a minimum, can be used as a fire barrier.

- › HIT-HP and HIT-SP Elements classified in the highest fire protection class REI 120 are available as standard and can therefore always be used as connections meeting all requirements.

WHAT THE FIRE PROTECTION CLASS REPRESENTS:

- R** The reliable stability of the connection is ensured for the period specified.
 - E** The room-dividing effect of the connection is ensured for the period specified.
 - I** The thermal insulating function of the connection is maintained for the period specified.
- 120** The characteristics mentioned above are guaranteed for 120 minutes of exposure to fire according to the standard temperature-time curve.

YOUR BENEFITS

› FIRE PROTECTION INCLUDED!

All HIT-HP and HIT-SP Elements significantly exceed the minimum requirements for fire protection and can therefore be used as fire barriers on all balconies.

› MAXIMUM SECURITY WHEN PLANNING!

With HIT-HP and HIT-SP Elements you benefit from peace of mind while planning, knowing that you are on the safe side: There are no additional costs for products with a higher fire protection class, because the elements come with it as standard.

› SAFE CONSTRUCTION!

No risk of confusion or mix-ups. Because the HIT-HP and HIT-SP Elements come with fire protection as standard, there is no risk of confusion or mix-ups during installation.

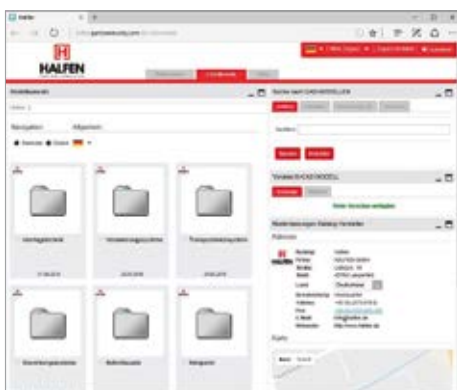
HALFEN

Your partner for BIM

HALFEN product and detailing plans created by our engineers for your projects are also provided as BIM (Building Information Modeling) CAD files to generate a 3D model of your building. Using BIM software for the design, construction process and maintenance of a building makes it much easier for architects, builders and suppliers to coordinate all aspects of a project. All information relevant to a building is made available in one place. Problems between various building disciplines can be quickly checked. All involved parties are able to cooperate more effectively resulting in real time and cost saving.



HALFEN provides CAD files for your BIM projects:



with the HALFEN PARTcommunity, the **CAD-Portal**



with the TEKLA® Software building component libraries



VISIT THE HALFEN CAD-PORTAL:

numerous, versatile and complimentary 2D and 3D files available for download!

IMPACT SOUND

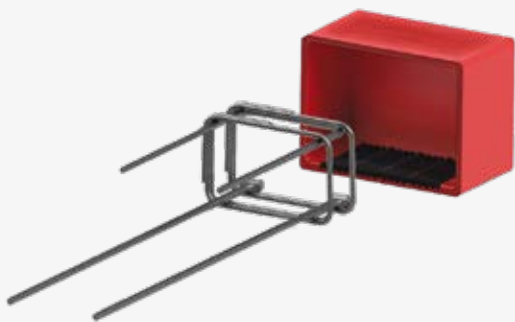


- 1 HBB bi-Trapez-Box
- 2 HTF Impact Sound Insulation
- 3 HTPL Perimeter Insulation
- 4 HTF-B Impact Sound Insulation
- 5 HTT Impact Sound Insulation

For quiet stairs

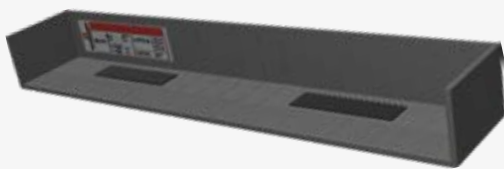
Noise can significantly affect the quality of living in apartment buildings or work performance in office buildings.

The sound of footsteps in inadequately insulated stairwells is particularly annoying. HALFEN can help with its reliable HBB bi-Trapez-Box solutions; HTF and HTT impact sound insulation units.



