

# CROSS-FIX



The new substructure system  
for rear-ventilated facades



## EJOT- specialist in fastening technology

facts and figures



**36** subsidiaries in **33** countries



**3,600**  
Employees



**40 million**

### Screws

In our manufacturing plants around the world, we produce up to 40 million items for construction and industry every day.



**27,963**  
Customers

**24,000**

### Products

In our manufacturing plants around the world, we produce up to 40 million items for construction and industry every day.



**1,500**  
Patents

Our engineers are constantly developing new product solutions that are protected by 1,500 patents.



Production site for bi-metal screws "In der Aue" plant, Bad Laasphe

## Fastening solutions for the building industry

**The EJOT Construction Division caters to selected segments of the building industry. This includes professional applications on building facades as well as installation solutions for technical facilities inside the building.**

The aspiration to high product quality is not an end in itself for EJOT. The customer really benefits from our screws and anchors. Therefore reliable installation also means low failure costs for the customer. Moreover, durable quality joints provide the best protection against expensive customer complaints. This is why our strategic product lines are manufactured according to highest quality standards. We convey expert knowledge about the use of our products to all our customers. And if required, we are on hand with advice and support for fastening systems.

Other services include advice over the telephone, application advice on-site, initial sizing, component tests in the EJOT Test Centre and a comprehensive training programme for system providers, architects, specifiers, distributors and installers with the EJOT TEC ACADEMY.

Innovative products are the key to success. We leave nothing to chance. We identify our customers' needs under real conditions on the job site. Communication from the market and about market requirements to the development departments is ensured by a regular exchange between our technical experts and specialists and users from the international building industry. This is how we develop innovative product solutions that offer a clear added value and inspire customers.



## At home in many trades

The EJOT® business areas at a glance

**With the Construction Division, EJOT offers professional fastening solutions for the building industry in the Building Fasteners and ETICS Fasteners sectors.**

**With EJOT you get everything you need for almost every application from a single supplier with the usual high product quality.**

**Anchoring Technology**

Special products for mechanical anchoring in non-cracked and cracked concrete as well as chemical and thus expansion pressure-free products for heavy-duty fastening in concrete and masonry.

**Timber Construction**

High-quality fastening technology for anchor and direct assembly in timber construction

**Industrial Lightweight Construction**

High-quality fasteners for fixing profiled sheets and sandwich panels in the industrial lightweight construction sector

**Interior Work**

Special products for fastening wood chipboards and for fastening attachments in plasterboard, masonry or concrete

**Flat Roofing**

Fasteners, and installation tools for the efficient fixing of insulation and waterproofing membrane to flat roofs and slightly sloping roofs

**Profiles for External Thermal Insulation Composite systems (ETICS)**

Profiles for high quality render finishes

**Solar**

Fastening technology for solar and photovoltaic installations on trapezoidal steel profile and sandwich element roofs as well as for use on fibre cement roofs

**Fastening solutions for External Thermal Insulation Composite Systems (ETICS)**

Special anchors for fixing insulation on external wall systems

**Rear-Ventilated Facades**

Complete substructure system with consoles, screws, anchoring solutions, insulation support anchors and anchors

**Mounting Elements for Attachments**

Fastening solutions for the planned and subsequent fastening of attachments to ETICS facades

**Window and Glass Facade Technology**

High quality fastening elements for window and door assembly and use in aluminium/glass facade systems



## The rear-ventilated facade

Manifold, energy efficient and durable

**The rear-ventilated facade is undisputedly the most diverse of the facades. It scores with its long-lasting service, offers great design freedom and is extremely popular with architects.**

Contrary to other facade types no requirements are placed on rear-ventilated facades regarding the building statics, because it is only hung in front of the actual load-bearing wall. And exactly this decoupling of statics, thermal and weather protection is what enables architects and builders to have a very high design freedom and versatility.

### **Manifold construction possibilities**

The construction possibilities for exterior wall cladding are almost limitless. In addition to a wide range of possible raw materials for wall cladding, it is the colours in particular that give the building its character and individuality, visible from afar. The rear-ventilated facade is equally suitable for new builds and restorations, in both public and private construction.



### Of lasting value

In addition to the design freedom, rear-ventilated facades also score in the areas of sustainability and economic efficiency, since it is one thing to plan and build a building. The other thing is the preservation of an intact function throughout the lifecycle and the proper handling of the used-up resources at the end of life. The individual components of the facade have a very long-lasting service and can be dismantled and returned to the material cycle at the end of their useful life. The use of nearly any insulation thickness and modern substructures enables U-values for the highest energy requirements.

### Special fastening technology

Every facade must be securely anchored to the load-bearing outer wall. In this case the substructure is the static link. The different fastening elements at this point are literally playing a key role, even though they seem to be insignificant. Because they ensure that all system components, such as insulation, substructure and facade cladding, are joined in a lasting and secure way.



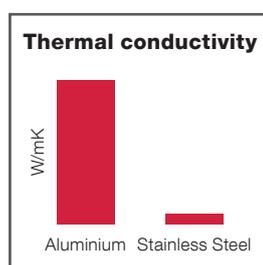


## CROSSFIX® is the revolution in the market of rear-ventilated facades

### The new substructure system

CROSSFIX® is the first stainless steel substructure that can be used for horizontal and vertical support profiles. CROSSFIX® increases your flexibility, facilitates assembly, saves precious time and reduces your storage costs. CROSSFIX® console is made of 100% stainless steel and thus significantly reduces the thermal bridge surcharge in the system.

With the CROSSFIX® modular system, EJOT delivers everything from a single supplier. In proven quality.

