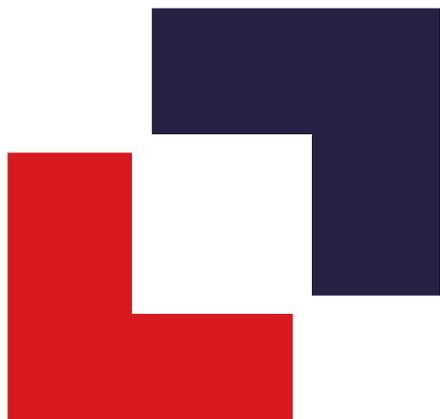
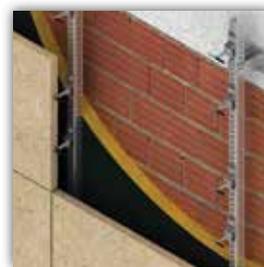
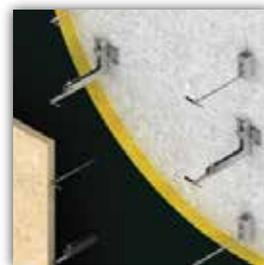
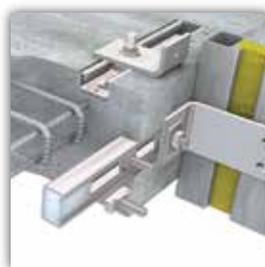


HAZ METAL FIXING SYSTEMS

Your Fixing Systems Specialist



Company Catalogue
HAZ.CC.EN/04.20

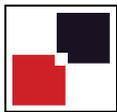




Admo Apco Headquarters - Abu Dhabi

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HAZ METAL
FIXING SYSTEMS

Your Fixing Systems Specialist



HAZ
Group of Companies
Establishment
www.hazgrp.com





Company Profile

Introduction

HAZ Metal A.S. is located in Iskenderun, in the southern part of Turkey, based in its own property of 17.000 square meters.

The company provides services in the design and production of fixing systems for facade cladding. Design and manufacturing capabilities cover the area for stone walls, curtain walls, brickwork walls, raincreen walls, concrete panel walls and secondary structures. Products such as anchors, brackets, framing channels, anchor channels, support & restraint brackets, anchor bolts and various accessories are among the standard productions at the factory.

The company's fundamental objective is to provide quality service in advising its clients to choose the most suitable fixing systems for their requirements and to provide them with quality production and supply with timely deliveries.

The innovative design and production techniques offer practical and economical solutions to solve every possible problem within the scope of fixing applications in facade construction.

As a manufacturer of fixing systems to major projects around the world, HAZ Metal has proven its quality and reliability to its clients. The company enjoys serving the sector and works hard to constantly improve and develop its services and products.

HAZ Metal is dedicated to achieve the highest level of customer satisfaction and is committed to being constantly in contact with its clients in order to better understand their requirements and to offer the services required for the design and production of fixing systems.

HAZ Metal is recognized globally as an international company active in the design and manufacture facade fixing systems and have proven their performance in numerous large scale projects around the world.

Company Vision

HAZ Metal aims to be a prominent player in the Façade Construction industry by designing and manufacturing high integrity fixing systems for major projects around the world. The company aims to be involved work high end projects with challenging façades around the world.

Company Mission

HAZ Metal strives to continually improve its engineering practices and product development to create state of the art fixing solutions in order to offer easy to use, secure and economic fixing systems to their prospective clients.

In parallel to this, the company pursues in investment for machinery and tooling to improve the quality of products and the production capacity and services as well as training of their staff.

History

HAZ Metal A.S. was founded in 1993, with the purpose of supplying stone fixings to its sister company. Both companies worked hand in hand to execute major stone cladding projects around the world.

With the technology and know how and the reach to international markets, HAZ Metal developed its technical capabilities and sales potential. This lead to the expansion of HAZ product range and its presence in international markets.

By the late 1990's, HAZ Metal had earned a reputation for being a quality and reliable fixing systems producer in the industry. Having a recognized brand name in the industry and gaining recognition from the products delivered, the strategy for growth was set forward.



In 2001, investment into new production capabilities was made to produce a wide range of products for use in construction. Expansion into new markets and widening of the product range were executed. HAZ Metal built a strong and reliable structure to become a prominent manufacturer of fixing systems used in the facade construction.

In 2004, HAZ Metal established, HAZ Metal GmbH in Wertheim Germany. The company started production as well as keeping stock to deliver products to on-going projects in Europe. There was another reason for this enterprise; which was successfully met, and that was to further increase the integrity of HAZ products by technical support and quality control auditing. HAZ Metal had opened the way to better support their products and systems with technical verifications and adopting new standards within the product features. This was a crucial step towards meeting the high demands of the consultants and architects.

In 2008 HAZ Metal received technical approval for the cast in channels from the German Construction Supervisory Board (DIBT). This has been the first start of certifying HAZ Products and will not be the last as the company has made a plan to certify all of its products in order to enhance the safety and reliability of HAZ products.

- 1993: HAZ Metal Sanayi ve Ticaret A.S. was founded
- 1993: Natural stone fixing systems production was started
- 1994: Through bolt production was started with hydro-mat machines
- 1995: Branch office in London, England was established
- 1996: With new marketing network, sales to European markets had begun
- 1996: Branch office in Abu Dhabi, UAE was established
- 1999: Channel production was started with rolling technology

- 2001: Production capacity was increased with new machinery
- 2003: Production of cast in channels was started
- 2004: ISO Quality management certificate was received
- 2004: Branch office in Wertheim, Germany was established
- 2005: Branch office in Doha, was established
- 2006: Production was started in Wertheim, Germany Branch after machinery investment
- 2007: HAZ Rus Ltd in Moscow was established
- 2007: Application for technical approvals was made
- 2008: Investment was made for in House Testing laboratory
- 2008: Technical approval; was received from DIBT (German Supervisory Board) for Cast in channels
- 2010: HAZ Asia Pacific Ltd was established in Singapore
- 2010: Production of Masonry Support systems was started and design capabilities was developed
- 2014: ETA certifications for anchor channels are received
- 2015: ISO 14001 environmental certificate and OHSAS 18001 Health & Safety certificated is received
- 2016: New investment for design and manufacture of steel structures
- 2016: Application for ETA certification made for anchor bolts

Production

Production Capacity

With approximately 10.000 square meters area of closed production halls, HAZ Metal is equipped with more than 100 work stations and has a monthly production capacity of approximately 500 tons.

Throughout the years, production techniques and methods have been improved to achieve better quality and more efficient productivity. HAZ Metal today implements modern technology in the production of fixing systems in order to meet the requirements of the industry.

The factory is equipped with a coil slitting machine, channel roll formers, press breaks, eccentric presses, automated end part formers, thread rolling machines, cold forging bolt makers, welding robots and various automated production units. Hot dip galvanizing with over 50 micro thick zinc coating and electro galvanizing with 12 micron thick zinc coating on mild steel is made is by pre-qualified sources outside the factory.

Emphasis has also been given to automation in which efficient and high precision production with lower costs are achieved. HAZ Metal is able to design and build machine parts, dies and tooling in house for achieving fast and flexible production of custom designed products.

A work shop is present at the factory which has the capability of preparing and maintaining the required moulding and tooling used in production. This provides advantages in being more flexible, efficient and economic in operations and manufacturing processes.

Production line setting, maintenance, alteration and adjustment of tooling are made without interrupting the production processes that leads to time saving and lower costs. With this resource, HAZ Metal can supply fixing systems elements to projects of any size with great value and reliability.

Technical Know-How

HAZ Metal's technical staff, each with more than 10 years of experience, has an outstanding technical knowledge in the field of stainless steel and steel fixing systems production.

Cutting, drilling, bending, chamfering, tabbing rolling, threading and especially, the welding of stainless steel and steel products, is carried out in the highest professional manner.

The work stations, such as eccentric presses, threading machines, Hydro-mat, bolt makers and channel rolling machines are the highest standard machinery available in the market.

Production processes are checked and evaluated constantly to engage in new methods and techniques in order to increase the quality level of HAZ products.

Technical excellence is maintained and increased through constantly following and keeping up with material and production standards.

HAZ Metal implements DIN, BS, EN and ASTM standards in their manufacturing processes. All manufacturing steps are adhered to the specifications in the standards in order to achieve the best quality production.





• Slitting line



• Automated robotic welding line



• Laser cutting machine



• Automated pressing line



• Hydro-mat - 16 station automatic head transferer



• Automated steel channel processing line



• Channel rolling machine



• Welding robot



• Automatic end part former

Quality Assurance

HAZ Metal readily embraces the responsibility of the business that they are in. The company has established a well planned quality control management system and has been awarded the ISO 9001:2008 quality management certificate from TUV SUD.