HBB bi-Trapez-Box

- > high-quality bi-Trapez-Bearing® with general building authority approval
- > maximum flexibility with boxes for three landing-slab thicknesses ($d = 16/18/20$ cm)
- > reliability in planning with type-tests approval
- > excellent sound insulating properties for a wide range of support loads
- > simple and quick installation



HTF



HTPL



HTF-B

- > Excellent sound insulating properties with a wide range of bearing pressures
- > General building authority approval for the bi-Trapez-Bearings® used
- > HTF – adaptable for all stair widths: elements available in widths from 100 and 120 cm, width freely adaptable with insulation and landing strips
- > HTF-B – use for elastic bearing of precast staircases in the base plate of the lowest floor
- > HTPL – acoustic decoupling of the staircase and wall



HTT Impact Sound Insulation

- > planning reliability through type-tests approval
- > fire resistance class up to R120 (F120)
- > flexibility for all applications – available in three different load levels
- > available for stair widths from 90 to 200 cm



HALFEN – **for quality that connects**

When it comes to connecting your components, you need products you can be sure of, products you can rely on. That is why for decades professionals have been choosing **HALFEN**. Our products are the culmination of continuous optimisation and development; they are manufactured with high quality materials in our regularly monitored production facilities. We cover a wide range of connecting elements for your construction projects.

Go for quality – choose **“MADE BY HALFEN”**.