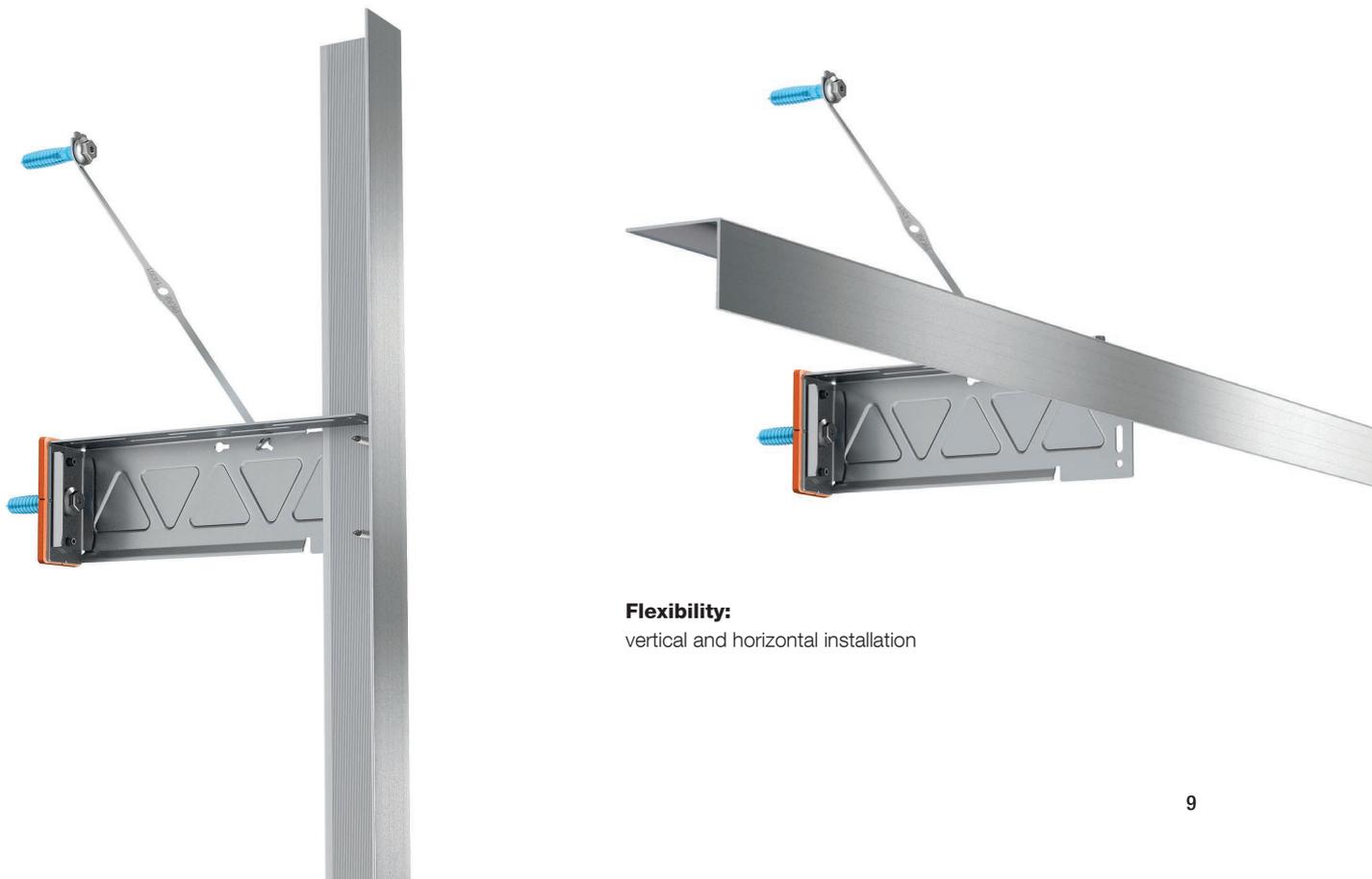


## Characteristics

- > Stainless steel console, grade 316 (A4) and grade 304 (A2) standard, A5 available upon request
- > Suitable for horizontal and vertical applications
- > Passive-house certified
- > Optimised load introduction due to FEM-analysis
- > Conforms to installation standards (hole spacing 250 mm for masonry)
- > Fastening on wood and steel substructures possible

## All advantages at a glance

- > **Everything from one source:** EJOT supplies a complete substructure system for all applications and all necessary information for installation.
- > **All purpose:** CROSSFIX® is the console for vertical and horizontal installation and offers maximum flexibility for all applications, no matter if fixed-point or sliding-point installation
- > **Economical:** CROSSFIX® enables quick and easy processing and standard-compliant fastening options on all common surfaces (e.g. concrete, solid and perforated brick, wood and steel substructures).
- > **Environment-friendly:** When manufacturing stainless steel, there is a more moderate amount of energy required and a considerably lower environmental pollution than when producing aluminium.
- > **Cost-efficient:** considerable savings in material costs and storage costs
- > **Energy-efficient:** The stainless steel CROSSFIX® console enables a significant reduction in the thermal bridge surcharge compared to aluminium.
- > **High static carrying capacity:** Stainless steel is many times more stable than aluminium
- > **Better fire resistance:** The thermal expansion of aluminium is twice as great as that of steel ( $\alpha T = 0.000024 \text{ m/m } ^\circ\text{C}$ ); the melting temperature of stainless steel is  $1450 \text{ } ^\circ\text{C}$  vs.  $660 \text{ } ^\circ\text{C}$  with aluminium.
- > **Safe:** The CROSSFIX® console is classified as non-flammable.
- > **Dynamic load capacity:** Seismic tests confirm the dynamic load capacity of the CROSSFIX® console.



**Flexibility:**  
vertical and horizontal installation

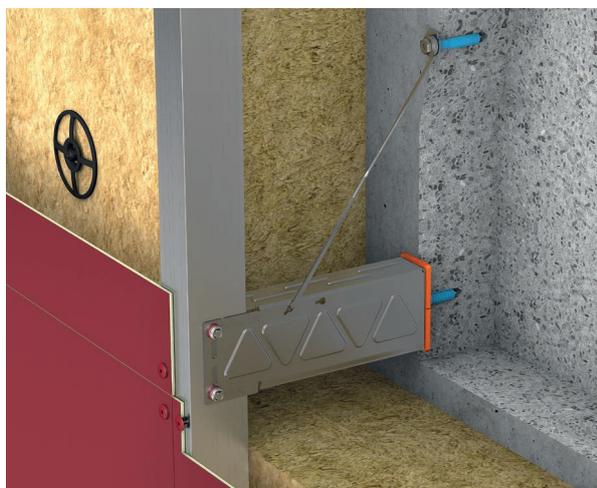
# CROSSFIX® can be used universally

## A console for different assembly purposes

With the CROSSFIX® console, EJOT provides a flexible solution that can be used vertically and horizontally, no matter of whether it is a fixed point or sliding point installation. This eliminates the need to install different consoles for vertical or horizontal use, which was previously the case.

