

Leviat[®]
A CRH COMPANY


HALFEN

INDUSTRIAL TECHNOLOGY

HALFEN Products in application



We are one team. We are Leviat.

Leviat is the new name of CRH's construction accessories companies worldwide.



Under the Leviat brand, we are uniting the expertise, skills and resources of **HALFEN** and its sister companies to create a world leader in fixing, connecting and anchoring technology.

The products you know and trust, including the HALFEN Industrial technology, will remain an integral part of Leviat's comprehensive brand and product portfolio.

As Leviat, we can offer you an extended range of specialist products and services, greater technical

expertise, a larger and more agile supply chain and better, faster innovation.

By bringing together CRH's construction accessories family as one global organisation, we are better equipped to meet the needs of our customers, and the demands of construction projects, of any scale, anywhere in the world.

**This is an exciting change.
Join us on our journey.**

Read more about Leviat at Leviat.com

Our product brands include:

Ancon[®]

H
HALFEN

PLAKA

Imagine. Model. Make.

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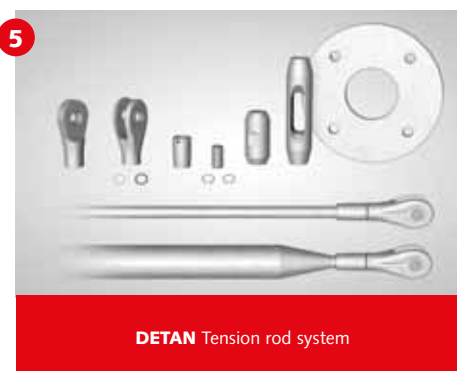
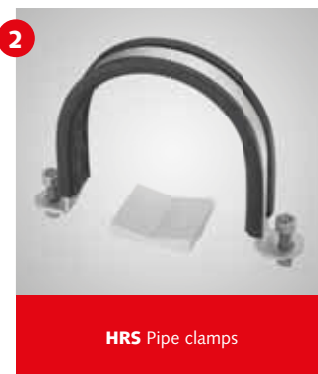
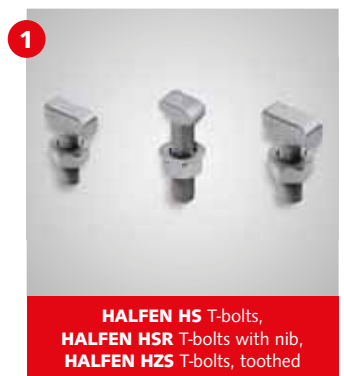


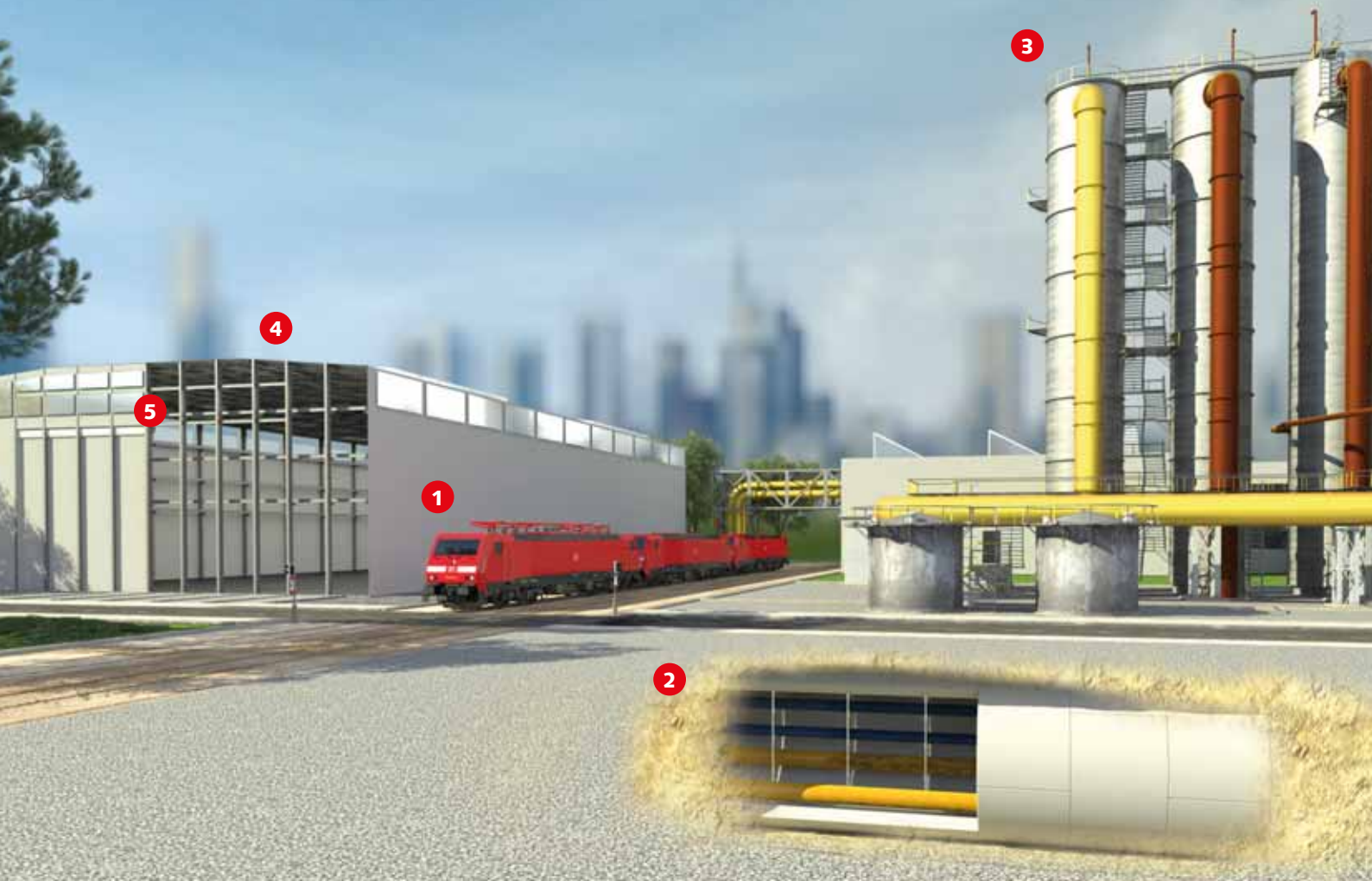
Contact information, planning tools and further details about our product brochures can be found on our website www.halfen.com

VERSATILE SOLUTIONS for the increasing demands of the future

The HALFEN Fixing system functions according to a meticulously designed modular principle. The system can be quickly adapted for different situations and can therefore provide solutions for numerous requirements for industry. The system is based on the tried and tested HALFEN Framing channels using matching HALFEN T-bolts and threaded plates.

This combination forms the basis for other systems – **HALFEN POWERCLICK** for factories and mechanical engineering, **HALFEN HALFIX** for multifunctional rooms and spaces and **HALFEN VERSOGRID** as an installation grid for under-ceiling structures. These all have one thing in common: they are all freely adaptable and are extremely time and cost effective.





VERSATILITY AT A GLANCE **from trains to the chemical plant**

Our products can be found almost everywhere; in trains, exhibition centres, tunnels, chemical plants etc. HALFEN Framing and mounting channel systems can be used in virtually unlimited applications and can always be adapted to the respective situation. That makes us an extremely **strong partner for all branches of industry.**

The picture above and the following pages illustrate selected examples where HALFEN Fixing systems have found successful application in industry.

A team of engineers is available to provide more detailed, one-on-one consultation for individual projects.

- 1 Transport
- 2 Infrastructure projects
- 3 Industrial buildings and facilities
- 4 Flexible design of spaces and buildings
- 5 Infrastructure, industrial projects



MECHANICAL ENGINEERING

High Demands

MECHANICAL ENGINEERING AND STRUCTURAL STEEL

Bolts and welded joints – these make up the majority of all fixing solutions in mechanical and plant engineering. Rigid, fixed connections can no longer keep up with modern, constantly evolving industry standards. Flexibility, adjustability and easy handling are among the most important requirements in mechanical and plant engineering.

This is precisely where we provide innovative solutions for various applications as used in transport or production facilities. Find out more on the following pages!

MORE FLEXIBILITY

- > Modular, future-proof construction method
- > Freely adjustable installation

OPTIMAL ADJUSTABILITY

- > Compensation of building tolerances
- > Use with different tolerances ranges
- > Freely adjustable connections

EASY TO USE

- > No special training required for installation
- > Installation positions and dimensions are easily modified



TRANSPORT – Track and road

In hardly any other industry is time efficiency as important as in the transport industry. Whether rail or road, we provide solutions for standardized modular assembly with short production times for a wide range of transport requirements.

The following are application examples for locomotive projects fit-out of train-carriages, cargo tie-down systems and ski-lift projects.



Products used

- > HALFEN HM/HZM Mounting channels (see page 40)
- > HALFEN HS/HSR/HZS T-bolts (see page 41)

ROOF COVER FIXINGS



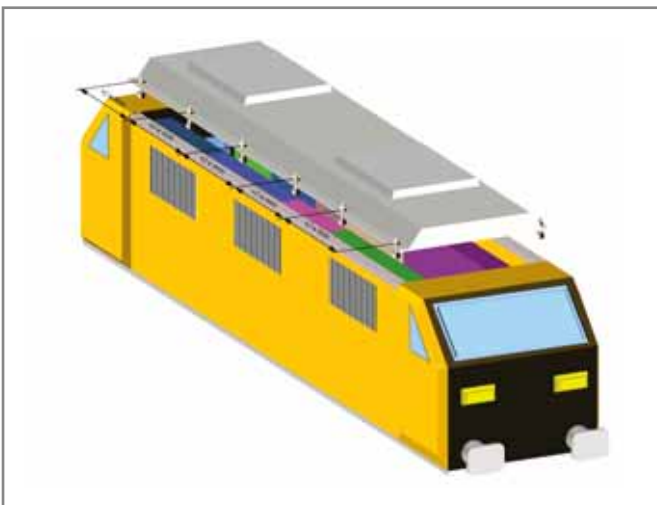
Application example:

✗ Requirements: Modern locomotives are equipped with replaceable module groups in the engine room, underbody and on the roof.

Fixing the roof mounted equipment to the body of the locomotive requires exact positioning of the bolt holes in both components; this places high demands on production. The bolt holes in the roof must be manufactured within a very narrow tolerance range to fit the bolt-holes in the locomotive body. This method of production is particularly cost-intensive.

✓ Solutions: The fixing solution is a combination of mounting channels and matching T-bolts. The system provides precise adjustment, without the need for close production tolerances.

The HALFEN Channels are welded to the locomotive body before further corrosion protection is applied. Roof modules can be bolted to the body at any point along the channel – quickly and easily, with no loss of installation precision. Over the past 20 years, more than 3,000 locomotives worldwide have been equipped with this system.



Easy access: Time saving maintenance



Roof fixings

MODULAR FIT-OUT SYSTEM



Application example:

✗ Requirements: Whether for passengers or cargo; the need for this type of vehicle to be flexible for different end-user requirements is critical. However, it is not economical to develop separate vehicle types for each individual purpose.

✓ Solutions: The platform construction method opens up numerous possibilities, for example when cargo needs to be secured for transport or for adaptable configuration of seating in railway carriages and buses. This system can even find application in theatres.