This system is a part of HAZ Metal's operations and there are no exceptions or compromises to the level of quality of its services and production. The QAC department is staffed with knowledgeable engineers who are trained in the field and form the backbone of this operation.

The factory is equipped with testing machines which are used to conduct chemical and physical tests on all items that enter and exit the warehouse. The production is strictly controlled with periodic in house testing of both raw materials and finished products. In order to maintain the performance of HAZ products and to fulfil the safety requirements for use in the construction industry, QAC plays a vital role in the company.



• Testing laboratory



• Standing tensile rig



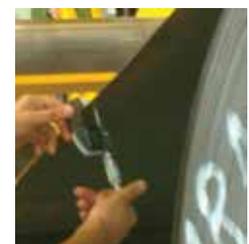
• Mobile tensile rig



• Spectre metre for chemical analysis



• Electronic gauge for galvanize coating thickness check



• Digital micrometer for material thickness check



Customer Service

Providing Service

HAZ Metal is known as a high quality and reliable service provider for the design and supply of fixing systems to the construction industry for facade applications.

The main advantage of HAZ Metal is the ability to custom design fixing systems and to provide fast production to meet the time restraint requirements of projects. The design and supply is done in accordance to international standards and more importantly with our customers' expectations.

HAZ Metal works hard to be a reliable and satisfactory service provider for facade fixing systems design and supply. A satisfactory service is recognized as the means of offering complete technical support to our clients with maximum flexibility in production and the fastest possible delivery times.

In order to provide this service, HAZ Metal has invested in new machinery and automated lines. At the factory, there are many types of different machines which provides the possibility of making a wide range of operations to stainless steel and steel forming and welding. This allows us to carry out most operations for small and medium sized production series in our own premises.

HAZ Metal has also established close ties for fixing systems component suppliers in order to complement their products with fasteners and accessories.

Investments have also been made in software programs and human resources for the continuation of service developments. Operation performances have been improved through office automation software. Periodic staff training for product and functional course subjects are organized for improving the knowledge and skills of HAZ personnel. HAZ Metal is committed to maintain and improve the level of service in order to satisfy their customers.

Worldwide Presence

To support the ambitions of the company and form a strong network where HAZ can cover the worldwide market, HAZ Metal has established its own companies in prime locations around the world. With this network, the company shows its presence globally.

HAZ Metal has more than 200 employees working both in Turkey and in its foreign branches. Along with a sales office in Istanbul, Turkey, there are HAZ branches in Germany, United Arab Emirates, United Kingdom, the Russian Federation, Qatar, Egypt and Singapore. HAZ Metal also has the means of distributing its products through their representatives in many more countries in Europe and the middle east.

With this network, HAZ Metal reaches out closer to its clients, to provide better services to meet local requirements. The company is determined to define the demand of their customers and offer them economical and flexible solutions to benefit them in today's competitive and ever demanding construction industry.

Technical Service

Offering technical services to specialist sub contractors, construction companies, designers and architects have been the most important drive of the company. We have worked together with our clients to formulate and implement the most suitable and secure fixing systems to be used on major projects around the world. The technical team are used being engaged with the project from beginning till the end for the successful execution of the facade works.

HAZ Metal believes in working hand in hand with its customers, providing with customers, providing design support and structural calculations for its products. The company's engineering teams provide services in design, fixing positioning, structural calculations, shop drawings and scheduling.



HAZ Metal GmbH - Wertheim Germany



HAZ Metal UK Branch - Hatfield, England



HAZ Pazarlama A.S. - Istanbul, Turkey



HAZ METAL FIXING SYSTEMS

Company : HAZ Metal Sanayi ve Ticaret A.S.
Activity : Main Production of Fixing systems
Design, Production & Technical Support
Location : Iskenderun Turkey



HAZ PAZARLAMA İÇ & DIŞ TİCARET

Company : HAZ Pazarlama İc ve Dis Ticaret A.S.
Activity : Marketing & Sales
Location : Istanbul, Turkey



HAZ METAL BEFESTIGUNSSYSTEME

Company : HAZ Metal Deutschland GmbH
Activity : Marketing & Sales, Production &
Technical Support
Location : Wertheim, Germany



HAZ METAL INDUSTRY & TRADE LLC

Company : HAZ Metal LLC
Activity : Marketing & Sales & Technical Support
Location : Abu Dhabi, United Arab Emirates



HAZ PAZARLAMA EGYPT TRADING LTD

Company : HAZ Pazarlama Egypt
Activity : Design, Marketing & Sales
Location : Cairo, Egypt



HAZ METAL UNITED KINGDOM BRANCH

Company : HAZ International Ltd
Activity : Marketing & Sales & Technical Support
Location : Hatfield, England



HAZ RUS DESIGN, INSTALLATION & CONSULTANTS

Company : HAZ Rus Ltd
Activity : Marketing & Sales
Location : Moscow, Russian Federation



HAZ ASIA PACIFIC PTE LTD DESIGN, MANUFACTURE & CONSULTANCY

Company : HAZ Asia Pacific Pte Ltd
Activity : Marketing & Sales & Technical Support
Location : Singapore

Product Range

Fixing Systems for Facade Cladding

HAZ Metal started producing fixing systems in 1993. HAZ Metal today has the technical know how and the technology to produce all types of fixing systems used for facade cladding. HAZ Metal designs and manufactures the following product lines.

- Stone fixings anchors
- Sub channel systems
- Anchor channel systems
- Framing systems
- Brickwork support systems
- Concrete panel support systems
- Anchor bolts & Undercut bolts
- Secondary steel structures

Steel structures for special application requirements are also designed and produced in HAZ Metal which are custom designed to meet project specifications.

Standard and customized production is made for all product categories to meet the special needs of projects. Products are produced from stainless steel and galvanized steel raw materials. Stainless steel grade EN 1.4301 (AISI 304) & EN 1.4401 (AISI 316) and galvanized mild steel grade EN 1.0038 (S235JR) & EN 1.0976 (S355MC) are used in the production of fixing systems.

Quality Standards

HAZ Metal implements EN, DIN, BS and ASTM standards in the design and production works. Production is strictly controlled within the tolerances of these standards.

All products are produced by its own personnel, applying the latest production methods with modern machinery. The quality control team, under the supervision of a mechanical engineer, is selected from long serving and experienced foremen.

Production is checked during each production step and is compared with the production drawings and specifications. The company is strictly bound to the concept of ISO 9001:2008 and "Total Quality Management" system. A quality assurance system has been set up and is running. It covers the control of each process in manufacturing. Control checks are documented and are recorded.

The application of this management system is maintained and is a part of day to day operations.

Technical Service

HAZ Metal designs and produces quality fixing systems targeted to high end construction projects. Through constant improvements in product design, production methods and new product programs, the company strives to offer better solutions and services for the needs of their customers who are active in the ever demanding construction industry.

HAZ Metal is committed to improve operational performances by pursuing internal investment in adopting design & management software programs and in development of personnel through constant training. Through these processes the company is determined to provide the highest level of service to their prospective clients.



• Stone fixing systems



• Sub channel fixing systems



• Brickwork support systems



• Prefabricated concrete panel fixing systems



• Anchor channel fixing systems



Technical Support

Design & Engineering

HAZ Metal provides services in the design of fixing systems and the preparation of structural calculations. This service is done in the company technical department using CAD software and stress analysis programs.

Our technical department receives the necessary technical information of the project in order to propose the most suitable, secure, easy to use and economical fixing systems in accordance with the project criteria. Custom design is also made in accordance with the architectural drawings of the project.

HAZ Metal provides the necessary technical documentation for submittal to the project officials in order to receive approval for the fixing system elements. The following principles are used in the design and structural calculations for natural stone fixing systems.

Finite element stress analysis is implemented for complex structures where the structural integrity of the fixing systems needs to be maintained. This procedure is especially made for sub channel systems and unitised panel facade units.

HAZ Metal can offer the design and engineering services by referring to any internationally renowned standards. The engineering department will relate to the specifications of the project and conduct its design and dimensioning according to the requested criteria.