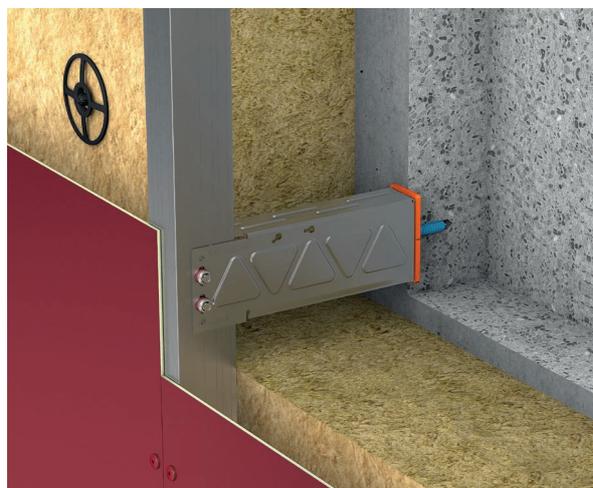
### Vertical assembly

Fixed and sliding point design for vertically running support profiles



#### Vertical fixed point

Fixing through clearance hole, optionally with powerkey for better load transmission



#### Vertical sliding point

Fastening through slotted hole

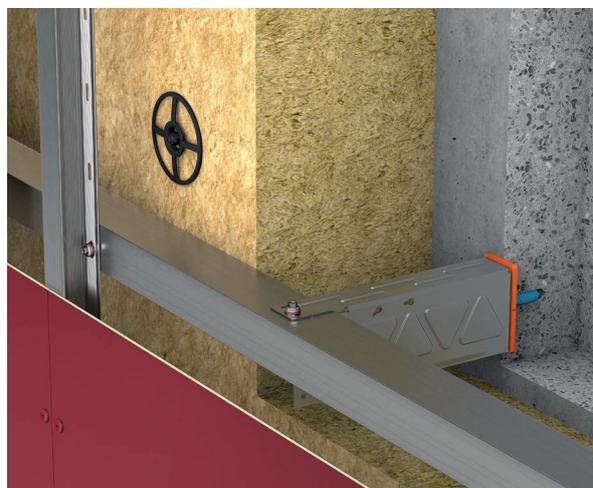
### Horizontal assembly (two-layer application)

Fixed and sliding point design for horizontally running support profiles



#### Horizontal fixed point

Fixing through slotted hole, optionally with powerkey for better load transmission



#### Horizontal sliding point

Fastening through slotted hole

# CROSSFIX® increases energy efficiency

## Improved U-values thanks to 100% stainless steel

In order to reduce thermal bridges in the rear-ventilated facade system and thus to achieve higher energy efficiency, materials with the lowest possible thermal conductivity are recommended for facade substructures. While this is around 17 W/(m K) for stainless steel, it is around 160 W/(m K) for aluminium.

Therefore, the use of stainless steel significantly reduces the transmission of thermal bridges in the CROSSFIX® substrate compared to systems made of solid aluminium. This means that significantly improved U-values can be achieved with the same insulation thickness.

## Aluminium and stainless steel in comparison

The isothermal images below illustrate temperature curves between the aluminium consoles and the CROSSFIX® console made of stainless steel. Lines of the same temperature are called isotherms. If these run almost parallel, there is only a slight disturbance compared to the one-dimensional heat flow (U-value, coefficient of heat transmission).

The large thermal bridge, as can be seen in Figure 1, results in a large heat loss. This means that the wall inside can cool down considerably. The temperature difference between the inside and outdoor area is therefore relatively small.

With the CROSSFIX® substructure system, compared to aluminium consoles, only a minimal thermal bridge forms (Fig. 2) and the wall in the interior cools significantly less. This example clearly shows how the use of a stainless steel substructure significantly increases energy efficiency.



**Figure 1**  
Pronounced thermal bridge on aluminium consoles



**Figure 2**  
Minimal thermal bridge with CROSSFIX®

# CROSSFIX® increases the energy efficiency

Improved U-values through 100% stainless steel

## Specification: Insulation thickness should be 200mm

When specifying façade substructures, it is recommended to use materials with low thermal conductivity in order to prevent the formation of thermal bridges. The thermal conductivity of stainless steel is approximately 17 W/mK whereas aluminium is typically 160 W/mK.

By using stainless steel, CROSSFIX® reduces the thermal conductivity compared to aluminium constructions. Therefore, EJOT can achieve strongly improved U-values with the same insulation thickness.

### Example based on a reference object in Graz, Austria

(5 floors, 1800 m<sup>2</sup> facade area)