In road and rail vehicle production, one basic body design is all that is needed. On the basis of this initial platform the interior is then fitted out according to individual customer requirements. This adaptability applies not only to the initially installed equipment, but also to later modifications if the intended use of the vehicle changes.



The main benefits:

- > Easy to adapt to new requirements
- > Unrestricted interiors allow for easy fit-out
- > Minimum specialist knowledge required



Products used

- > HALFEN HM/HZM Mounting channels (see page 40)
- > HALFEN HS/HZS T-bolts (see page 41)



©Shutterstock

Example:
Ceiling, floor and wall channels for freely-adaptable fit-outs





MODULAR FIXING SYSTEM

The HALFEN Channel and bolt system provides a method for fit-out design that can be used in different vehicle types for application in modern locomotive production



Application example:

✗ Requirements: The demands on modern locomotive production are high. These demands vary according to each country, which means that vehicle types must always be individually adapted. This results in a large number of locomotives with different equipment requirements.

✓ Solutions: We offer a complete solution with its versatile channel system for modular and platform construction. HALFEN Mounting channels are welded directly onto the main body of the vehicle and subsequently treated with the same corrosion protection. This gives locomotive manufacturers a single platform to which different components can be reliably fixed using HALFEN T-bolts. Country-specific configuration, replacement of components during maintenance or modernization of components is effected quickly and easily. The locomotive's effective future service-life is ensured.



The main benefits:

- > Increased flexibility for installation of supporting frames
- > Individual adaptation
- > Reduced risks due to fewer custom-made products
- > Reduces the risk caused by using different tie-down systems from multiple international manufacturers

CARGO TIE-DOWN SYSTEMS

Safety is extremely important when transporting any loads: Dangerous cargoes must be securely fixed at all times over the whole cargo area to minimize the risk to others and possibly also the environment. HALFEN Mounting channels in combination with quick-release tie-downs ensure optimal secure and reliable fixing of cargo and also quick adjustment where needed.



Application example:

✗ Requirements: When cargo needs to be transported by road strict requirements must be met to secure the load. However, since the type of load often varies, the fixing points used to secure any loads to the truck or on to a trailer must also be adaptable.

✓ Solutions: Load-securing paraphernalia can be reliably attached to the vehicle using HALFEN Toothed mounting channels. The channels are welded to the vehicle frame and all load generated by the cargo and the vehicle movements are effectively transferred into the vehicle frame. This positive-locking solution ensures maximum safety while still allowing adjustable fixing.



The main benefits:

- > Adjusts to fit the load
- > Positive-locking tie-down connections
- > Tried and tested, proven tie-down system
- > Versatile fixing solutions



Products used

- > HALFEN HM/HZM Mounting channels (see page 40)
- > HALFEN HS/HZS T-bolts (see page 41)



Optimal use of cargo space



Tie-down attachment in a HALFEN Channel



Freely adjustable - secure fitting



CABLE SKI-LIFT STATIONS

High altitude applications:

DETACHABLE CHAIRLIFT OR GONDOLA CABLE LIFTS

HALFEN Fixing technology is used in ski-lifts all over the world, including the Pardatschgratbahn in Ischgl, Austria. The 3-S cable-lift conveys winter sports enthusiasts to an altitude of over 1,251 metres to the upper ski slopes; a world record at the time it was opened in the winter of 2014/2015. Nowadays, all Doppelmayr 3-S cable-lift bearing blocks are fitted using HALFEN Products.



The main benefits:

Benefit from the versatility of HALFEN Channels and HALFEN T-bolt connections!

- > Optimally coordinated, original components for maximum safety
- > Freely adjustable over the entire channel length: complete length of the channel can be used for tensioning
- > Faster start-up times with simple fine-adjustment
- > Reduction of problems caused by tolerance issues
- > Multifunctional components allow the number of in-stock spare parts to be reduced
- > Adaptable modules can result in less need of location-specific information

- > Planning can start earlier with reduced information thanks to increased flexibility
- > Adaptable modules result in short downtimes
- > Faster installation of standard modules to the steel structure



Products used

- > HALFEN HM Mounting channels (see page 40)
- > HALFEN HTA Cast-in channels



Application example:

✗ Requirements: For reasons of economy and to ensure short construction times, only standard components are used for any cable ski-lift project. These components must be easy, quick and safe to install. This is the only way to ensure these type of projects can be finished within the tight dead-lines of a few months; even at the highest altitudes on the planet. With constantly changing constraints or in the event of damage, it is also important to be able to make adjustments or repairs quickly.

✓ Solutions: HALFEN Cast-in and mounting channels in combination with HALFEN T-bolts are a tried and tested solution for fixing standard, adaptable, bearing block modules for application under extreme conditions such as those experienced in cable ski lifts. If damaged, blocks can be replaced immediately without any mechanical reprocessing of the connections.



Pictures: 3-S Pardatschgratbahn, Ischgl, Austria



HALFEN Channels compensate manufacturing and building site tolerances.



A modular standardization of the in-stock components was only made possible with the HALFEN Channel. Components no longer have to be individually machined in a time-consuming process, but are immediately installed.



Our fastening systems are the product of choice when it comes to on-site adaptable systems - whether for low loads, high loads or dynamic loads.



Thanks to the HALFEN Channels, components with a very high load distribution can be precisely positioned and readjusted at any time. Anchor and mounting channels were used here.



PRODUCTION PLANTS

To remain efficient, production facilities must also be adaptable. Converting to new production runs is particularly time-consuming with standard rigid systems. No company can afford losses to production caused by extended downtimes. **HALFEN Adjustable bolted connections** provide a cost and time-saving system that enables quick modifications to production systems with parts manufactured off-site, which require no special training or tools to install.

MATERIAL HANDLING



Application example:

✗ Requirements: Circular conveyor systems are used to elevate packages to a higher floor level, for example in baggage conveyor systems at airports or package handling in logistics centres. Previously, the circular conveyor system was manufactured especially for a specific order - the central support column had to be adapted to the conveyed material (i.e. the package size). Time-consuming planning and lengthy manufacturing processes quickly made the production of circular conveyors inefficient.

✓ Solutions: Because of the continuous lengths of the HALFEN Mounting channels along the centre column, one column design will now suit all customers. The centre columns can also be pre-produced without a specific order; this optimizes production capacity and compensates fluctuations in production. The end result is shorter delivery times and significantly less complex planning. Positioning the cantilever arms can be done directly on-site during assembly, as can any future adjustments or modifications.



Circular conveyors systems: Flexible adjustment of conveyor lines according to requirements and applications



The main benefits:

- › Optimal use of production capacity
- › Adaptable standard solution that suits most customers
- › Shorter delivery times
- › Quick modification of production processes
- › No conflict between standard production parts and customer specifications
- › Reduces the risks occurred when using several international suppliers
- › Fewer problems as fewer custom products are required

FIXTURE TECHNOLOGY



Application example:

✗ Requirements: In mechanical engineering, dedicated work stations are often used for clamping workpieces. These are usually costly one-off productions, which only pay off with large volume mass-production. Locking plates are often used to ensure that the basic structure can be used as universally as possible. With very large workpieces, however, they also quickly reach their limits.

✓ Solutions: With the HALFEN Channel-bolt fixing system it is possible to manufacture a clamping device for larger-sized workpieces. These clamping devices are freely adjustable. They ensure that different size workpieces are always reliably clamped.



The main benefits:

- > Basic configuration for diverse requirements
- > Manufacturer and type independent standard components
- > Precise, finely adjustable – no costly machining
- > Short change-over time – high productivity
- > Speedy implementation of innovations
- > Reduced planning and paperwork, less time and energy required when re-fitting, implementing modifications etc.



Products used

- > HALFEN HM Mounting channels (see page 40)
- > HALFEN HS T-bolt (see page 41)



Adjustable clamp fixtures for welding stations

PRODUCTION LINES



Easy installation and adjustment of bearing blocks using Halfen Mounting channels and T-bolts



Application example:

✘ Requirements: Roller bearings are a standard feature in mechanical engineering. These bearings must always be exactly aligned with the shaft to ensure they are stress-free to avoid damaging the bearing. Production of the holder for bearing blocks in which roller bearings are located is generally very complicated.

✔ Solutions: The System allows easy alignment of the shafts with the bearing blocks to ensure a stress-free system. The channel-bolt system allows quick replacement and realignment of the roller bearings during maintenance. Replacing standard components from different manufacturers or new model series – even with other hole layouts – can be achieved easier and with more precision than previously.



The main benefits:

- > Manufacturer and model independent standard components
- > Fine adjustment capability allows high precision
- > Quick modification without expensive machining
- > Allows quick production switchover
- > Cost-effective rough tolerance production



Products used

- > HALFEN HM Mounting channels (see page 40)
- > HALFEN HS T-bolts (see page 41)

Escalators, lifts and more:
FURTHER APPLICATION EXAMPLES



HALFEN Channels used in escalator construction



HALFEN Channels and bolts used in a lift shaft



Adjustable connection on a steel frame

INFRASTRUCTURE

A perspective view of a long, curved metal structure, possibly a bicycle rack or a tunnel, with a red banner at the top containing the word 'INFRASTRUCTURE'. The structure is made of silver metal and has a repeating pattern of curved sections. The background is a plain, light-colored wall.

Versatile fixing system

INFRASTRUCTURE

Modern industrial societies also need efficient and reliable infrastructure. This includes utility tunnels, noise barriers, bridges and other traffic facilities. Our Systems provide optimum solutions that are economical and thanks to their adaptability, durable and long-lasting.

Fixings in tunnels must satisfy the highest requirements, i.e. have a long service life; depending on various influences and sustainability. We solve this with versatile bolt connections, its easily-adjustable framing system and pre-assembled connection elements.

- › Economical and long-term solutions
- › Reliable even when subjected to dynamic loads
- › Planning reliability with tried and tested HALFEN Products
- › All components available from one source
- › High degree of standardization in the bolt connections reduces costs
- › Fine adjustment requires just seconds
- › Freely selectable installation positions and dimensions

UTILITY TUNNELS



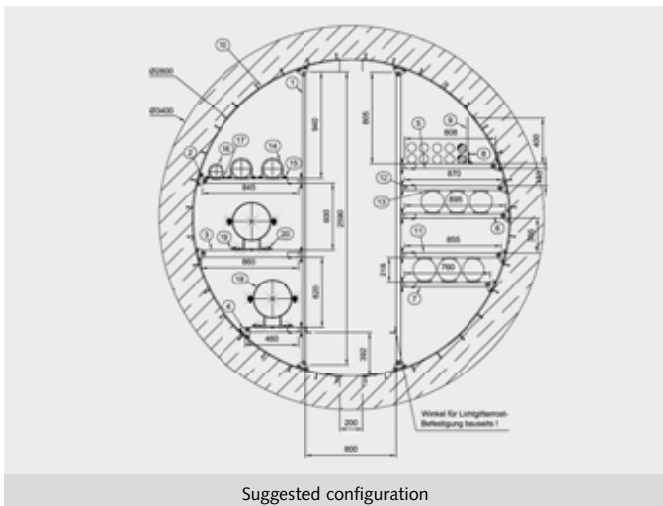
Application example:

✗ Requirements: In utility tunnels numerous cables and pipes must be permanently and safely installed. Initially the sheer number of systems that need installing can prove to be a challenge.