HALFEN Cast-in Channels HTA-CE



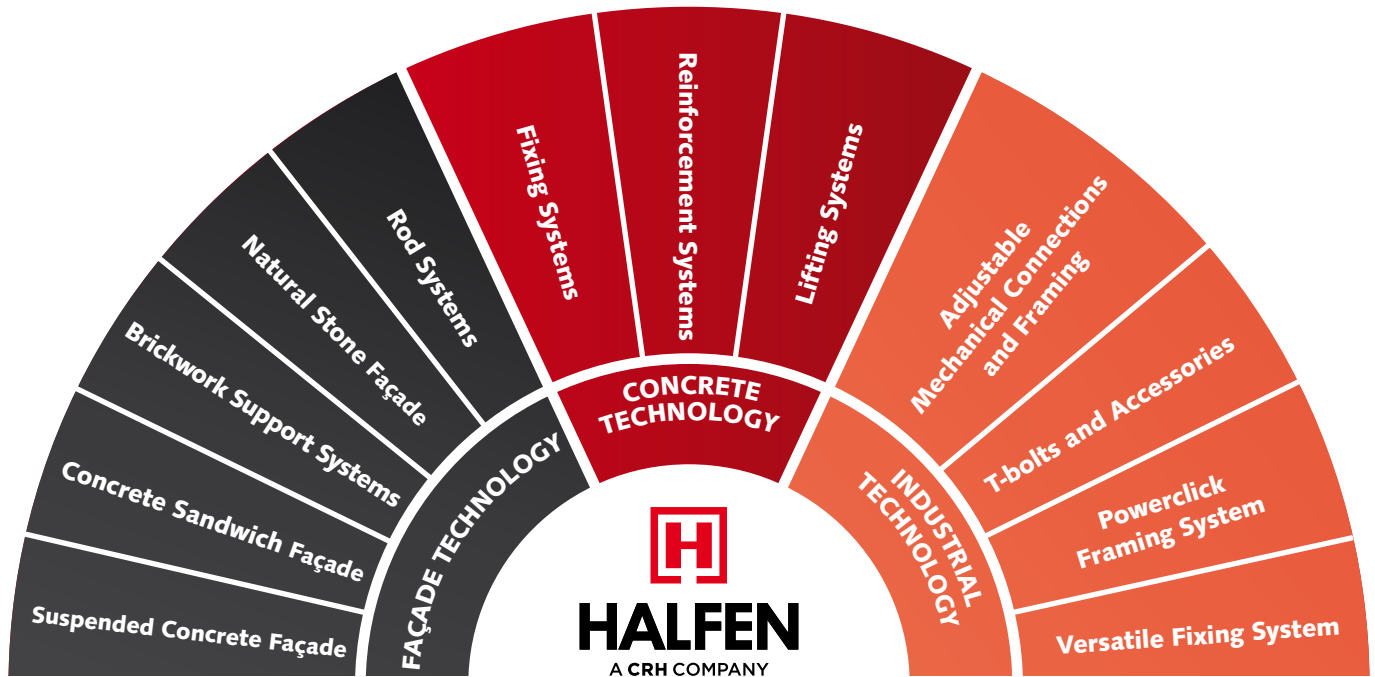
Balustrade fixings HGB



DETAN Rod system – design elements



HALFEN HK5 – Thermo brickwork support systems for brickwork façades



FAÇADE TECHNOLOGY

SUSPENDED CONCRETE FAÇADE

- › Precast panel anchors: FPA
- › Horizontal anchors: DS, HKZ, ULZ, SPV, HVL, WDK, WDI, HFV
- › Adjustable restraint: LD
- › Parapet corbels: BRA
- › Top fixing dowels: WPA

CONCRETE SANDWICH FAÇADE

- › Sandwich panel anchors: SP-SPA
- › Sleeve sandwich panel anchors: SP-MVA
- › Flat anchors: SP-FA

BRICKWORK SUPPORT SYSTEMS

- › Brickwork support: HK5, KM
- › Brackets: HW, KW, KWL
- › Ties for precast lintel: HK5-S, FSW, HSL
- › Cavity wall ties: LSA, HEA, HPV
- › Scaffold anchor: HGA
- › Wall ties: ML, BL

NATURAL STONE FAÇADE

- › Body anchors: HRM, HRC, DT, BA, DH
- › Grout-in anchors: UMA, UHA
- › Sub-structure system: SUK, UKB

ROD SYSTEMS

- › DETAN Rod system S460
- › DETAN Rod system stainless steel
- › DETAN Compression rod system

CONCRETE TECHNOLOGY

FIXING SYSTEMS

- › HALFEN Cast-in Channels: HTA, HZA
- › Balustrade fixings: HGB
- › Profiled sheets fixing channel: HTU
- › Corner guards: HKW
- › DEMU Fixing anchors: T-FIXX®, Bolt anchor
- › Lift-Box: HLX
- › Mechanical anchor bolt systems
- › Chemical anchor bolt systems

REINFORCEMENT SYSTEMS

Physical structural products

- › Balcony connection: HIT
- › Impact sound insulation units: HBB, HTT, HTF, HTPL

Reinforcement connections

- › Screw connection: HBS-05
 - › Universal connection: HUC
 - › Stud Connector: HSC
 - › Reinforcement coupler: MBT
 - › Precast coupler: HEK
 - › Loop Box: HLB
 - › Rebend connection: HBT
- #### Reinforcement technology
- › Anchor rail: HDB
 - › Column shoe: HCC, HAB
 - › Betojuster: HBJ
 - › Shear dowel: HSD

LIFTING SYSTEMS

Quick coupling systems

- › DEHA Spherical head lifting system: KKT
- › FRIMEDA Lifting anchor system: TPA

Threaded lifting systems

- › HD Anchor system: HD
- › Fixing anchor system: HA

INDUSTRIAL TECHNOLOGY

ADJUSTABLE MECHANICAL CONNECTIONS AND FRAMING

- › Mounting and Framing: HM, HL, HZM, HZL
- › Frame connectors: HVT
- › Cantilevers: KON
- › Pipe clamps: HRS
- › Pipe supports: HRG, HCS
- › Pipe base: RUK
- › Lift-off safety device: AHS

T-BOLTS AND ACCESSORIES

- › HALFEN T-bolts: HS, HSR, HZS
- › Locking plates: GWP

POWERCLICK FRAMING SYSTEM

- › System 63
- › System 41 + 22

VERSATILE FIXING SYSTEM

- › HALFIX: HFX



ALWAYS THERE FOR YOU

Want to find out more about HALFEN in specific countries?