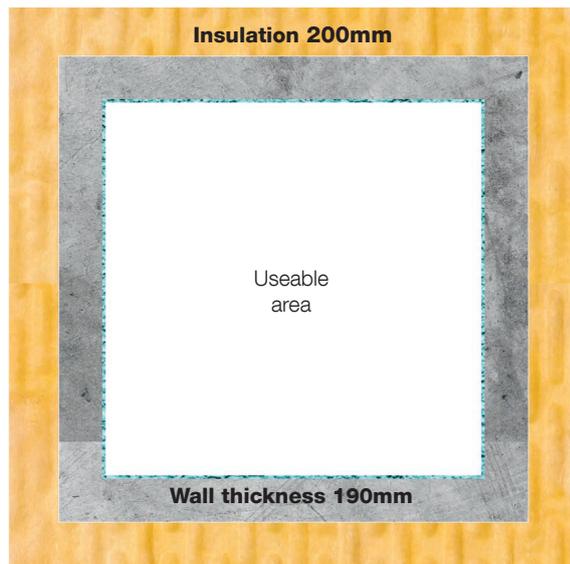
CROSSFIX® Console K1 220mm

Number of sliding points per m<sup>2</sup>: 2

Number of fixed points per m<sup>2</sup>: 1

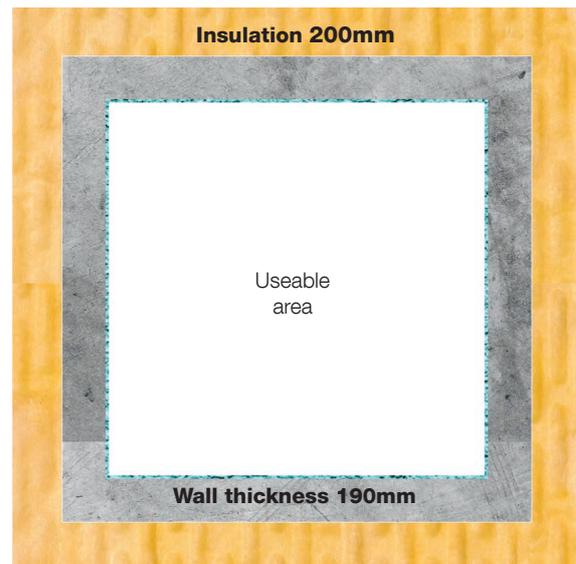
Insulation thickness: 200mm

Heating medium: natural gas



Aluminium Console

**U-value facade incl. thermal bridge =  
0,251 W/(m<sup>2</sup>K)**



CROSSFIX® Console

**U-value facade incl. thermal bridge =  
0,183 W/(m<sup>2</sup>K)**



**Significantly lower U-value  
thanks to stainless steel!**



After 10 years of use:

**Heating cost savings of €10.400!**

**48,6t less CO<sub>2</sub> production!**

Payback period of CROSSFIX® is 8.75 years

# CROSSFIX® increases the usable area

More living space and usable area through 100% stainless steel

## SPECIFICATION: U-Value of 0,183 W/m<sup>2</sup>K should be realised

The thermal conductivity of stainless steel is lower than that of aluminum. With CROSSFIX®, the required U-value can be achieved with a much lower insulation thickness than with an aluminium substructure..

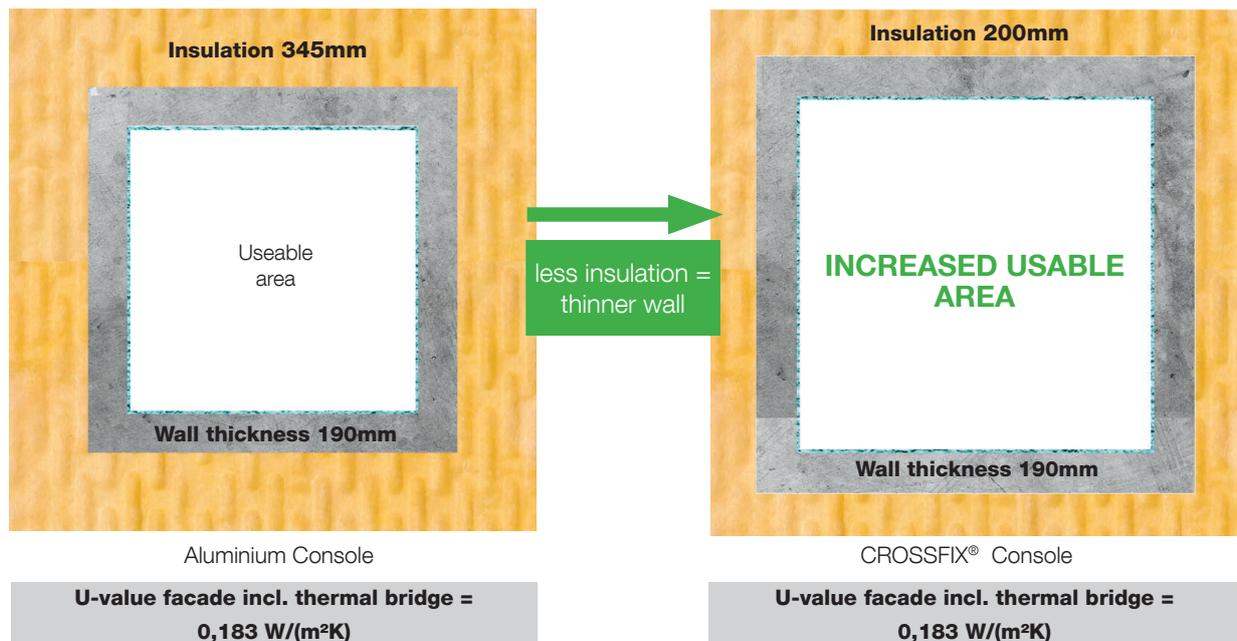
### Example based on a reference object in Graz, Austria

(5 floors, 1800 m<sup>2</sup> facade area)