✓ Solutions: HALFEN Cast-in channels with a specified radii can be cast directly into the utility tunnel segments during production. With this system of channels and T-bolts, utility services are easily fixed to the sides of the tunnel. Another solution is the option of using a retrofitted clamping ring. The post-installed HALFEN Channels provide a base for cantilevers, pre-assembled frames or can be used with the HALFEN Powerclick system.



HALFEN Cantilevers as adjustable pipe supports



Suggested configuration



The main benefits:

- > Future-proof solutions
- > No complicated drilling required
- > Efficient and fast installation of support structures
- > On-site adjustable fixings
- > For cable-trays, fire fighting equipment, supply and waste disposal systems
- > Optimal use of available space



Products used

- > HALFEN HZA toothed anchor channels or HZM toothed framing channels (see page 40)
- > HALFEN HS/HZS T-bolts (see page 41)
- > HALFEN Cantilever (see page 44)



The efficient HALFEN System



ENVIROMENTAL



Application example:

✗ Requirements: To erect noise barriers quickly and efficiently, a meticulously designed, modular fixing system is required. The system should use as many standardized elements as possible, which can also be used in other similar projects.

✓ Solutions: Using standardized parts HALFEN Fixing systems provides numerous possibilities for cost-efficient installations which are freely adjustable. The standard sound absorbing elements consist of two-layers of high density hydrophobic rock wool, encapsulated in a structural frame covered with steel mesh and UV-resistant mesh fabric.



Cost-effective HALFEN fixing concept using standard components



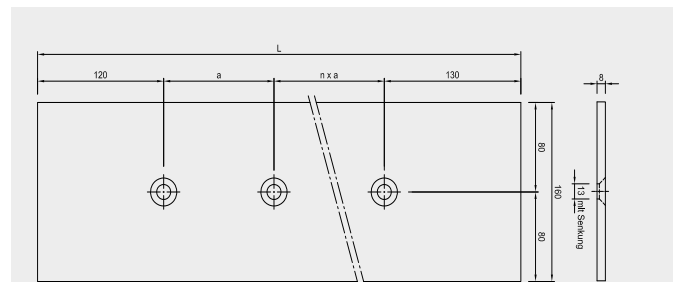
Noise reduction elements with planters mounted on easily adjustable brackets made of durable stainless steel

Pictures: Kanton Aargau, Abteilung Tiefbau



Products used

- > HALFEN HM/HZM Framing channels (toothed) (see page 40)
- > HALFEN HS/HZS T-bolts (see page 41)
- > HALFEN Cantilevers (see page 44)



| L | a | n | Number of holes |
|------|-------|---|-----------------|
| 1040 | 395 | 1 | 3 |
| 1540 | 430 | 2 | 4 |
| 2040 | 447,5 | 3 | 5 |
| 2540 | 458 | 4 | 6 |
| 3040 | 465 | 5 | 7 |
| 3540 | 470 | 6 | 8 |

BRIDGES



Pipe supports efficiently adapted to the application



Drainage pipes installed with minimal drilling



Upgrade and replacement of pipes without damaging bridge components and impacting the overall appearance

TRAFFIC INFRASTRUCTURE



Fixings where they are needed; however often they change



Products used

- > HALFEN HM/HZM Framing channels (toothed) (see page 40)
- > HALFEN HS/HZS T-bolts (see page 41)
- > HALFEN Powerclick (see page 42)
- > HALFEN Cantilever (see page 44)



INDUSTRIAL PROJECTS

Improving efficiency IN INDUSTRY

Increased efficiency despite growing demands for quality, safety and low-costs. Industry needs to meet and overcome these challenges; now and in the future. Prerequisite is a highly-developed, intelligent standardized system, which is easily adapted to the respective requirements.

The **HALFEN Powerclick** system has proved its worth for many years now. Above all the HALFEN Powerclick system plays an important role in pipe supports in large industrial plants, and especially so in chemical plant projects.

The system is upgradable, allows precise adjustment and therefore meets the high demands to further industry's need for adaptability in times of globalization and cost efficiency.

- > Minimal number of different components and types, can be modified for different loads
- > Pre-assembled with quick-assembly bolt connections
- > Easy multifunctional application



POWERCLICK



Application example:

✘ Requirements: Especially in industrial applications, small and medium bore pipe runs are critical systems that have to be simultaneously safe, reliable, efficient and designed to allow access at any time (for maintenance and repair). Planning normally involves a lot of time and effort. Complicated and complex fixing systems can also result in costs for storage and lengthier assembly times.

✔ Solutions: We have developed a modular system for construction of industrial pipework that enables hundreds of different support variants with only 12 multifunctional components. This system has the advantage of safety, efficiency and speed at all stages of a project. The HALFEN Powerclick System is a method for pipe support in industrial pipe support construction and has been proven in more than 100 large-scale industrial projects.

> Efficient Design

Planning time is considerably reduced when using on-site adjustable systems. Real-world statics (2 and 3 dimension) facilitate planning and installation. We provide support with component libraries for common digital planning tools (CAD).

> Efficient Logistics

All standard articles are available at short notice. On-site installation can start almost immediately.

> Efficient Installation

With one basic HALFEN Channel type and only 12 different connection components, 90% of all support types are possible. The multifunctional connection elements are quickly installed. All connections can be adjusted with millimetre precision. All connecting parts including the beam clamp for connecting to the main structural steel girder are form-locking.

> Efficient Compatibility

The HALFEN Powerclick System 63 is compatible with the 41 and 22 Systems. Various utilities, cable trays, process control systems and measuring and control technology can be economically combined in the overall support concept. We also provide accessories tailored to the HALFEN Powerclick system. These include pre-assembled pipe clamps, friction bearings and cantilevers.

> Efficient Maintenance

Benefit from low storage requirements and uncomplicated up-upgrades, fast setups and short downtimes for your plant. With only a small number of different basic components the HALFEN Powerclick System is nevertheless very adaptable for use in almost any application.



Also suitable for large pipe diameters



Utility tunnel



Products used

- > HALFEN HZA toothed anchor channels or HZM toothed framing channels (see page 40)
- > HALFEN HS/HZS T-bolts (see page 41)
- > HALFEN Cantilevers (see page 44)

Application: POWERCLICK IN SERVICE TUNNELS



Application example:

✗ Requirements: Installing fixings in infrastructure tunnels must be possible without drilling. Therefore another method must be used.

✓ Solutions: An anchor channel ring consisting of two toothed half-segments is installed directly in the canal pipes. The Powerclick framing system can be attached to the anchor channel ring for use as a versatile frame.



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VERSATILE FIXING SYSTEMS

Innovative System

ADAPTABLE, VERSATILE APPLICATIONS

With innovative systems like HALFIX and VERSOGRID, we tackle various challenges of today. These systems make rooms and spaces more adaptable.

The HALFIX variable positioning system allows multiple use of wall space and provides a solution to inefficient use of available real estate. The VERSOGRID Installation grid, in contrast, allows ceiling space to be used, for example in event and trade fair venues or railway stations.

- > Innovative solution for versatile use of ceiling and wall spaces
- > Future-proof fixing systems
- > All-in-one system with accurately manufactured accessories



HALFIX – the flexible positioning system



Application example:

✗ Requirements: At a time when the population is steadily on the increase and while at the same time suitable building space for education and sport is limited, the optimum use of available space becomes more and more important. In addition, inflexible rooms in existing buildings are often only used for about 20 to 40% of the time; most of the time these spaces are being left empty. This is where solutions are required that are versatile, future proof and economical.

✓ Solutions: HALFEN HALFIX can be used wherever structures, rooms or buildings have to be quickly adapted to new requirements. The system consists of the HALFIX Channel including connection brackets either for floor-to-ceiling or for wall installation, as well as the HALFIX fastening system. The System is based on the tried and tested HALFEN 53/34 Channel using a specially developed inlet and a matching adapter bolt. The adapter bolt allows load bearing elements to be reliably and safely fixed or quickly removed from the inlets in a matter of seconds. The system allows switching between different applications in the shortest possible time. For example, various type of sports equipment and load-bearing equipment can be easily and quickly attached and detached when no longer needed.



The main benefits:

- › Create multifunctional spaces
- › Patented, friction-locking system for absorbing loads
- › Alternating between different applications in shortest possible time
- › Future-proof solution
- › Alterations in the use of space without affecting the building fabric or needing renewed planning by engineers and architects
- › Fast, low-cost and economical modernization
- › No individual static verification required for changed layout
- › Increased utilization of available space
- › Modification requires no special tools or skilled personnel



*The concept illustrated, which is based on the HALFEN HALFIX system was installed by On Top Klettern GmbH. (www.wandlungsfähigerraum.de.)



HALFIX Channel assembly

Depending on the spatial and structural specifications, select either the channel connection for floor-to-ceiling installation or the channel connection for wall installation. As soon as the channel structure has been installed, the space can be used for a multitude of purposes.



HALFIX Panel connections

Flat connections brackets are available for fitting climbing walls, acoustic walls and shock absorbing padded walls etc.



HALFIX Fixing systems

HALFIX Power System

The Power fastening system consists of 2 power inlets and the power attachment element. These components form a unit which is used for connecting slacklines, ropes or climbing nets. The system was designed as a slackline suitable, heavy load anchorage according to DIN 79400.



HALFIX Classic System

The Classic Inlet has almost unlimited and very diverse applications. It is a flexible fixing point and can be used for various types of leisure or sports equipment, to connect room dividers or other innumerable paraphernalia.



HALFIX Accessories

Protect channel and Inlet covers to prevent fingers catching and the risk of injury resulting therefrom

4 hole adapter plate for quick erection of panel elements



Areas of application

- > Open-plan office space
- > Stadiums
- > Fitness/Leisure centres
- > Wall climbing
- > Rehabilitation institutes
- > Multi-function buildings
- > Television studios
- > Museums
- > Fit-out system for retail
- > Classrooms and multi-purpose rooms in schools and day-care centres
- > Trade fairs venues
- > etc.

Versatile solutions for large hall structures: HALFEN VERSOGRID

Whether in exhibition halls, train stations and airports or other large indoor venues with fluctuating public traffic, suspension systems must be designed for maximum flexibility and adaptability. Roof and ceiling elements—beams, girders, existing building services or unevenness in the main building structure – often make installation difficult when large display screens or panels, loudspeakers or spotlights need to be installed.

HALFEN VERSOGRID provides an innovative solution: The installation grid creates a level plane below concrete roofs and steel girder structures; requires minimal time and effort to install.

The individual components with a weight of only 5.5 kg/m are connected and secured without requiring any tools. The double slot profile allows load-bearing elements to be fixed under the grid using suspension ring bolts. Cable ducts and other media supply components can be fixed on top of the grid system. Individual profile elements are easily and quickly removed and replaced. This allows necessary repairs, e.g. to media supply lines to be carried out quickly and efficiently. The large selection of RAL colours for the powder coating also ensure a unique and overall very aesthetic design.



The main benefits:

- > The light-weight main profiles and the cross elements only weigh 5.5 kg per metre.
- > Simple and quick installation and removal of the cross elements; no bolts required.
- > Suspension is also possible via the cross elements, if, services utilities e.g. are located above the main profiles.
- > Minimal visible joints as all butt joints have ± 1 mm longitudinal tolerance to allow for temperature expansion and installation tolerances.

The concept behind this innovative system

The HALFEN HVG VERSOGRID Installation grid is a system for installation of lighting and media equipment. It is ideal for regular configuration and re-configuration of suspended loads. The double slot profile allows components to be fastened to both the top and bottom over the entire length of the profile.