Reference is made to the following standards:

British Standards

- | | |
|----------------|--|
| BS 8298 | • Design and installation of natural stone cladding |
| BS EN 10088-2 | • Steel plates, sheets and strips stainless and heat resisting |
| BS 6105 | • Corrosion resistant stainless steel fasteners |
| BS 5950 | • Structural use of steel work in building |
| BS 6399 Part 2 | • Code of practice for wind loads |
| BS 970 Part 3 | • Mechanical properties for stainless steel |

German Standards

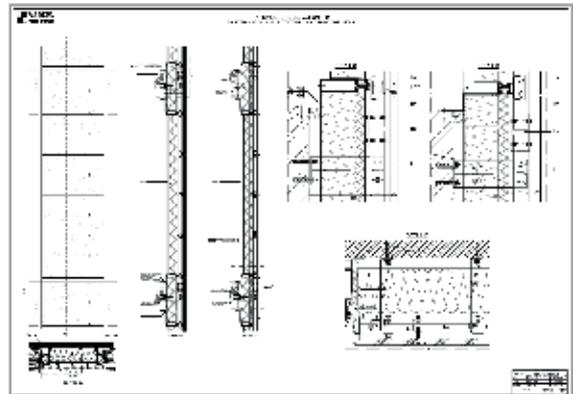
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| DIN 18 516 | • Cladding for ventilated walls |
| DIN 18 800 | • Steel structures, design and dimensioning |
| DIN 18 801 | • Steel framed structures |
| DIN 1045 | • Concrete and reinforced concrete, design and dimensioning |
| DIN 1053 | • Masonry, design and dimensioning |
| DIN 1055 | • Wind loads design code |
| DIN 4114 | • Steel construction, stability cases |

American Standards

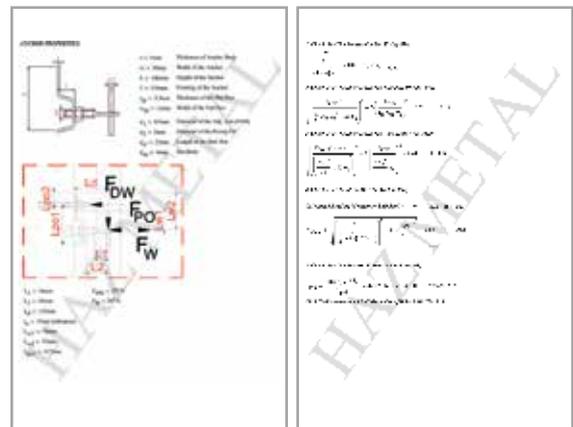
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| ASTM C1242 -12 | • Standard guide for stone attachment systems |
| ASTM A 276 | • Specification for stainless steel bars and shapes |
| ASTM 666 | • Specification for annealed or cold worked austenitic stainless steel sheets |
| ASCE | • Minimum design loads for buildings |
| Uniform Building Code & International Building Code | |

Euro codes

- | | |
|---------|---|
| EN 1990 | Basis of Structural Design. Structural Analysis and Design by Testing |
| EN 1090 | Execution of steel & aluminium structures |
| EN 1991 | General Actions - Wind |
| EN 1998 | General Rules, seismic actions and rules for buildings |



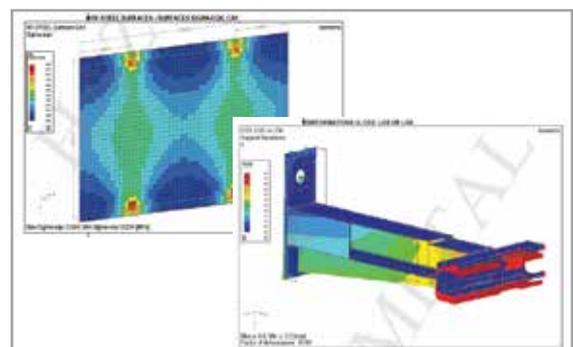
• Shop drawing with application details



• Structural analysis report



• Parametric design



• Finite element method stress analysis

Stone Fixing Systems

Natural stone facades are constructed with fixing systems that are made out of stainless steel, that allow secure and easy method of supporting stone panels on to load bearing backing walls.

Three dimensional adjustable anchors that are fixed on to load bearing walls either with anchor bolts or mortar are the most common method of stone fixing systems in the construction industry. Fixing systems accommodate all types of backing walls whether they are concrete walls, block work & masonry walls or steel structures.

There are various types of fixing systems with varying sizes to suit the wall cavity sizes, to carry the stone loading and to with stand the wind pressures. Careful analysis of the stone application must be conducted when choosing the most suitable fixing systems required. The following points are taken into consideration when designing a fixing system for natural stone installation.

- Stone type and dimensions
- Wall structure: projection size, wall cavity and insulation thickness
- Application type: horizontal or vertical joint installation
- Joint size and the requirement of expansion and compressing joints
- Structural wall backing type
- Height of facade
- Relevant loads such as dead loads, wind loads and seismic loads
- Design criteria of the project and safety factors to be used in calculations



HZ Z Anchors



- Fixing to concrete with anchor bolts
- Projection sizes up to 150 mm
- Recommended for loads up to 800N
- Installation at horizontal or vertical joints
- Three dimensional adjustability

AXO Body Anchors



- Fixing to concrete with anchor bolts
- Projection sizes up to 260 mm
- Recommended for loads up to 1300 N
- Installation at horizontal or vertical joints
- Optimum static performance
- Three dimensional adjustability

HA L Anchors



- Fixing to concrete with anchor bolts
- Can be used for stone thickness's higher than 50 mm
- Various types to enable adjustability
- Installation at horizontal joints only

HDM Mortar Anchors



- Fixing to masonry with mortar
- Projection sizes up to 240 mm
- Recommended for loads up to 1200 N
- Installation at horizontal or vertical joints
- Three dimensional adjustability



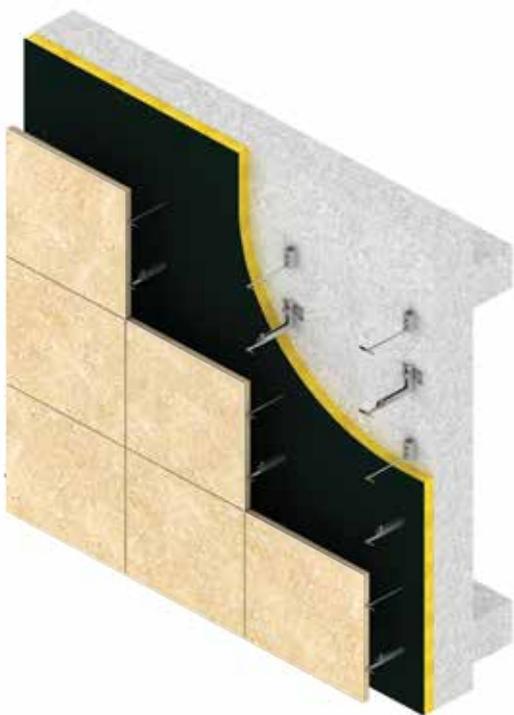
Demir Bank Head Quarters, Istanbul

Direct fixing to concrete walls with anchor bolts

Fixing to load bearing walls with anchor bolts. Insulation is cut at each anchoring point. The insulation part is laid back in to position after the anchor is fastened. Insulation joints are sealed with insulation tape to avoid cold bridging.

Direct fixing to concrete or masonry walls with mortar

Fixing to load bearing walls with mortar anchors using mortar. Insulation is drilled at each anchoring point. Drilled holes are filled with mortar and anchors are set in to the mortar filled holes. Curing time for the mortar should be spent before commencing the work.



Steel Sub Channel Fixing Systems

HMP Sub channel systems are used for stone cladding on to non-load bearing walls or on to walls structures where there are high projection sizes. By using specially designed channel supports and restraints, channels are spanned between floor levels, creating a sub frame on to which installation is enabled by using set screws and nuts.