CROSSFIX® Console K1 220mm

Number of sliding points per m<sup>2</sup>: 2

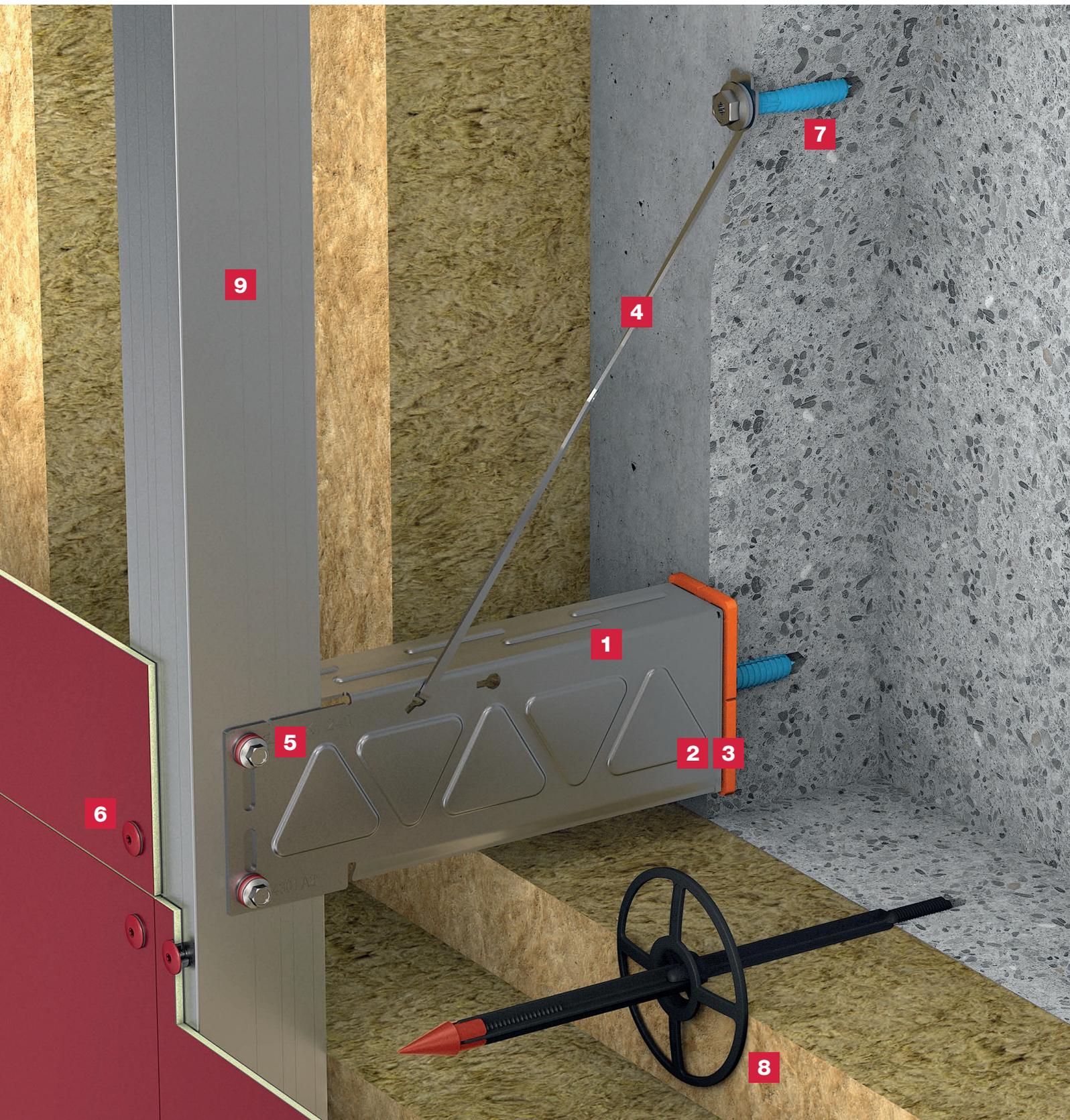
Number of fixed points per m<sup>2</sup>: 1



Usable area increases by 96,45m<sup>2</sup>!  
€346.693 additional real estate price!

# CROSSFIX® is a complete system

The individual components and the appropriate EJOT® accessories



**1 Console**

Stainless steel (A2/A4). Reach 40-400 mm in 20-mm-steps, larger reach possible. Pressure plate and thermal stop captive pre-assembled



**2 Stress plate**

For a higher load impact or load bearing capacity



**3 Thermal stop**

For even better U-values capacity



**4 Power Key**

For better load transmission



**5 Self-drilling screw VARIO**

Sliding and fixed point screw including sliding washer with buffer zone for connecting consoles and support profiles



**6 LT System**

Screws and centring grommets for fastening cladding panels to support profiles



**7 Embedment**

Facade anchors, metal anchors or chemical anchors for fastening the consoles and support profiles in the load-bearing wall (depending on the structural requirements)



**8 Insulation support anchor**

For fixing insulating material



**9 Support profiles**

Support profiles in different versions for cladding panels





## Our service range

Your satisfaction comes first

**With the EJOT CROSSFIX® system we offer you a complete facade substructure from a single supplier. You provide all the information about your project and we will develop the right solution for you.**

In addition to our complete range of services, which you can view on the Internet, we offer you the following optional services specifically for your CROSSFIX® project:

- > Preparation of an offer for the square meter price of the regular surface on the basis of the completed checklist and the documents provided
- > Initial sizing and a reference surface based on it
- > Dowel pull-out tests on masonry on site by trained EJOT specialists
- > U-value calculation

# Digital information

Website:

[www.ejot.at/crossfix](http://www.ejot.at/crossfix)



Interactive Checklist



Installation video



# Certificates

EPD CROSSFIX



LEED Fact Sheet



Passive House Certificate



Global Fastener Alliance®  
<http://www.globalfasteneralliance.com/>



Qualitätsmanagementsystem  
DQS-zertifiziert nach ISO 9001:2008  
Zertifikat-Registrier-Nr.  
302825 QM08



Institut Bauen und Umwelt e.V.  
<https://ibu-epd.com>



Fachverband Dübel- und Befestigungstechnik  
<https://www.bv-bausysteme.de/>



Passivhaus Institut  
<http://www.passiv.de/>



EN-1090-1:2 Zertifizierung bis  
Execution Class 4



Technical development supported by  
FH Joanneum  
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Österreichischer Fachverband für  
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[www.oefhf.at](http://www.oefhf.at)



Fachverband Baustoffe und Bauteile für  
vorgehängte hinterlüftete Fassaden e.V.  
<https://www.fv.hf.de/>