Depending on load requirements, grid spacings between 1.0 m and 6.0 m are possible. Using a single channel type for both the main profiles and cross elements provides a flush installation plane. This makes the cross elements equally suitable for suspension.

Using the system components the installation grid is fastened either to concrete with dowels or with clamps to steel girders.

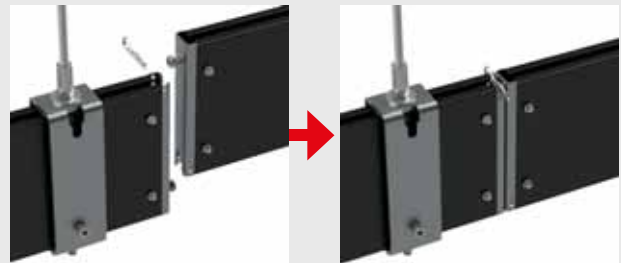
No tools required; interlocking installation



The main profiles and cross elements are fixed using a bolt-free, interlocking connection element.

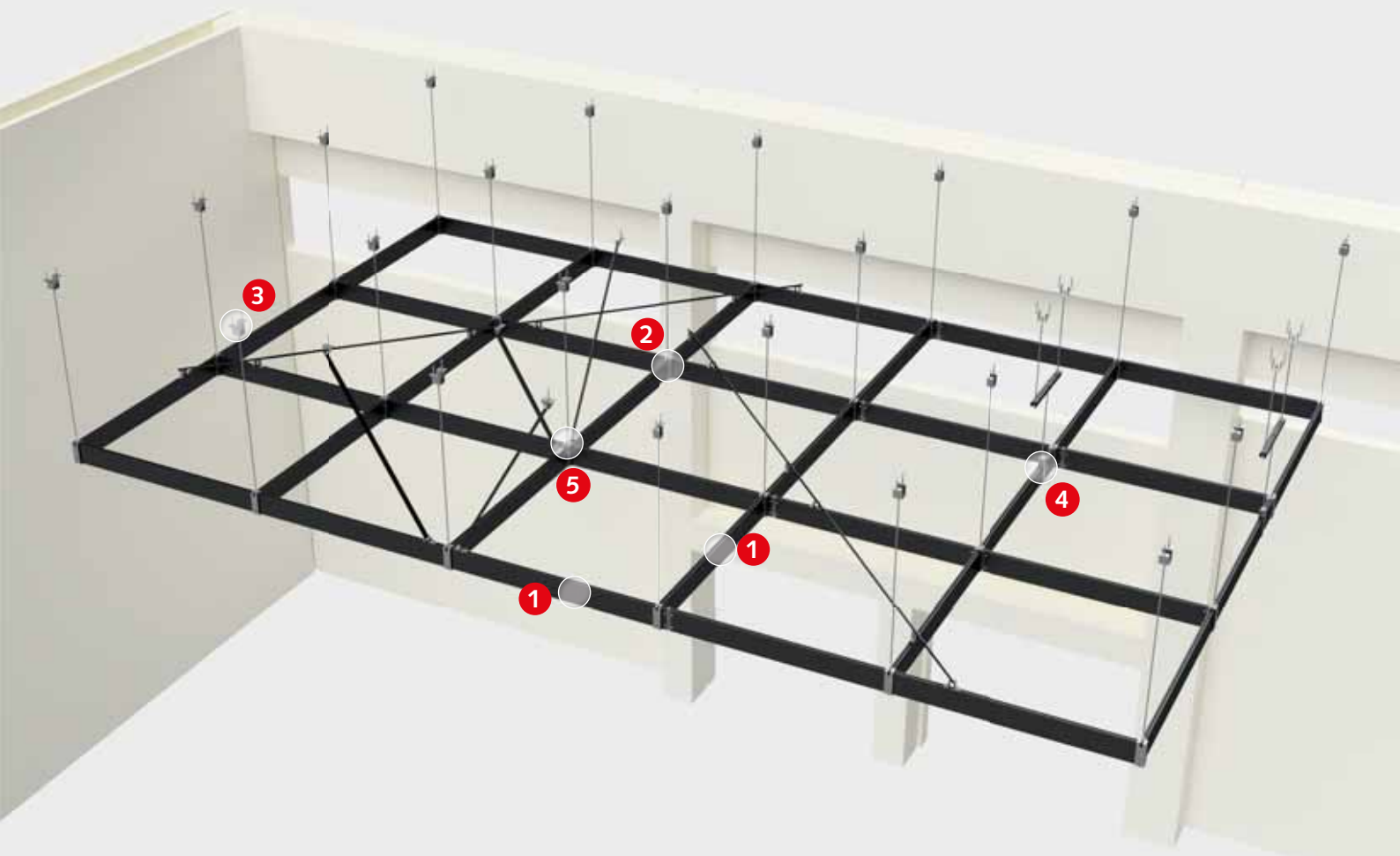
The lightweight profiles can therefore be attached by one person in minimal time without requiring any tools. When installation is complete, the connection is secured against accidental separation using R-clips (split pins).

Connecting the main profiles:

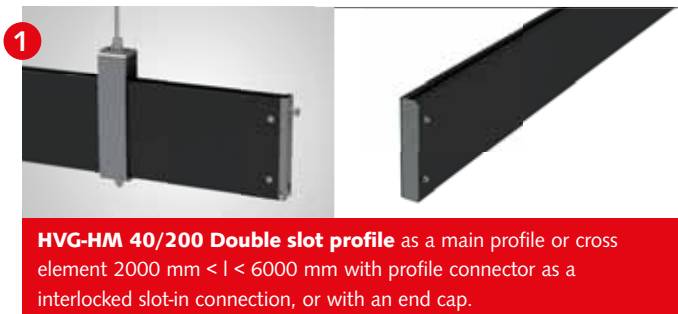


Connecting the cross elements:

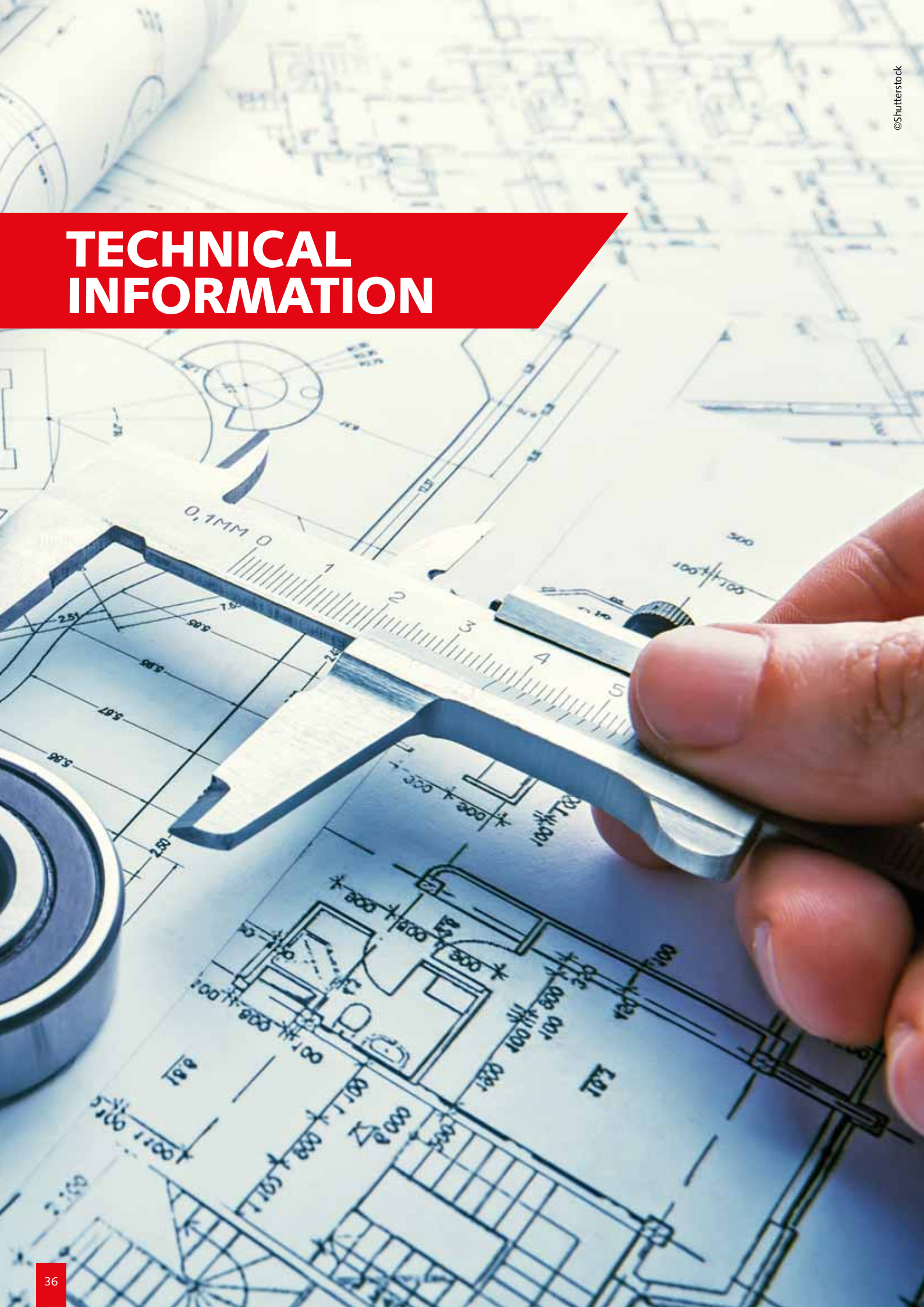




SYSTEM OVERVIEW



TECHNICAL INFORMATION



A look behind the applications:

HALFEN FIXING SYSTEMS

On the previous pages, we illustrated a wide range of industrial situations where versatile fixing solutions were used. In this section we take a look at the respective fixing system behind the application.

Further information on all HALFEN Products and systems can be found in our technical catalogues at www.halfen.com.

HALFEN PRODUCTS OVERVIEW:

- > HALFEN Framing and Mounting channels
- > HALFEN T-bolts
- > HALFEN Powerclick
- > HALFEN Cantilevers
- > HALFEN Pipe clamps

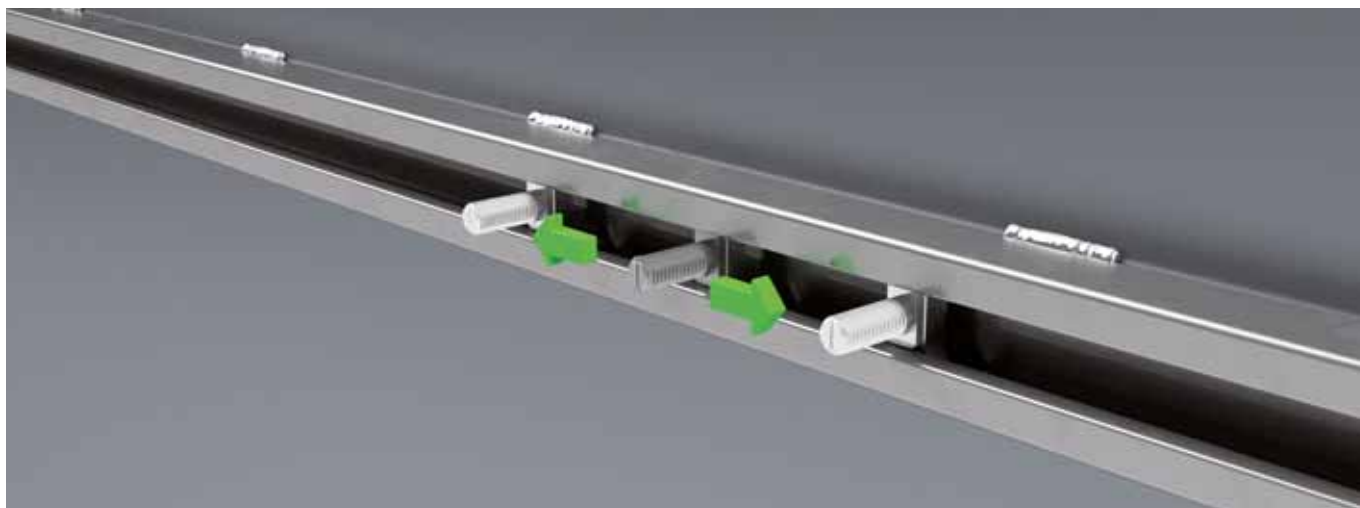
The Technology behind the product

HALFEN FIXING SYSTEM

Whether in mechanical engineering, vehicle and plant construction, in the chemical industry or energy sector – all applications are based on a simple but ingenious system; freely adjustable connection of channels and t-bolts.