- Channels are fixed on to channel supports that are fastened to load bearing beams, spanning between floor levels overlaying in front of the thermal insulation
- Stone fixing is done with anchors that are fixed on to channels either with set screws or lock nut sets
- High load bearing capacity to fit projection sizes up to 360 mm
- Greater projection sizes are achieved with special design
- Fully adjustable and allows quick and easy installation
- Lower drilling points increases production rate and reduces cold bridging
- Channel systems available in stainless steel type 1.4301 (AISI 304) & 1.4401 (AISI 316) and hot dip galvanized mild steel type 1.0038 (S235JR)



HMPA-HC2
 Sub Channel System



- Projection sizes up to 350 mm
- Ideal for heavy loads and large projections
- Installation in vertical and horizontal joints
- Adjustability in all directions, +/-30 mm
- Fixing to channels with set screw sets

HMP-ATS
 Sub Channel System



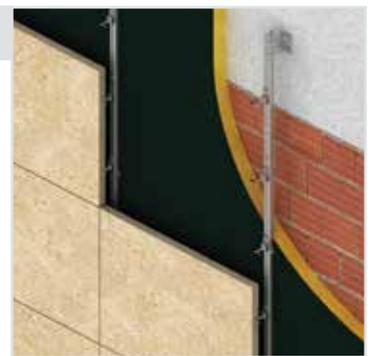
- Projection sizes up to 360 mm
- Ideal for varying projection sizes and stone panel dimensions
- Adjustability in all directions
- Fixing to channels with lock nut sets

HMPC-HC1/H
 Sub Channel System



- Projection sizes up to 300 mm
- Ideal for staggered patterned façades
- Quick adjustability at horizontal axis
- Installation at horizontal joints
- Fixing to channels with lock nut sets

HMPA-HC3
 Sub Channel System



- Projection sizes up to 250 mm
- Fast & easy, and economic
- Installation at horizontal and vertical joints
- Fixing to channels with set screw sets



Four Seasons Hotel, Cairo

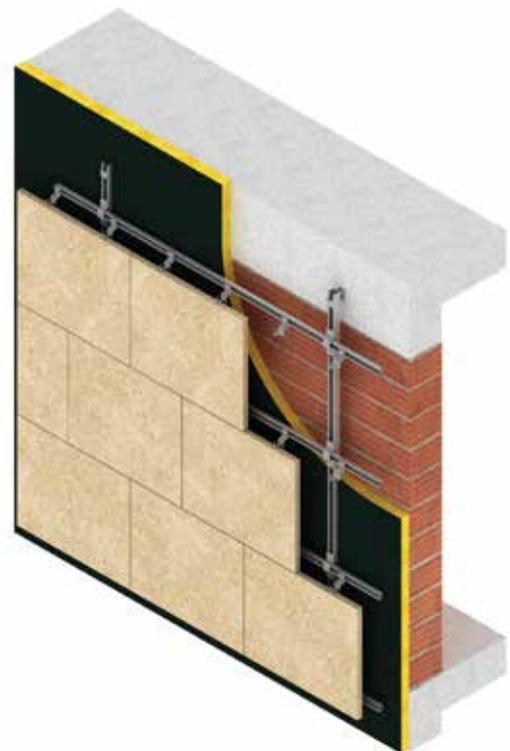
HMPA-HC2 Sub Channel System

U Channels are fixed on to load bearing beams with channel supports, coinciding with the vertical joints of stone panels. Installation is made at the vertical joints with anchor pins setting into the drilled pin holes on the vertical edge of the stone panels. Anchors are fixed to channels with set screw sets.



HMPC-HC1/H Sub Channel System

C Channels are fixed on to load bearing beams with channel supports. Horizontal channels are fixed on to vertical channels with connection elements, coinciding with the horizontal joints of the stone panels. Installation is made at the horizontal joints with anchor pins setting in to the drilled pin holes on the horizontal edge of the stone panels. Anchors are fixed to channels with lock nut sets.



Aluminium Sub Channel Fixing Systems

Fixing systems with aluminium sub channel systems are preferred due to its light weight and easiness of cutting and drilling. These systems are used for the installation of cladding panels such as, natural stone panels , ceramic panels and fibre cement panels.

Three connection systems are used for stone installation. One is with a pin system to install panels through drilled pin holes at the edge of the panels. The second is for installing panels with undercut anchors through undercut holes drilled at the rear surface of the panels. The third system is the kerf system where panels have slots opened at the edges of the panels where kerf angles are used for fixing.

Three dimensional adjustability is enabled and fast installation is possible due to the light weight of aluminium and the ease of cutting and drilling on site.

- Fixing to sub channel structure which is attached to load bearing beams
- Light weight and easy to install
- Possibility of cutting and drilling aluminium channels provides flexibility
- Fully adjustable and allows fast installation with the use of self drilling screws
- Aluminium channels are from extruded sections grade EN AW 6063 T66



HMP-ALU-AG
Sub Channel System



- Sub channel system with vertical and horizontal channels
- Projection sizes up to 350 mm
- Recommended for loads up to 3500 N
- Attachment to stone with undercut bolts
- Hang on fixing on to horizontal channels

HMP-ALU-SP/H
Sub Channel System



- Sub channel system with vertical and horizontal channels
- Projection sizes up to 350 mm
- Recommended for loads up to 3500 N
- Anchors with pins are set in to the channels slot and fixed with tabbing screws

HMP-ALU-SP
Sub Channel System



- Sub channel system with vertical channels
- Projection sizes up to 250 mm
- Attachment to stone with pins
- Anchors with pins are set in to the channels slot and fixed with tabbing screws

HMP-ALU-SP/HK
Sub Channel System



- Sub channel system with vertical and horizontal channels
- Projection sizes up to 350 mm
- Anchors with kerfs are set in to the channels slot and fixed with tabbing screws



School of Foreign Affairs, Doha

HMP-ALU-U Aluminium Sub Channel System

Aluminium U channels that are fixed vertically on to load bearing beams with channel supports. Stainless steel body anchors are fixed on the vertical aluminium channels with self tabbing screws. Anchor attachment to stone panels is done with pins.

HMP-ALU-P Aluminium Sub Channel system

Aluminium T channels and slot channels are fixed vertically and horizontally to form a grid on the load bearing wall. Stone panels; with aluminium brackets are fixed on the rear surface with undercut anchors, are set on the horizontal aluminium channels with the hang on method.



Anchor Channel Systems

HMPR Anchor channels are rolled channels with pressed studs that are cast in to concrete structures. This fixing system allows practical fixations into concrete walls, slabs, beams and columns that securely transfer the loads on to the building's substrate.

HTB T head bolts and **HMLN** lock nuts are used to allow secure and easy connections on to the anchor channels. The use of this system is applicable in a wide range of construction works.

Anchor channels are first secured to the form work at designated positions. Channels are provided with filler to avoid the concrete from entering inside the channel slot.

The filler is taken out after the concrete has dried and connections are made with corresponding T head bolts and lock nuts at desired positions. Three dimensional adjustability is achieved through flexible design.

The use of anchor channels for connections offers great advantages. The safe and reliable attachments with easy and quick production times lead to faster completions of the construction works.

The result is a quality finish at lower costs. The requirement of pre-design and prefixing in construction offers great advantages, in achieving better results.



HMPR
Anchor channel



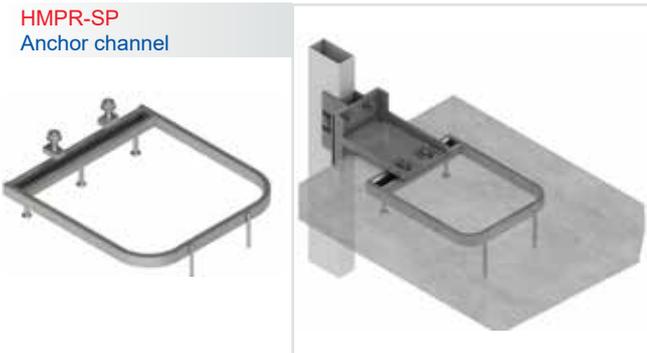
- Easy & secure fixing to concrete structures
- Load capacity of up to 30.9 kN on C30/37 concrete
- Fixing is made with suitable T head bolts
- Resistance loads are verified by certificates

HAZ-TU
Anchor channel



- Fast fixing of profiled metal sheets
- Fixing is made with self tabbing screws
- Load capacity of 5 kN at every 250 mm
- Resistance loads are verified by certificates

HMPR-SP
Anchor channel



- For fixing curtain wall panels
- Used for fixing on thin wall slabs
- Installation on top of slab
- Three dimensional adjustability

HWT
Wall tie



- Used for restraining purposes
- Easy connections of prefabricated units
- Sizes available for up to 150 mm cavity
- Tensile loads of up to 12.0 kN



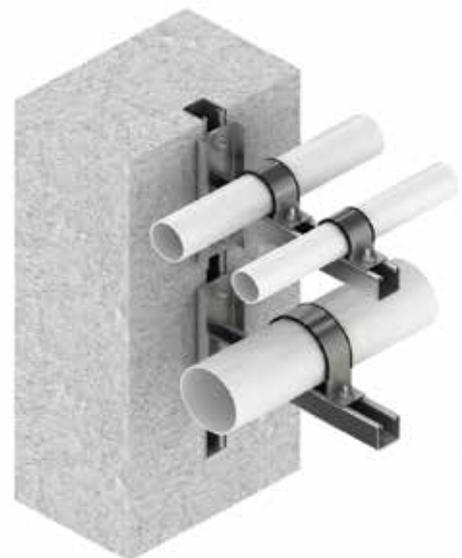
Hyundai Innovation Centre, Singapore

Curtain wall application fixed on anchor channels

Anchor channels are widely used for the installation of curtain walls. Unitised panels with materials such as glass and natural stone, are prefabricated in to a single panel unit. These panels are erected on to the facades and are quickly and easily fixed on to anchor channels using T head bolts and special load bearing brackets.