Montanuniversität Leoben  
<https://www.unileoben.ac.at/>



RWTH Aachen, Institut für Stahlbau  
<http://www.stb.rwth-aachen.de/>



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# FINISHED PROJECTS



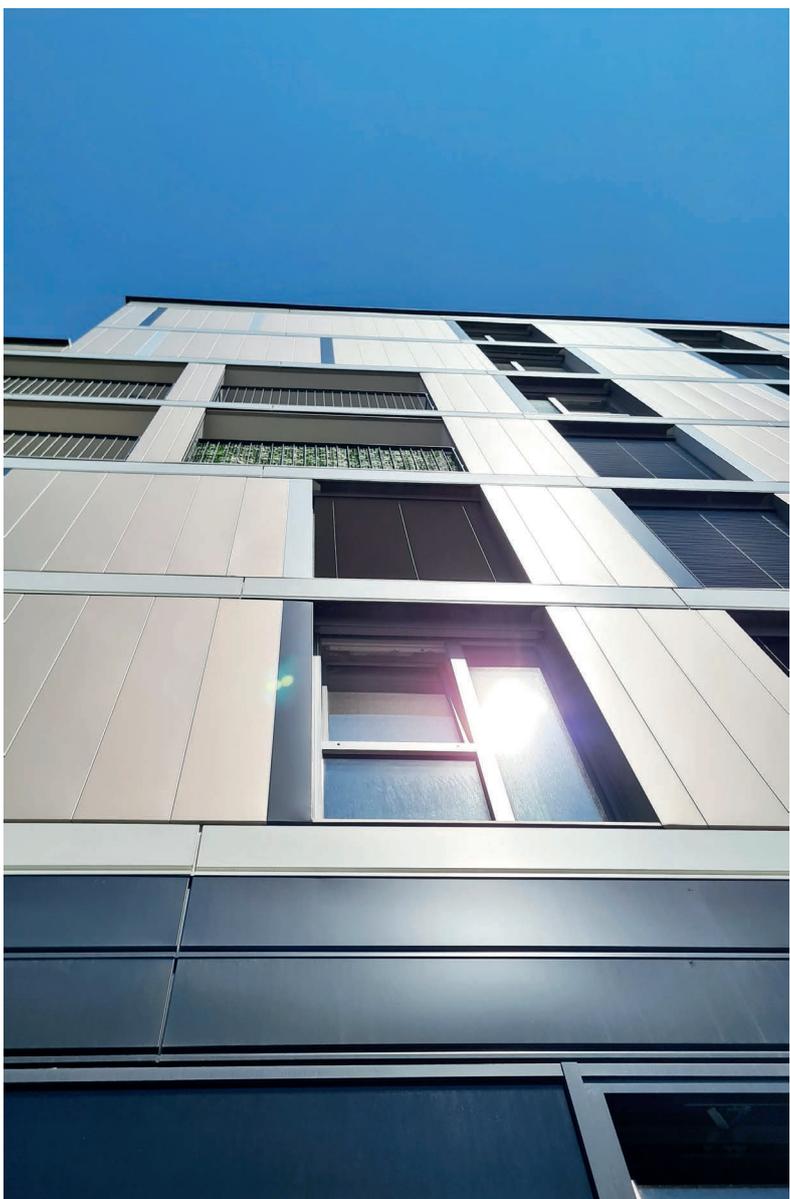
**CROSS -| - FIX**



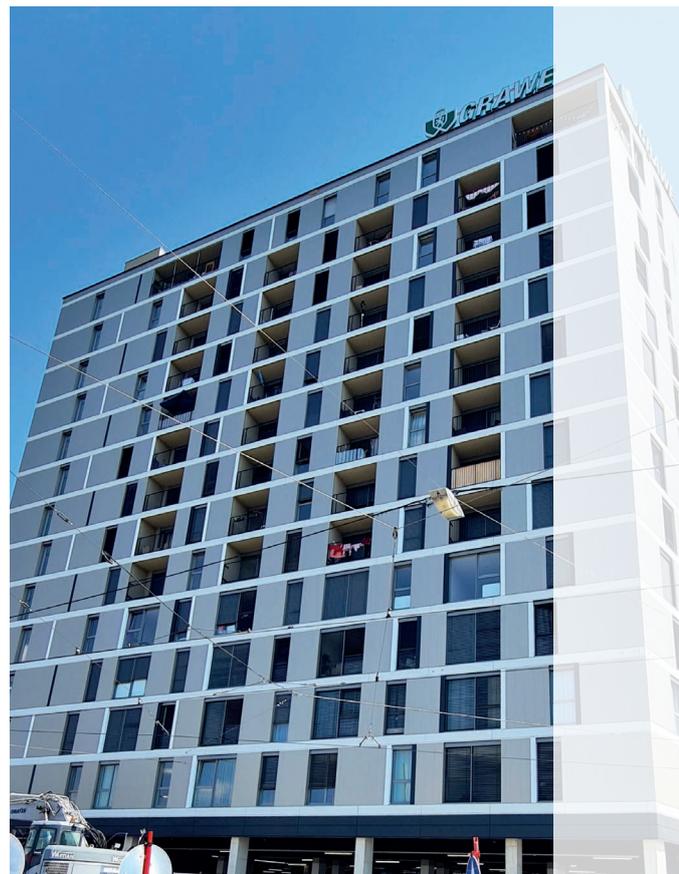


The legero united campus in the south of Graz consists of two rings of different sizes. Generous glazing, the facade made of bronze-colored anodized aluminum, which changes in the sunlight, and the lush inner courtyards blur the boundaries between inside and outside. The larger office ring can be topped up by another floor at any time.





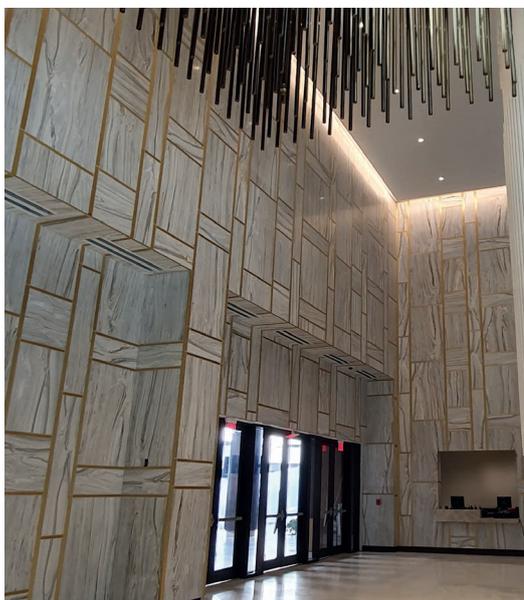
The architectural masterpiece consists of a total of 5 structures. On the ground floor there will be retail space that will ensure more comfort in everyday life for future residents, a forecourt with water features, green areas and seating as well as numerous parking spaces.