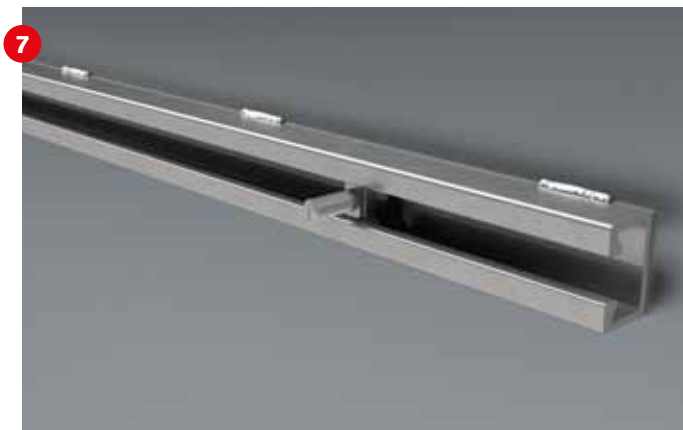
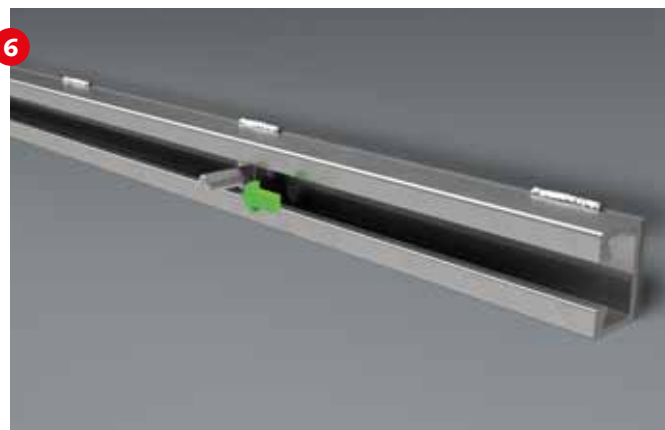
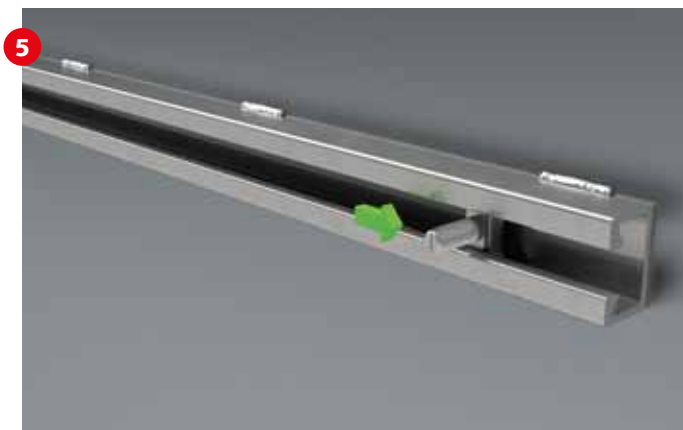
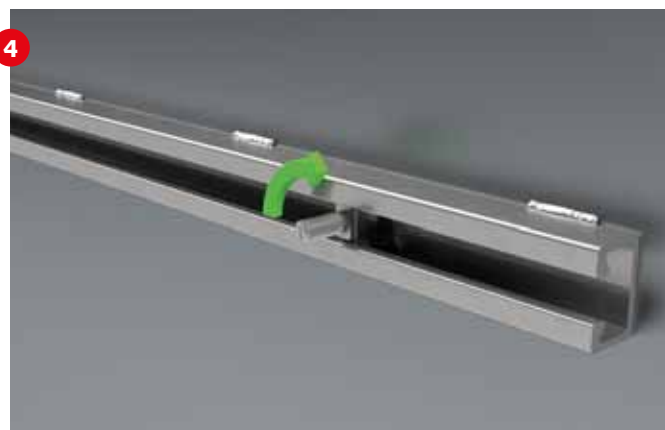
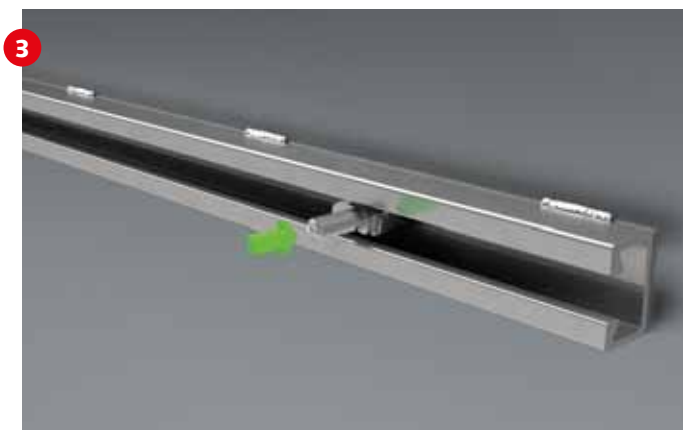
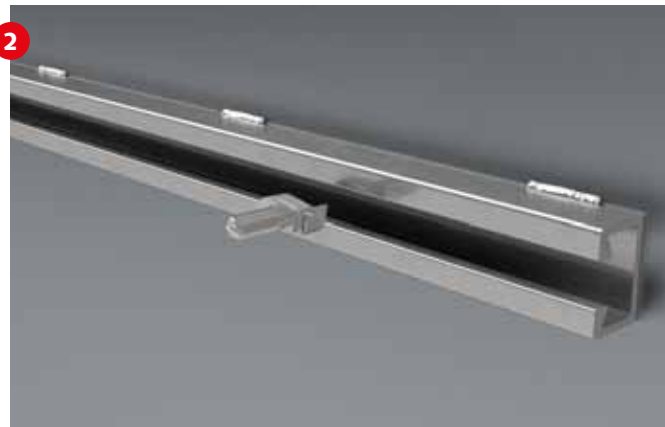
The system is a **high-capacity mechanical fastening system**. Various components or assemblies (here as an example a 90 degree angled bracket) are fastened to the channel using a HALFEN T-bolt. The T-bolt is simply inserted into the channel at any point along the channel slot and rotated 90°. The shape of the bolt head is designed to prevent it from turning any further. Visual verification of correct installation is provided by a notch on the end the shaft. The notch must be at right-angles to the longitudinal direction of the channel. The position and fixing point of the T-bolt can be easily changed by loosening the nut and moving the T-bolt; this allows free adjustability over the full length of the channel.

Various **channels, bolt types** and accurately fitting accessories allow individual solutions and a multitude of possible application situations.



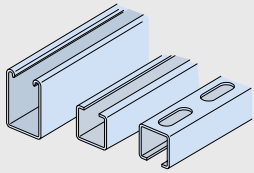
The main benefits:

- > Full flexibility when positioning, adjusting and dimensioning the bolt connections
- > Selectable corrosion protection:
 - a) Pre-galvanized framing channels for low-duty requirements
 - b) Hot-dip galvanized mounting channels for heavy-duty requirements
 - c) Stainless steel (A2, A4, HCR) framing and mounting channels for maximum requirements
- > Quick assembly and adjustability of system and connection components
- > Simple modification or upgrading of whole systems without any on-site machining required
- > No specialist trade required on-site for assembly and modification work
- > On-site assembly and modification work is dust and noise free
- > Even after bolting, all system components fully retain their corrosion protection
- > A large selection of standard profiles with a range of static and dynamic load capacities

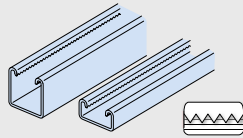


Available in various versions: HALFEN FRAMING CHANNELS

COLD-ROLLED FRAMING CHANNELS



HM, HL Channels



HZL, HZM Channels,
toothed

Cold-rolled channels are particularly suitable for economical use for low loads. They are available with slotted holes or in a standard version with no holes.

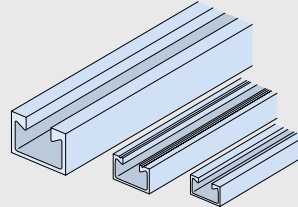
HM/HL Framing channels

- > Particularly economical number of channel types

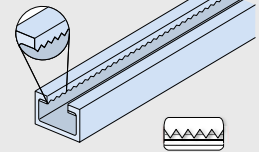
HZL/HZM Framing channels (toothed)

- > For loads in channel longitudinal direction
- > Non-slip connection for higher demands on the channel

HOT-ROLLED MOUNTING CHANNELS



HM Channels



HZM Channels
toothed

Hot-rolled channels can also be used for large as well as for dynamic loads; also suitable for welding.