Plumbing installation with anchor channels

Anchor channels are used for a variety of construction applications which require attachments made on to concrete. Pipe and duct installation and the installation of electrical wiring are the most common applications that are made using anchor channels. This method saves time and results in a high quality finishes.



Brickwork Support Systems

FIX Brickwork support systems are used for the secure and easy installation of masonry facades. The **FIX** masonry brackets are used to transfer the dead loads of non load bearing outer shell masonry walls to the load bearing inner walls of buildings. Load bearing masonry support brackets are fixed on concrete beams which carry the dead load of the facade. **HRST** Restraints ties or **HWT-M** wall ties are used along the rest of the storey height to secure the masonry facade against wind loads.

The following points should be carefully evaluated when designing a masonry facade: thickness of insulation and air gap; design of details, such as, wall areas, joints, external and internal corners, lintels above doors and windows, and columns. Many product variations are available for these situations, including the fixing of pre-cast brickwork lintels and prefabricated elements.

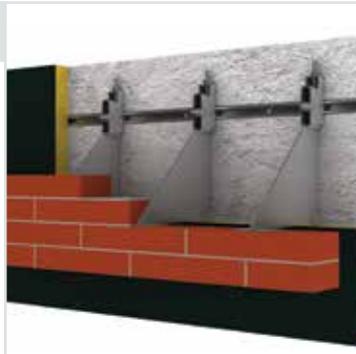
The thickness of the insulation together with the air gap make up the projection size that makes up the distance between structural backing and facing brick wall. The greater the distance is between the two layers, the larger has to be the projection K of the support brackets.

Brickwork support brackets are suitable for distances between leaves of 40 to 160 mm. The corresponding masonry support brackets come with projections K of 130 to 350 mm. Angle supports are used for any cavity sizes that are less than 40 mm.

In order to cover all the loads within the application of brick works installation, there are three load groups that the brackets can carry. The load categories are 3.5, 7.0 and 10.5 kN.



FIX-U
Brickwork Support Bracket



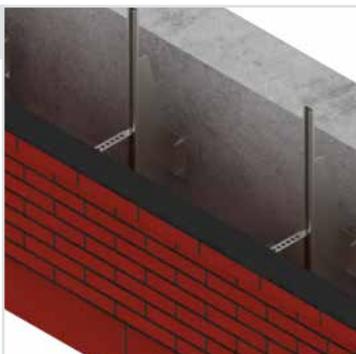
- Adjustable and easy to install brackets
- Projection sizes up to 350 mm
- Load capacity of up to 10.5 kN
- Fixing to concrete with anchor bolts and anchor channels

HMCS
Brickwork Continuous Support



- Continuous masonry supports
- Projection sizes up to 230 mm
- Load capacity of up to 18.0 kN
- Fixing to concrete with anchor bolts and anchor channels

HMS-AW
Restraint Channel

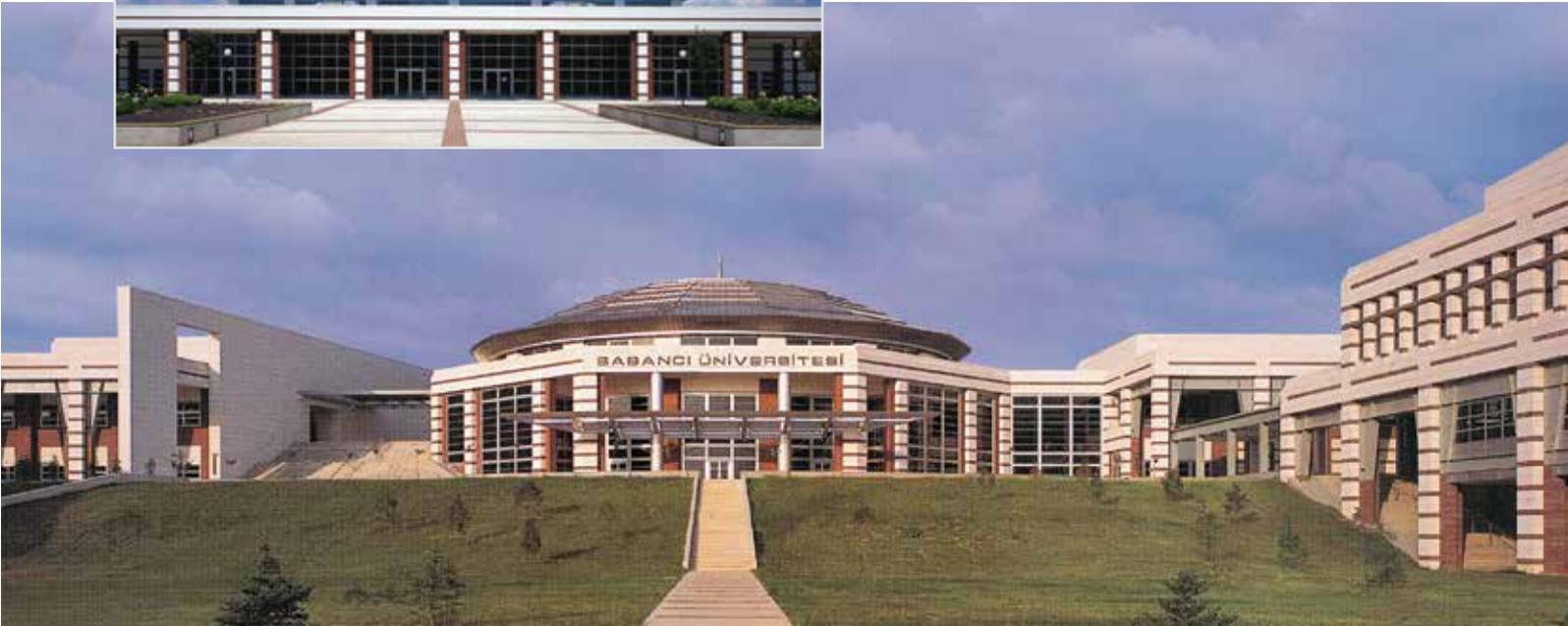


- Restraint channel for cladding on parapets
- Cavities of up to 145 mm
- Suitable for use with wall ties
- Quick and easy fixing

FIX-S
Brickwork Support Bracket



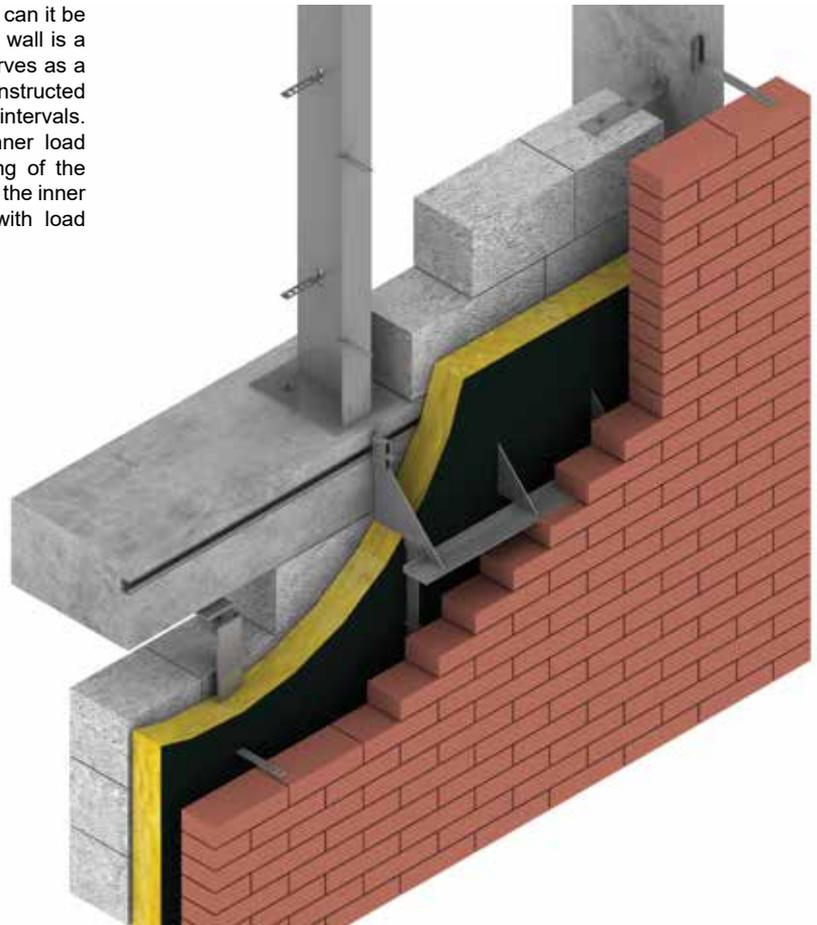
- Installation of prefabricated units
- For use over window and door openings
- Load capacity of up to 10.5 kN
- Suitable for use with anchor channels and U inserts



Sabanci University, Istanbul

Brickwork Facade

A brickwork facade which is built with bricks, is formed out of a load bearing inner wall, an insulating layer and an outer wall. The outer wall cannot be used for load bearing purposes nor can it be used for attachments of various components. The outer wall is a design element that satisfies the aesthetics and also serves as a means of weather protection. The outer wall which is constructed of layers of brickwork needs to be supported at regular intervals. The load of the brickwork is transferred on to the inner load bearing wall by brickwork support brackets. Restraining of the outer wall is made with restraint wall ties. Therefore, both the inner and outer wall shells are connected to each other with load bearing brackets and restraint wall ties.