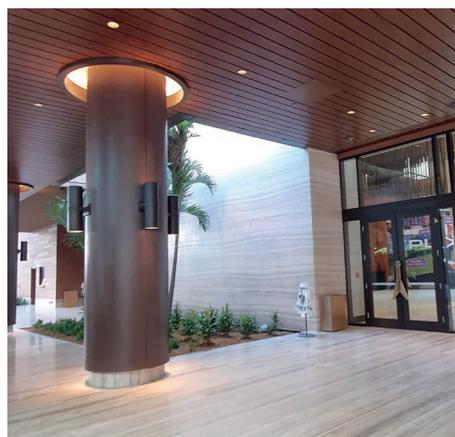


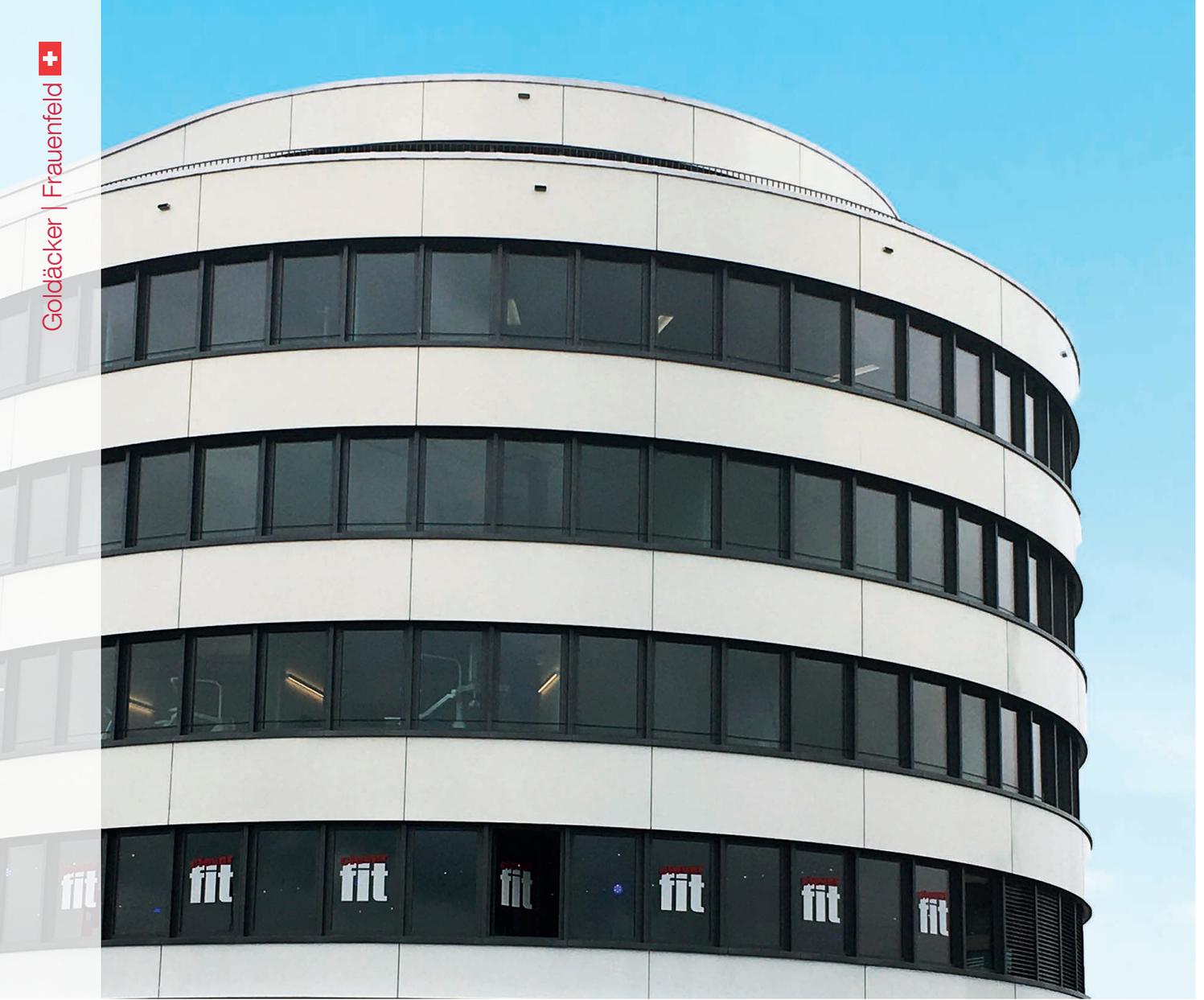
The "Vital- und Gemeindegemeinschaftszentrum Dobl-Zwaring" comprises a community and medical center including a café in a 2 and 3-storey building complex. The building was erected as a monolithic structure in solid construction with a usable area of 2,600 m<sup>2</sup>.





In cooperation with an Italian marble dealer, EJOT Italia was able to realise the project in America. CROSSFIX was used to fix the marble facade indoors and outdoors.





Goldäcker I is used as an office / commercial building. It has a sales area of 1,022 m<sup>2</sup> and an area of 7,305 m<sup>2</sup> for office and commercial use.