You can find out all about HALFEN and our products and services on our website. It also contains our contact details as well as those for our international distribution subsidiaries and partners - all this under the same address:

www.halfen.co.uk

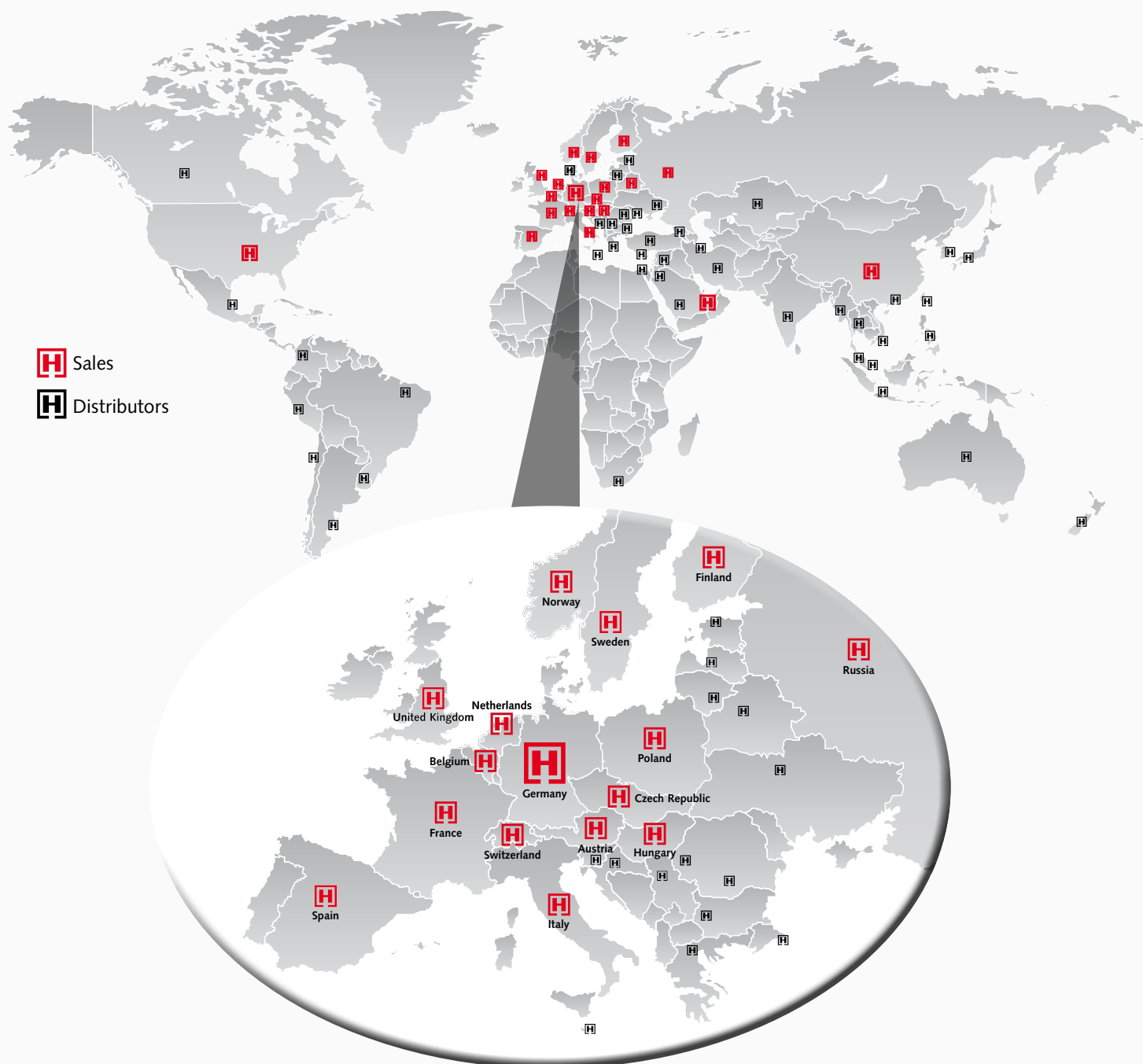


Come and take a look around.
We look forward to hearing from you!

HALFEN INTERNATIONAL

Serving the world from the heart of Europe

You can now rely on the **"MADE BY HALFEN"** quality in over 60 countries worldwide





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