Prefabricated Panel Support systems

FIX-PA Facade panel support system is specially designed for the secure and fast installation of prefabricated concrete panels on to load bearing structures. This system consists of support and restraining elements.

The **FIX-PA** Panel brackets consist of upper section, centre section and special fitting which is cast in to the concrete panel. Depending on the load resistance and the fixing type to the structure, there are different types of an upper section. The standard upper section is fastened at the edge of the sub structure.

The standard **FIX-PA** anchors can support loads of up to 35 kN. However custom made design can be made to achieve loads of up to 70 kN. The **FIX PA** are tested and verified by calculations and further inspections carried out by third party approval inspection bodies.

Facade Panels are restrained by using **FIX-BR** spacing bolts which is compatible with the **FIX-PA** anchors. The standard cavity sizes are 240 mm and are supplied with ISO plastic spacers.

To complete the facade panel support system, HAZ offers the design and manufacture of **FIX-BRA** Parapet anchors. These anchors are used for the safe and easy support of parapet finished components on to the supporting subframe.



FIX-PA
Panel Bracket



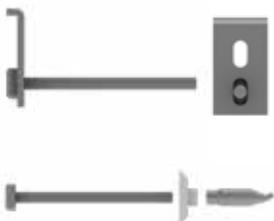
- Fully adjustable support system
- Load capacity from 6 to 35 kN
- Available in various types to accommodate fixing method to structure

FIX-DW
Top Fixing Dowels



- Available for loads up to 35 kN
- Suitable for cavities of up to 80 mm
- Supplied with plastic sleeves

FIX-BR
Restraint bolts



- Restraining bolts to accommodate the support anchors
- Up to 240 mm cavity sizes
- Supplied with ISO pressure plates

FIX-BRA
Parapet Bracket



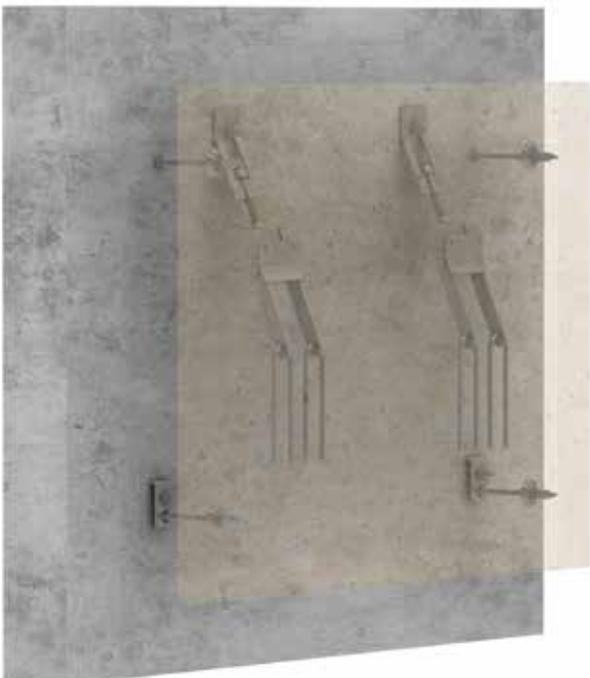
- Custom designed to suit large range of parapet components
- Wall thickness of up to 200 mm
- Supplied with B500 grade re-bar



Centre for Technology & Design, St Pölten

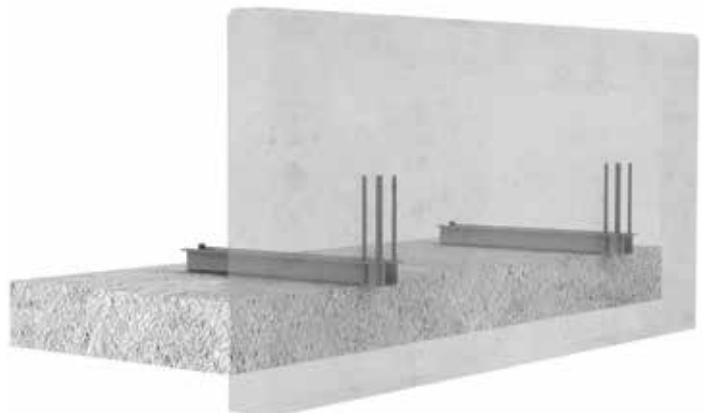
Prefabricated concrete panel support system

Prefabricated concrete facade panels are suspended on the subframe using **FIX-PA** Panels anchors which enable safe and quick installation. Each panel is installed using two facade anchors in order to distribute the load evenly. **FIX-BR** spacing bolts are used to restrain the panels from wind loads. Four restraint anchors are required to fix each panel. **FIX** Panels Fixing systems are verified by testing and structural calculations.



Parapet Support System

Prefabricated concrete parapet panels are attached to the load bearing subframe with **FIX-BRA** parapet brackets, which are specially designed for the secure support of these high load structures. In achieving even load distribution, two parapet brackets are used to install each panel. These brackets are partially inserted into the brackets. These brackets are partially inserted into the prefabricated panel with the means of rebars that are fixed to the brackets. The parapet brackets are attached to the concrete subframe with approved anchor channels or anchor bolts.



Framing Systems

HMP Framing systems with channels and various accessories are used to build steel constructions for the installation of various types of secondary structures. Efficient modular support structures are built quickly and easily. Flexible and low cost application is achieved.

Framing systems consist of cold formed steel and stainless steel channels which are supplied with suitable T bolts and lock nuts to build secondary structures for various types of applications in construction. Attachments of any kind of elements are achieved with T bolts or lock nuts. Bolting is made freely at the desired position along the length of the channels.

The use of framing systems increases installation times rapidly and results in the significant decrease in application costs. Work commences very quickly and the need work drilling and welding is eliminated which results in a better quality finish at lower installation costs.

Some of the areas of use consist of pipe and duct installation, machinery set ups, mechanical and electrical installations. The use of framing systems eliminates drilling and welding on site therefore resulting in safe and quick commencement of construction works.

Channels are supplied either plain or with perforated slotted or round drilled holes. Galvanized steel and stainless steel is available.



HMP C Channels



- Channels available with and without drilled holes
- A variety selection of channels to fit different loadings
- Toothed channels available for longitudinal loads

HMC Cantilever brackets



- Brackets available for projection sizes up to 700 mm
- Load capacities are verified according to different application types
- 41/41 & 36/36 C channels are used with corresponding T bolts & lock nuts

HC Channel Connectors



- Channel connections are available in a variety of shapes and sizes
- Suitable for use with channel types 41/41, 41/21 & 36/36

HPCL Pipe clamps



- Pipe clamps suitable for pipe sizes between 21.5 & 508 mm
- Various type of pipe clamps available for application requirements



Abu Dhabi Financial Centre, Abu Dhabi

Mechanical, Plumbing and Electrical Installations

Mechanical, plumbing and electrical utilities are installed using framing systems. Channel systems and its accessories provide easy and efficient solutions to meet any project's requirement. The flexibility of the framing systems offers endless formations to suit any type of application.

Plumbing Installations

The combination of channels, brackets and channel connections allows the building of frames that are self standing. The frame work can be fixed on to the concrete ground. The modular frame works provide efficient and reliable solutions for various applications such as pipeline installation, machinery assembly and electrical fittings.



Anchor Bolts

HB Anchor bolts are used for fastening components on to load bearing substrates. There are many types of anchor bolts available for use for installing fixtures on to different types of base materials.

Anchor bolt type selection is made according to the type of walls, whether it is, concrete, masonry, block work, or stone. Design loads for tensile and shear load directions are taken into account in order for the correct selection of the anchor bolts.