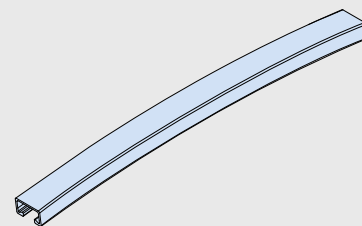
HM Mounting channels

- > For transferring high tension loads
- > Also suitable for longitudinal load transfer when used in combination with the nibbed HSR T-bolt (carbon steel)

HZM Mounting channels (toothed)

- > For high loads in channel longitudinal direction
- > Mechanical load transfer in 3 planes

CURVED FRAMING CHANNELS



- > Curved channels can also be made to customer specifications
- > Custom-made products are planned and produced for specific projects.
- > Avoids time-consuming modification, drilling or thread cutting in already-assembled, corrosion-protected components

Material specification

- WB** = Steel, mill finished
- FV** = Steel, hot-dip galvanized
- SV** = Steel, pre-galvanized
- A2** = Stainless steel (Austenite microstructure)
- A4** = Stainless steel (Austenite microstructure)
- HCR** = Stainless steel, HCR "High Corrosion Resistant" (Austenite microstructure)

Precise fit for all channels:

HALFEN T-BOLTS FOR ALL APPLICATIONS

HALFEN HS T-BOLT (STANDARD)

- > Suitable for all profiles
- > Load possible in two directions
- > Marked at the shaft end with one notch



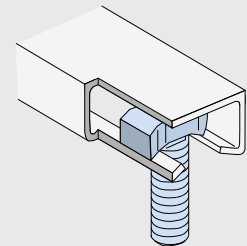
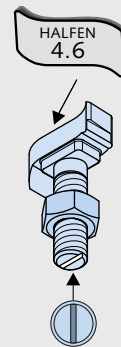
strength class 4.6/8.8
electroplated with special coating chrome (VI) free (GVs)
or hot-dip galvanized (FV)



strength class 70
stainless steel A4
corrosion resistance class III/medium

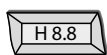


strength class 50
stainless steel HCR = high corrosion resistance (1.4529/1.4547)
corrosion resistance class V/very high

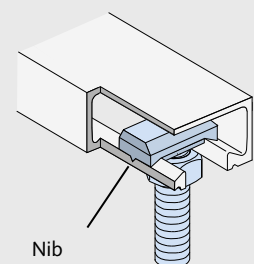
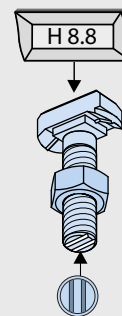


HALFEN HSR T-BOLT (NIBBED)

- > Only for hot-rolled profiles from the heavy-duty support system 40/22, 50/30, 52/34, 72/48
- > Only for carbon steel WB and FV
- > Non-slip: nibbed T-bolt increases load transfer in longitudinal direction
- > The hammer head prevents unintended turning of the bolt under vibration
- > Load transfer in longitudinal direction of the channel in accordance with the expert report
- > Marked at the shaft end with two notches



strength class 8.8
electroplated with special coating chrome (VI) free (GVs)
or hot-dip galvanized (FV)

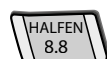


HALFEN HZS T-BOLT (TOOTHED)

- > Teeth in the underside of the T-bolt head interlock with matching teeth in the channel lips, providing mechanical load transfer in the longitudinal direction.
- > Marked at the shaft end with two notches



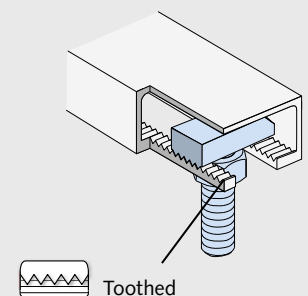
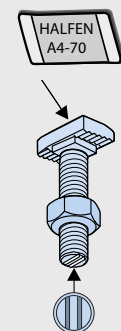
strength class 70
stainless steel A4
corrosion resistance class III/medium



strength class 8.8
electroplated with special coating Cr (VI)-free (GVs)
or hot-dip galvanized (FV)



strength class 70
stainless steel FA = Ferrit-Austenite (Duplex-steel, 1.4462)
corrosion resistance class IV/high



Versatile, pre-assembled framing system: HALFEN POWERCLICK

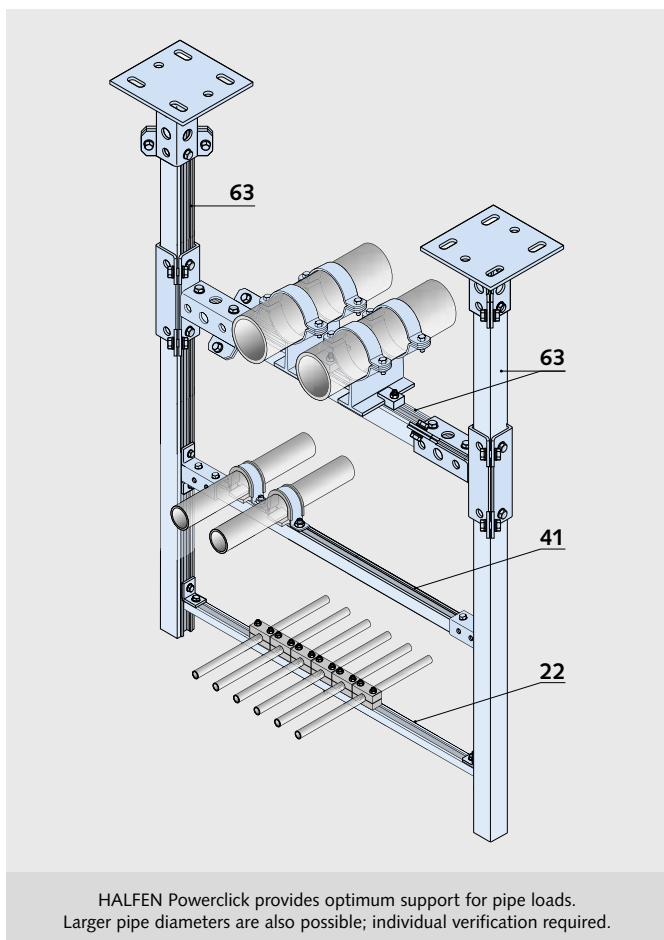
HALFEN Powerclick is a modular system and was specially developed for industrial piping support.

The system consists of only a few, multifunctional components that allow hundreds of different support variants - efficient, proven and optimally suited for fast and efficient configuration or later upgrades!



The main benefits:

- > Time-efficient, fast assembly
- > System consists of only a few, multifunctional components
- > Smaller parts are delivered pre-assembled
- > Fast start-up times, short downtimes
- > Further components can be fastening at any point in the channel (fully adjustable)



HALFEN Powerclick provides optimum support for pipe loads. Larger pipe diameters are also possible; individual verification required.

THREE SIZES – ONE SYSTEM

With three profile sizes (22, 41 and 63) the most economical solution for every load level is always easy to find. Different pipe diameters can be used within one design structure.

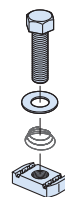
Three basic profiles:



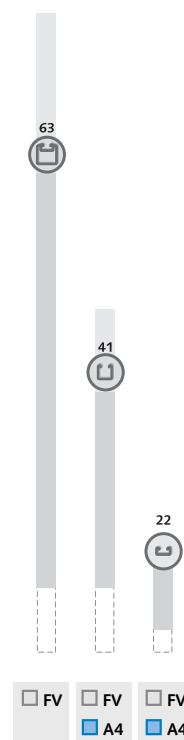
compatible connecting components and extensive accessories



one type of POWERCLICK bolt for all applications (pre-assembled)



the efficient HALFEN Powerclick system



HALFEN Powerclick: SYSTEM OVERVIEW

Powerclick System 41



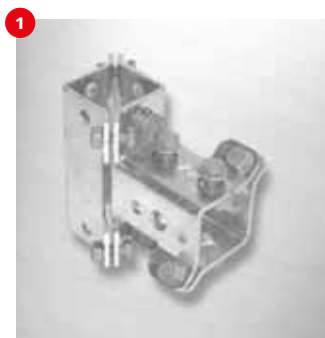
Pre-assembled connectors –
user-friendly for the planner, and a time-saver on-site.

Powerclick System 63

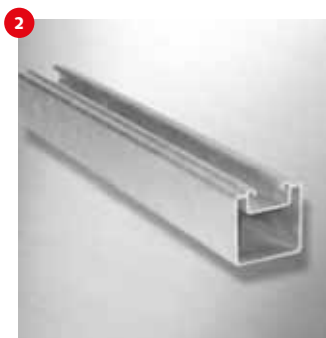


Unique system of connector elements with gripping characteristics
for optimum transfer of bending moments. Load capacities according to EC3
and up-dated according to the new pressure equipment guidelines 2014/68/EU.

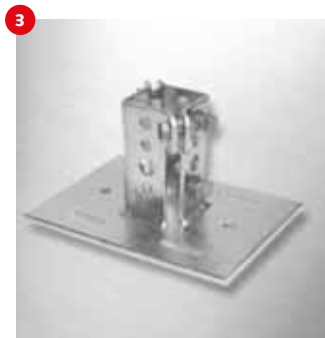
Fewer components, maximum application: OVERVIEW OF SYSTEM COMPONENTS



Corner connector for
three-dimensional supports



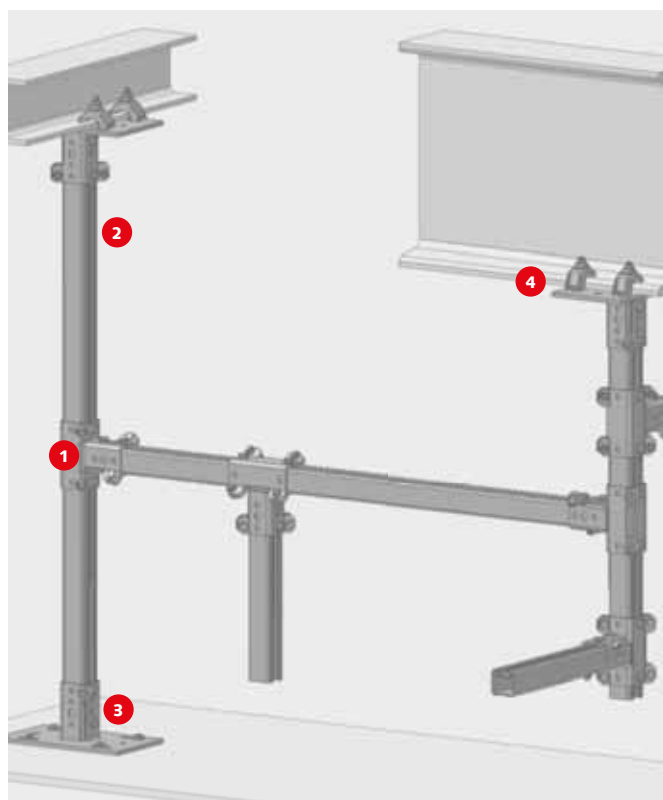
Framing channel for all
pipe support systems