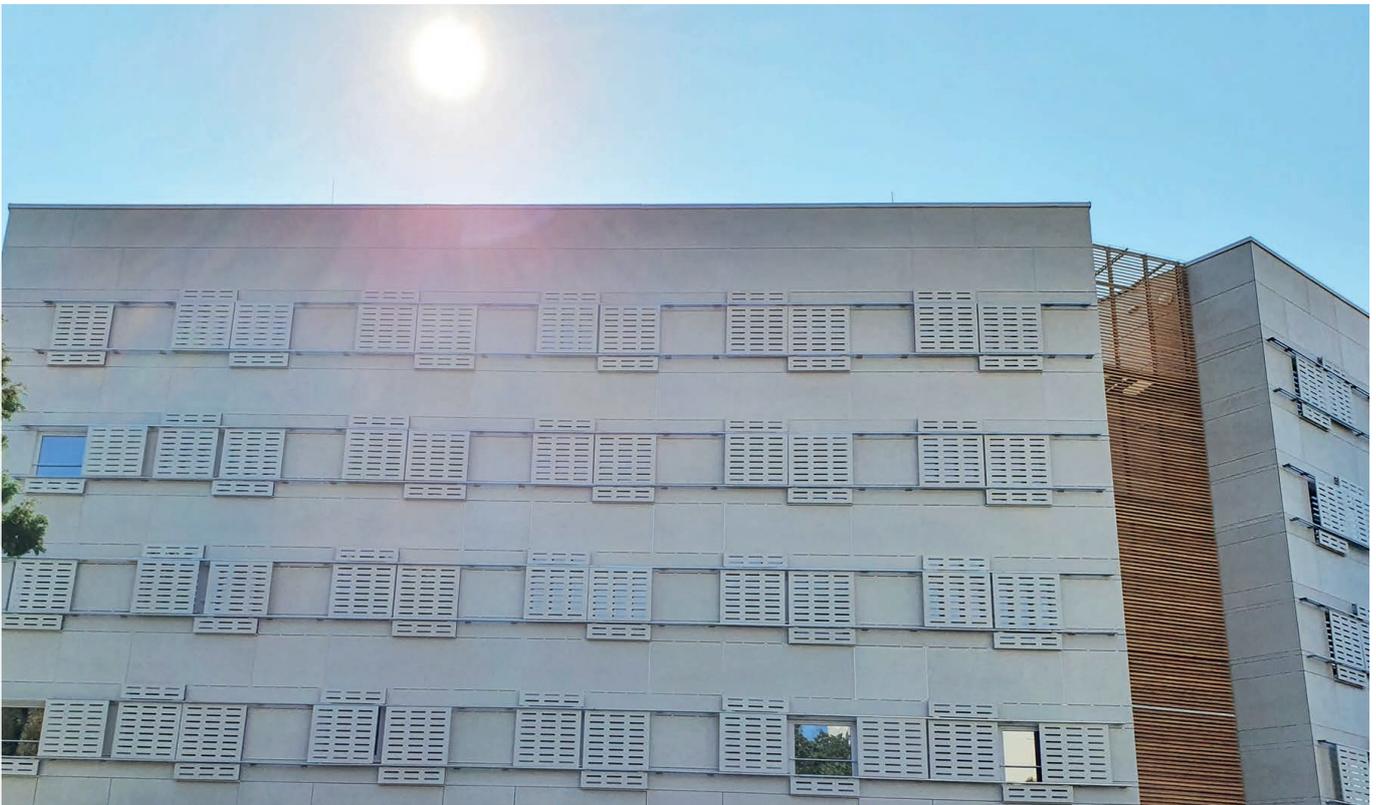


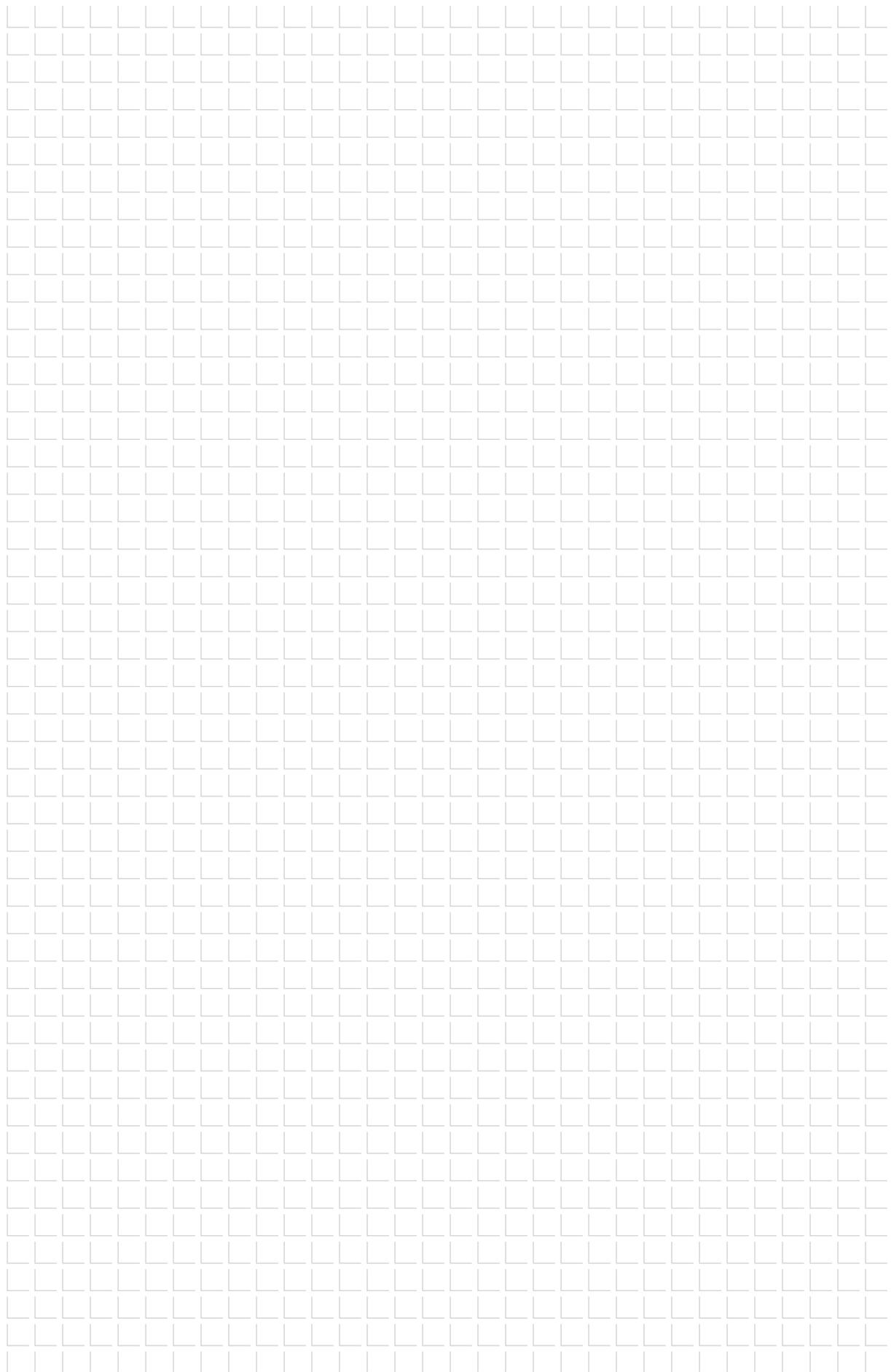
The project, called Hexagon Offices & Apartments, has a total area of 25,000 m<sup>2</sup>. The Hungarian construction company Kesz has converted a building, which was originally intended to be a hospital, into offices and an aparthotel.





Much emphasis was placed on modernity and energy efficiency in the new student residence in Dubrovnik. The dormitory is intended to help position the University of Dubrovnik as an internationally recognised university with a focus on international cooperation.







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