Expansion bolts are all tested to meet the tensile force and shear force performance criteria. There are different anchor bolt sizes to meet the design loads of the application. Load capacities of the anchor bolts are verified by the testing made in house and at authorized testing laboratories.

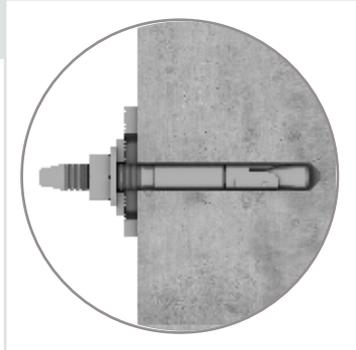
Below is the main categories of anchor bolts:

- Torque-Controlled Expansion Anchors
- Bonded Anchors
- Undercut Anchors
- Deformation-Controlled Expansion Anchors

Anchor bolts are available in stainless steel grade 1.4301 & 1.4401 and galvanized mild steel grade 1.0038.

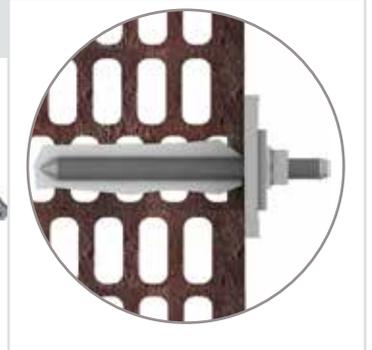


Expansion bolts



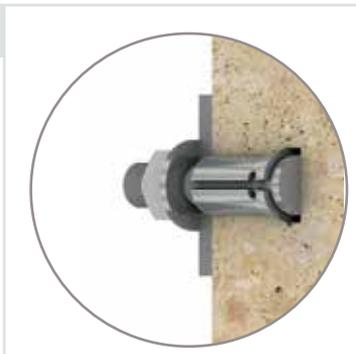
- Torque controlled anchor bolts
- Available in from M6 to M16 sizes
- For use in concrete and filled and reinforced block work

Chemical anchor bolts



- Bonded anchor bolts
- Is used in combination with epoxy resin
- Available in sizes M8 to M20
- For use in concrete, block work and masonry walls

Undercut anchor bolts



- Undercut anchor bolts
- Used for fixing on to natural stone
- Wet drilling system with suitable drilling equipment is required

Wall plugs



- Deformation controlled anchor bolts
- Available in sizes M8 & M10
- For use in concrete, block work and masonry walls

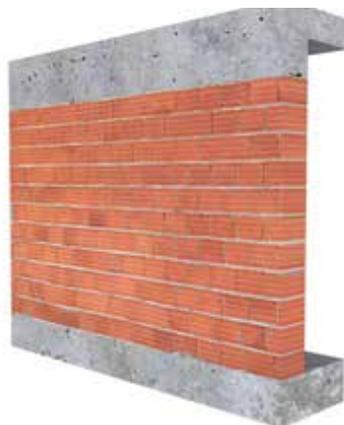


Istanbul, Levent district sky line, Turkey

Concrete walls: Concrete is a base material that contains cement and gravel. The performance of expansion bolts on concrete walls depends on the compressive strength of the concrete. The most common concrete compressive strength is C20/25 which means that there is 25 N / mm² compressive strength on the concrete.

Brick walls: Brick walls are built with individual brick layer on top of each other and bonded together with mortar. Brick walls may be constructed with either hollow or solid bricks. The choice of bolts to be used largely depends on whether the bricks are hollow or solid.

Block work walls: Block work walls are built with individual blocks layer on top of each other and bonded together with mortar. Block work walls may be constructed with either hollow or solid blocks. The choice of bolts to be used largely depends on whether the blocks are hollow or solid.



Special Design & Fabrications

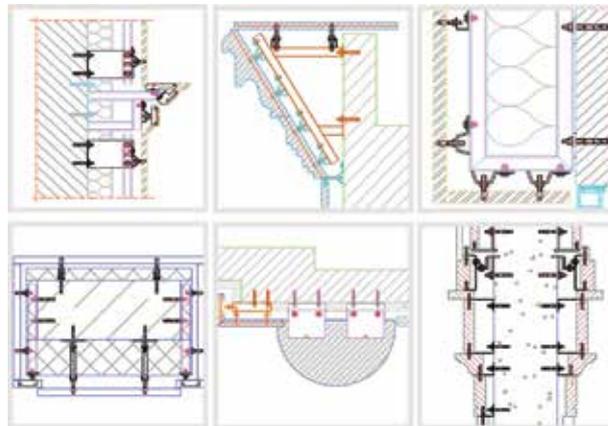
HAZ Metal offers services in the design and manufacture of special fixing systems and structural building components.

Technical support is provided during the tender stage of the project to advise and propose for the design of systems that will offer flexible and economical solutions.

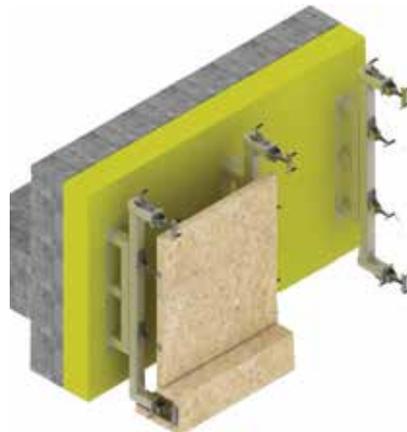
HAZ Metal is equipped with CAD design software to support the special design with 3D graphics illustrations as well as the preparation of structural calculations using finite element analysis.

HAZ Metal has extensive experience in offering its design and manufacturing services in supplying bespoke fixing systems for the application of facades on major projects. Design analysis, structural integrity and manufacturing possibilities are all analysed and planned to construct the most demanding structures.

The HAZ Metal design team, work together with the architects and the consultants on the project in order to realize the specified features of the project. As an experienced and knowledgeable company in the field of facade constructions, HAZ Metal is always ready to find innovative and economic solutions to solve the problems within the scope of facade cladding.



• Custom design for every aspect of stone installation is made to suit the architectural features of the façades. HAZ Metal has comprehensive knowledge and experience in proposing the most efficient method of fixing.



• Different techniques to install stone façades are designed and tested to suit the technical requirements of the projects. HAZ Metal has the resources to design and test fixing systems in order to receive approvals from the project consultants.



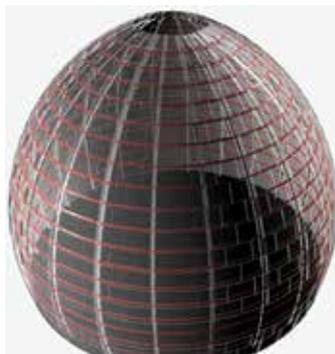
Culture Village, Doha

Sub channel systems in curved and irregular walls:

Sub channel systems that are applied for irregular facade cladding needs precision design and thorough static analysis. The cladding of irregular walls are made with bespoke design and fabrication.

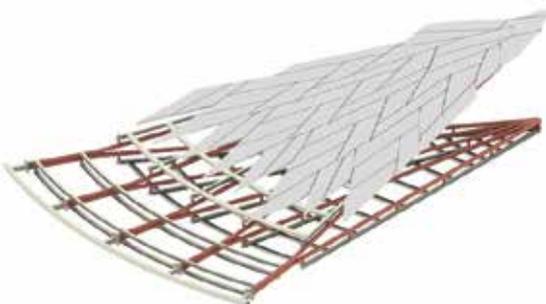
Structural steel secondary structure:

Making designs and conducting the structural analysis for structural steel secondary structures for use in cladding whether it be stone, glazing, prefabricated panels etc.



Preassembled and unitized stone panels:

By incorporating the curtain wall technology, the stone panels are fixed on to a framing system for fast and easy installation. The technology has been developed to enable such conditions for the external facade cladding.