Support foot for all
connection types



Beam clamp for all
beam sizes

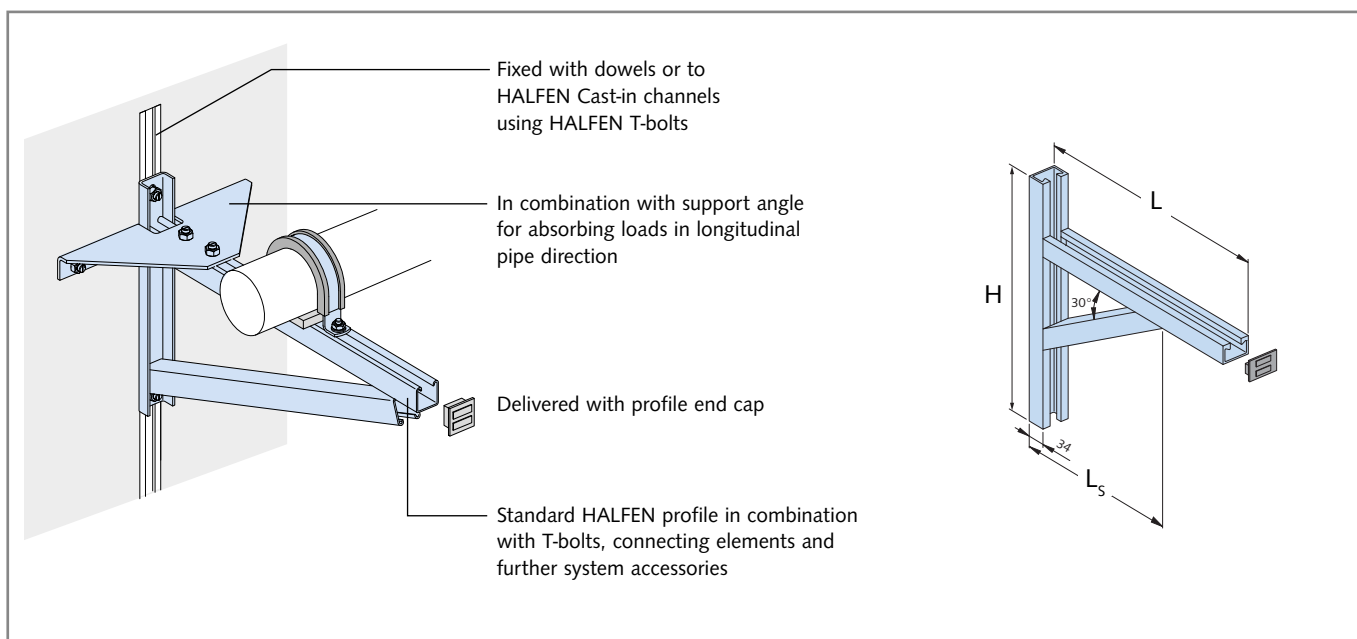
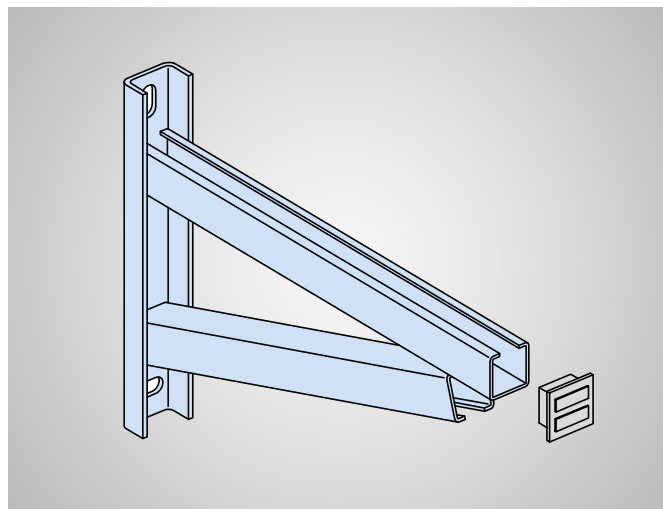


Only 4 different basic elements suffice to create a main support structure
12 construction elements for 90% of all supports

Made from framing channels: HALFEN CANTILEVERS

HALFEN Cantilevers are manufactured using standard HALFEN Framing channels and therefore also have the same advantages of fast, safe and adjustable assembly.

The cantilevers are used as an all-in-one support system for piping and utilities. The high-quality corrosion protection (hot-dip galvanized or stainless steel) is unaffected by installation and adjustment.



Material specification

- FV = Steel, hot-dip galvanized
- A4 = Stainless steel (Austenite microstructure)



Dimensions

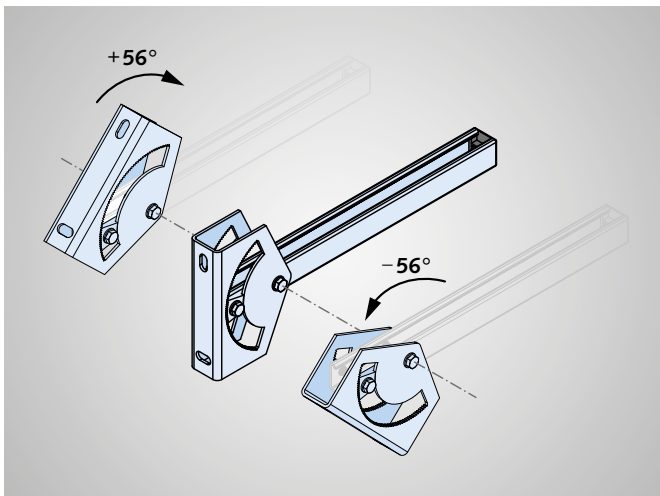
| | |
|------------------|------------------|
| Cantilever 52 | 500 mm – 1100 mm |
| Cantilever 41 | 175 mm – 775 mm |
| Cantilever 28/36 | 100 mm – 700 mm |

All lengths listed correspond to our standard elements.
Custom orders are available on request

Cantilever brackets to suit any angle: HALFEN ADJUSTABLE CANTILEVER

The HALFEN Adjustable cantilever can be freely rotated to an angle of $\pm 56^\circ$. This allows the cantilever to be quickly and reliably adjusted to the correct installation position even with curved or inclined wall surfaces. A positive load transfer to the support structure is ensured through the toothed back.

The weld-free cantilever consists of a toothed back part and a HM 41/41 Framing channel cantilever arm.



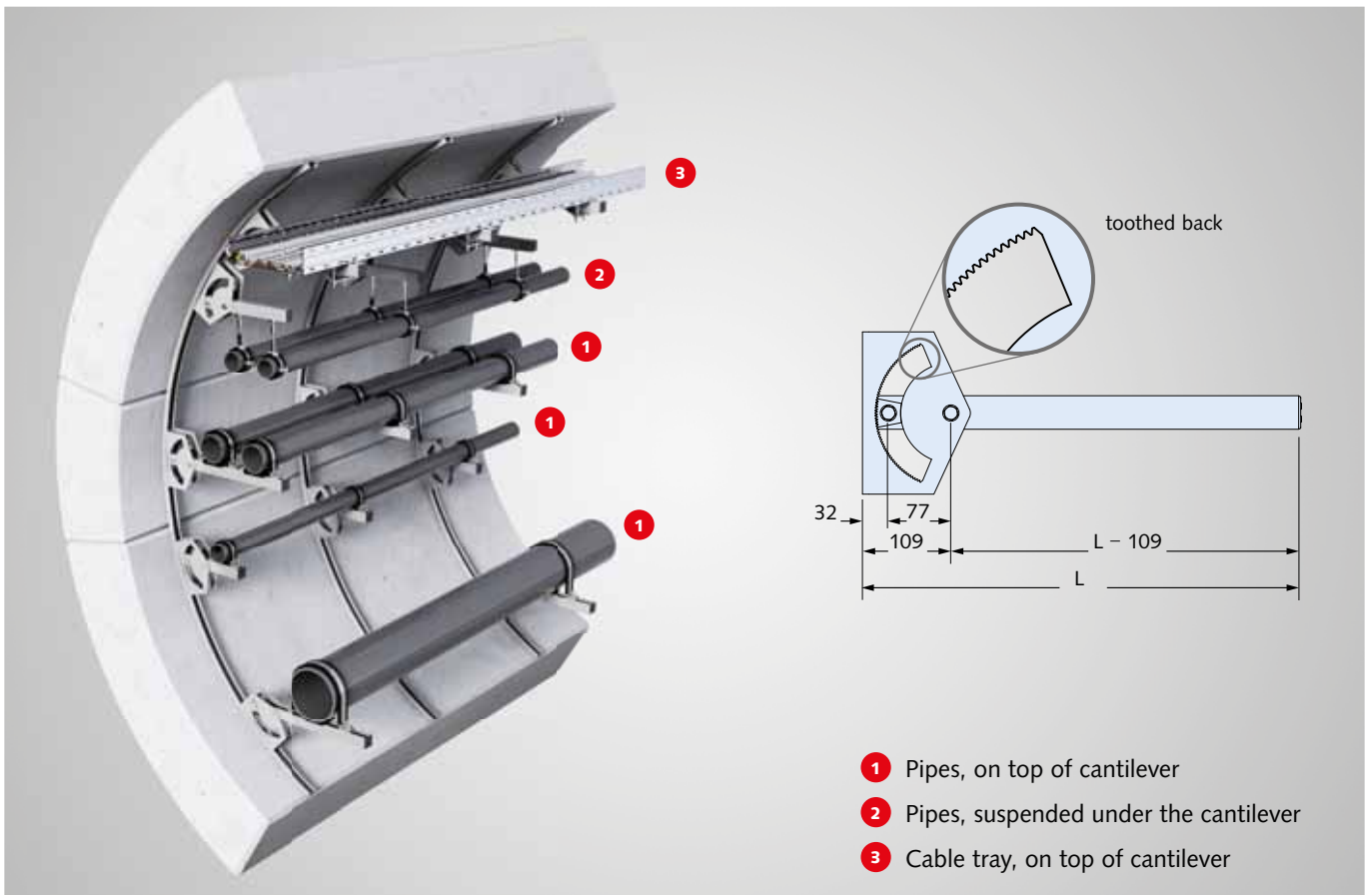
Material specification

- FV = Steel, hot-dip galvanized
- A4 = Stainless steel



Dimensions

- Length = 257 mm
- Length = 357 mm
- Length = 507 mm



- ① Pipes, on top of cantilever
- ② Pipes, suspended under the cantilever
- ③ Cable tray, on top of cantilever

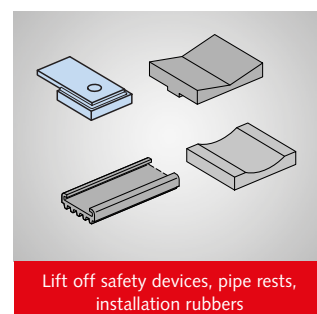
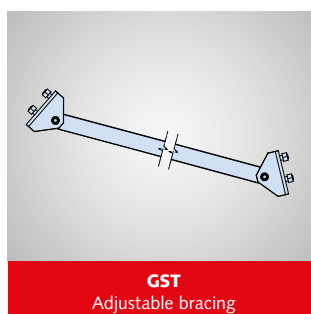
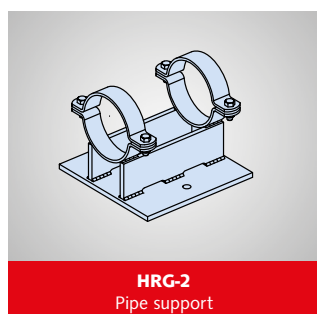
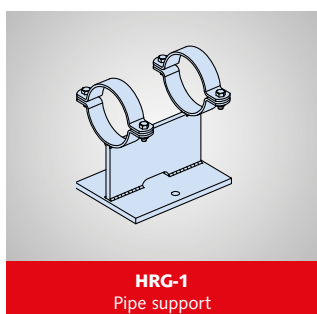
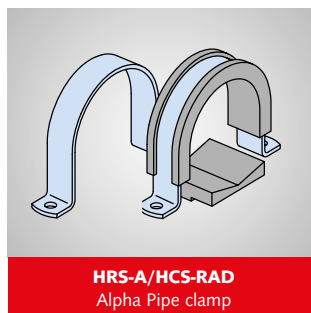
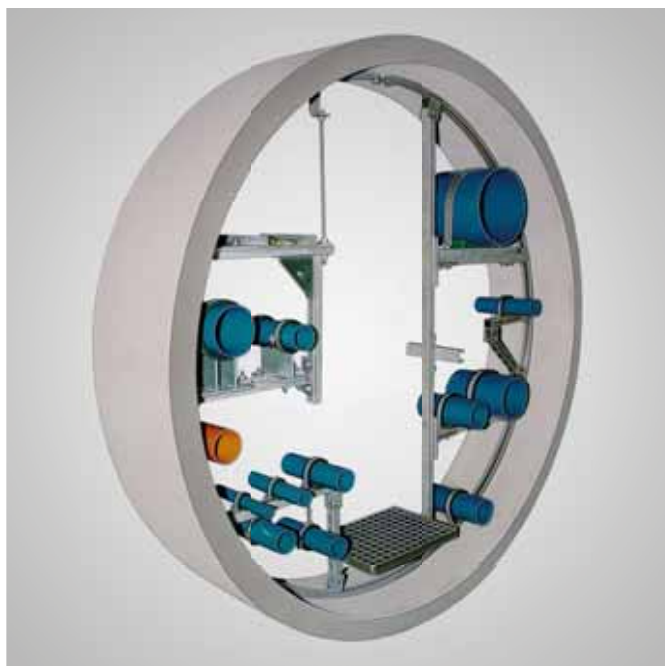
Suitable for low or high loads: HALFEN PIPE CLAMPS

HALFEN Pipe clamps are designed for use in piping projects for adjustable installation when using HALFEN Framing channels. The material thicknesses are dimensioned according to requirements so that a combination with HALFEN Powerclick is the most economical solution. The innovative bolt connections ensure that the original basic structure remains versatile for the long term. The pipe clamps are available in various load types and are therefore suitable for low-duty and high-duty requirements.



The main benefits:

- > Wide range of applications, from large pipe range diameter of 15–530 mm axially braced or sliding pipe fixings
- > High corrosion protection with hot-dip galvanized and stainless steel elements
- > Available with vibration/heat-insulating rubber and temperature-resistant pipe rests



Industrial technology: OUR CUSTOMERS

For decades, we have been a supplier of efficient fixing systems that meet the high requirements demanded by industry. Experience and know-how are important. In this brochure a number of application examples were illustrated. Our customers are active worldwide in a wide variety of industries. What all our customers have in common is the aspiration to improve time and cost efficiency while maintaining high quality and safety. We support them with innovative solutions.



BILFINGER

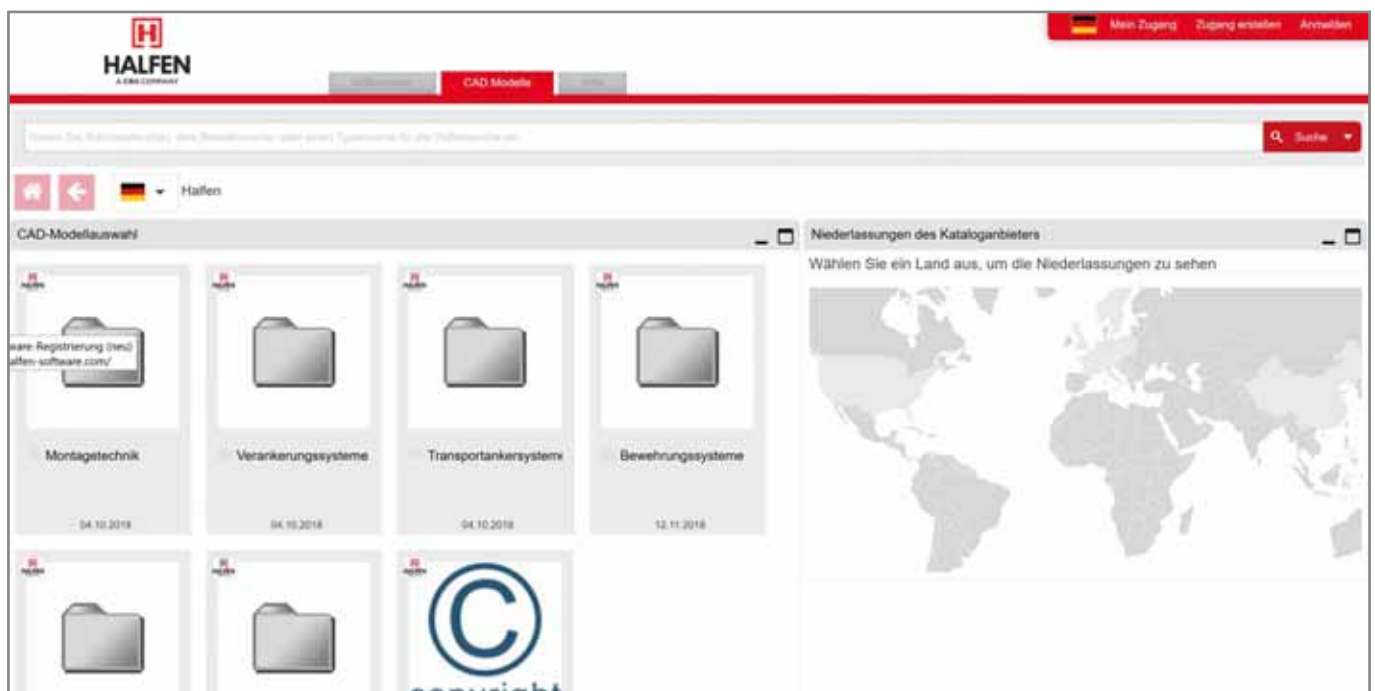


| | | | |
|---------------|-----------------------|--------------|----------------|
| ABB | Daimler | MAN | SWARCO FUTURIT |
| Andritz Hydro | Dow | Minimax | Talgo |
| BASF | Dürr | Nippon Cable | Thyssenkrupp |
| Bayer | Dynamit Nobel | NKT | Toshiba |
| Bombardier | Infineon Technologies | Otis | VDL |
| Brookville | KHS | Pesa | voestalpine |
| BYD | Kinki Sharyō | Putzmeister | Volvo Buses |
| Covestro | Lanxess | Rheinmetall | Vossloh |
| CRRC | Linde | Shell | |

Your partner for industry and plant engineering: **PLANNING WITH US**

We support designers and engineers with easy-to-use, high-standard, state-of-the-art products and solutions. Component libraries for various CAD programs are available for free download from the HALFEN Website.

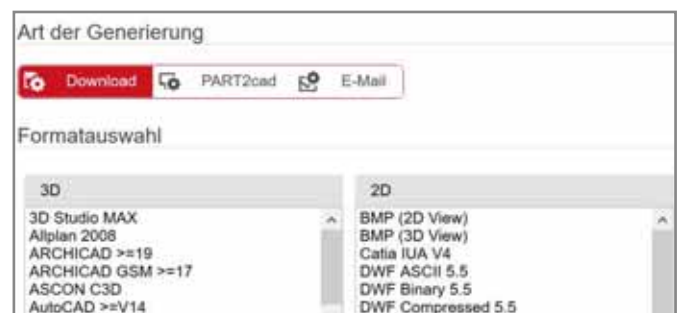
HALFEN PARTcommunity



The HALFEN PARTcommunity (halfen.partcommunity.com) includes numerous CAD drawings of HALFEN components. After free registration (non-committal) you get unlimited access to the library.

A large number of drawings are available for the industrial and anchoring technology sector. A user friendly configurator to edit the components is provided.

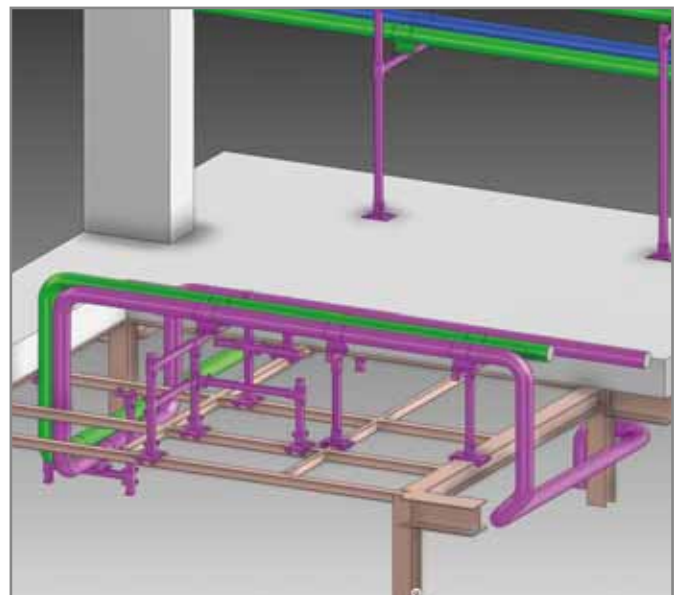
All standard 2D and 3D CAD file formats are available.



HALFEN Component libraries for AVEVA PDMS and E3D

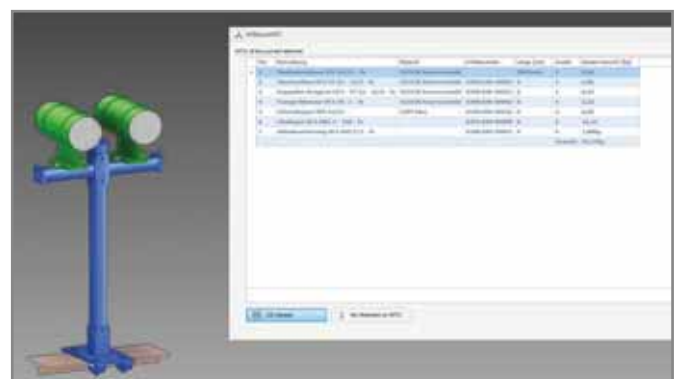
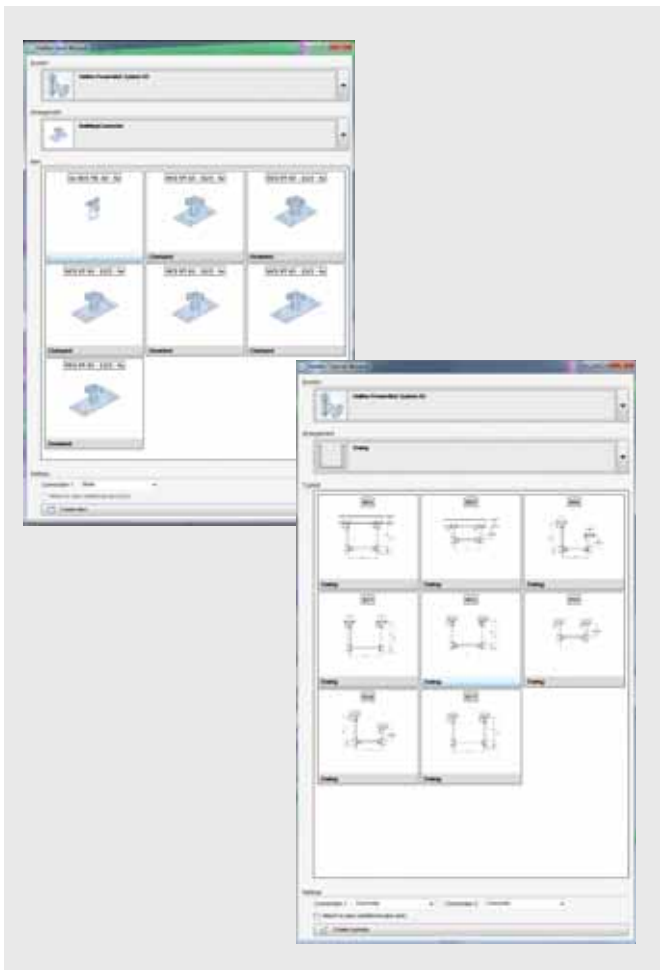
The AVEVA PDMS and E3D planning software are among the most commonly used systems for industry and pipework planning.

We developed a special program interface for users which can be directly integrated into the software. It provides an easy selection of individual elements or alternatively complete Powerclick System 63 frame constructions including pipe clamps, pipe shoes and sliding bearings.



Complex load-bearing systems can be assembled using the available parts. If required these automatically adapt to existing pipe or supports.

Assembly drawings and parts lists can be automatically generated.





Leviat[®]
A CRH COMPANY

Innovative engineered products and construction solutions that allow the industry to build safer, stronger and faster.



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