References



Project Name : Emirates Palace Hotel
 Location : Abu Dhabi, United Arab Emirates
 Contractor : Turner International
 Consultant : Keo Consulting
 Cladding Area : 160.000 Square meters



Project Name : Bibliotheka Alexandria Library
 Location : Alexandria, Egypt
 Contractor : Arab Contractors & Balfour Beatty JV
 Consultants : Sonetta
 Cladding Area : 40.000 Square meters





Project Name : Museum of Islamic Arts
Location : Doha, Qatar
Contractor : Baytur Construction Ltd
Consultant : IM Pei
Cladding Area : 60.000 Square meters



Project Name : The Grand Mosque
Location : Abu Dhabi, U.A.E
Contractor : Six Construct
Consultant : Halcrow International
Cladding Area : 145.000 Square meters

References



Tax Office, Moscow



Yapi Kredi Bank, Istanbul



Mauritius Bank, Mauritius



Emirates Towers, Dubai



Gasprom Headquarters, Moscow



Ministry of Petrol & Gas, Ashgabat



New American Embassy, Yerevan



New American Embassy, Astana



School of Foreign Affairs, Doha



Culture Village, Doha



Usadba Centre, Moscow



White Square Office Centre, Moscow



Istek Vakfi Towers Istanbul



Riverside Hotel, Moscow



NBU Bank, Tashkent



Faisal Bank, Cairo



The Fund Building, Abu Dhabi



Abu Dhabi Mall, Abu Dhabi



American Embassy, Port Au Prince



American Embassy, Kingston

References



Kingdom Trade Centre, Riyadh



Admo Apco Headquarters, Abu Dhabi



Garanti Bank Headquarters, Istanbul



Is Bank Headquarters, Istanbul



Four Seasons Hotel, Cairo



National Museum, Ashgabat



Musical Academy, Moscow



Texas College, Doha



Sabancı University, Istanbul



Zadco Gasco, Abu Dhabi



Fairmont Hotel, Dubai



Eschborn Plaza, Frankfurt



Conrad Hotel, Cairo



Hilton Hotel, Adana



Hilton Hotel, Baku



Hilton Hotel, Jeddah



Ritz Carlton Hotel, Moscow



Voytorog Plaza, Moscow



Lazurnaya Hotel, Sochi

References



Adnoc Headquarters, Abu Dhabi



Conrad Hotel, Dubai



The Ruby, Mumbai



Hydra Avenue, Abu Dhabi



Corporate Tower, Abu Dhabi



City lights, Abu Dhabi



Orchard Emerald, Singapore



Dorsett Hotel, Singapore



Jurong East MRT extension C1590, Singapore



Hyundai Innovation Centre, Singapore



Capital plaza, Abu Dhabi



World Trade Centre, Dubai



Etihad Towers, Abu Dhabi



AngMo Kio ITE HQ, Singapore



Biopolis Phase 3, Singapore



Yas Mall, Abu Dhabi



White Gardens Office Centre, Moscow



Westfield White City, London



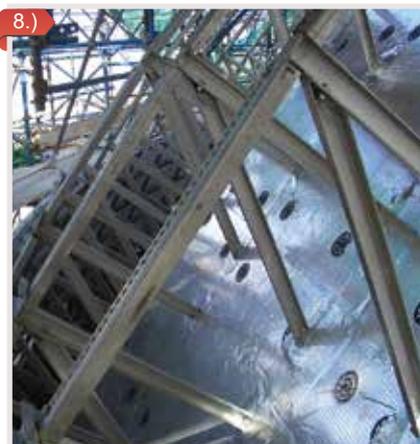
Westfield, Stratford London

Case Studies

Project : Grand Mosque
Location : Abu Dhabi, UAE
Main contractor : Six Construct
Consultant : Halcrow
Installation area : 145.000 Sqm

The Grand Mosque is the second largest mosque in the world and due to its landmark status all of the facade was cladded with white sivec marble from Macedonia. HAZ Metal offered its services for the design and supply of grade 1.4401 (AISI 316) stainless steel fixing systems. There were many different type of wall backings, projection sizes and loadings. Each fixing location was studied separately and a bespoke system was designed and delivered to site for the works to commence. In total 600 tons of 1.4401 (AISI 316) grade fixing systems was delivered to the project for the facade works.

1. The mosque with stone cladded four large domes and the entrance to main praying area.
2. Top of pillars located at the base of the domes.
3. Stone cladding at the gate with large protrusions.
4. Minaret at 38 metres height with the whole area cladded with stone.
5. External Columns
6. Internal columns
7. & 8. Stainless steel sub channel fixing used for the installation of the dome.
9. The top of the dome where the panels are fixed with anchors.



Project : Museum of Islamic Arts
Location : Doha, Qatar
Architect : I.M. Pei Architects
Main contractor : Baytur Construction
Consultant : Halcrow
Installation area : 60.000 Sqm

The Museum of Islamic Arts is built on a man made island located in the Doha Bay. The facade construction was made 5-10 cm thick limestone and granite blocks that were fixed on concrete walls with adjustable L anchors. Special design was made in order to meet the architectural aspects of the facades. HAZ Metal offered its services in the design and the delivery of the fixing systems for the complete facade.

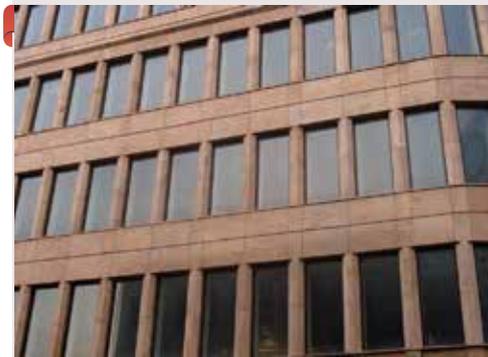
1. The view of the building standing on the man made island
2. Perspective of the external facade
3. Stone cladding on enclined walls located inside of the building
4. & 5. Fixing details of the columns where high load blocks are fixed with heavy duty L shaped anchors
- 6.& 7. Internal stone cladding with sloping and edging achieved with specially designed fixing systems
8. Stone cladded columns with height of 8 metres
- 9.&10 .Construction of the sea wall made out of 4.5 ton granite blocks. The block are installed on to a special designed restraining anchors made out of grade 1.4401 stainless steel.



Project	: White Square Office Centre
Location	: Moscow, Russia
Architect	: EHMAP
Contractor	: ENKA Construction
Consultant	: DC Group
Installation	: 18.000 Sqm

The White Square Office Centre has an external facade of 18.000 sqm of granite cladding. A combination of gible granite and nero empala granite were used on the facade. HAZ Metal was responsible for the design, and supply of fixing systems. The architectural features of the stone installation required the extensive design of the fixing systems to offer the secure and adjustable fixing of the stone panels on site.

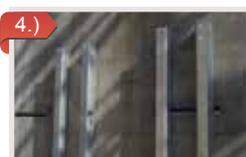
1. & 5. Pictures of the stone façades.
6. & 10. Stone cladding on the parapets at the top of the building. Facing stone panels and soffits were fixed on to a special designed support that was bolted on the concrete and had adjustable anchors for stone connection.
7. & 8. Stone installation with body anchors that are fixed on to a specially designed stainless steel sub channel system.
9. Stone fixing on to thermal and damp insulated walls. Anchors are covered with the damp insulation after fixing is complete.



Project : Adnoc Head Quarters
 Location : Abu Dhabi, United Arab Emirates
 Main contractor : Six Construction
 Consultant : Meinhart
 Installation area : 55.000 Sqm

The New Headquarters of Adnoc in Abu Dhabi is one of the highest buildings with stone facade cladding. At 385 metres height there were challenges in verifying the structural integrity of the system. Each stone was 110 x 220 cm in size and weighed 285 Kg. HAZ Metal was responsible for the design of the fixing systems for the stone. Supply of cast in channels, support system and the undercut bolts for the stone attachments were made as one package to the specialist contractor.

1. The view of the building
2. West elevation of the tower with heck platforms
3. The view of the blind wall with secondary structure fixed on cast in channels
4. Close shot of the fixing detail made on the cast in channels
5. Part of the tower elevation clad with stone
6. Close shot of the stone cladding supported on the special system
7. Close shot of the fixing system behind the stone cladding
8. Stone being hoisted into position for attachment on to the system
- 9 & 10. Stone panels with undercut bolts already attached at the back of the stone panels



Project : Design & Technology Centre
Location : St Polten, Austria



Project : Renaissance Tower
Location : Istanbul, Turkey



Project : Bosmos Office Flats (Brickwork cladding)
Location : Switzerland



Project : Mataf Extension, (False ceiling cladding)
Location : Mecca, KSA





Notes

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Notes

A large grid of graph paper for taking notes. The grid consists of 20 columns and 40 rows of small squares, providing a structured area for writing or drawing.



Notes

A large, empty grid of small squares, intended for taking notes. The grid is composed of light gray lines on a white background and occupies the majority of the page's vertical space.



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Always at the forefront of fixing technology, HAZ METAL has earned a reputation as the leaders in fixing systems innovation and is regarded as the one to follow. HAZ METAL fixing systems of today become the standard of tomorrow.

HAZ METAL combines the very latest international technology with its own research and development team to establish a technical excellence within the industry. HAZ METAL readily embraces the responsibility of a major producer and shares its expertise with problem solving solutions.