

FRANK | egcobox



In modern architecture cantilevers are a regular construction feature. To prevent thermal bridging, insulated cantilever connection systems are used. These approved systems combine connection components with integrated thermal insulation materials, thus allowing designers to satisfy both the structural stability and thermal insulation regulations.

Egcobox has been approved by the construction supervising authorities of the following countries:

- Germany
- Netherlands
- Austria
- Poland
- Czechoslovakia



Structural stability is provided by a framework of steel reinforcement passing through the 60 to 80 mm thick thermal insulation material. This ensures that the complete structural component (e.g. a balcony) is fully integrated into the building frame. The **Egcobox** individual cantilever connection system has been approved since 1997.

A distinctive feature of this system is the use of continuous reinforcement without a welded joint. A stainless steel sleeve is placed over the rebar in the component joint area where corrosion protection is required. The annular gap between the sleeve and the rebar is then injected with an epoxy resin to provide a corrosion proof joint.

Egcobox with its continuous rebars has significant benefits over conventional systems:

- **Uniform material properties of the reinforcement between the two components to be joined**
- **Reduced vertical deflection of the cantilever**

Three-dimensional thermal simulation models demonstrate how **Egcobox** works and prove that the system meets all energy and hygiene requirements of the official thermal insulation regulations.

Another key advantage of the **Egcobox** system is its versatility. In addition to our extensive range of standard elements, **Egcobox** can be adapted to suit the dimensions of individual constructions, which means that designers do not have to „design around“ standardised elements.

Egcobox elements are available for the majority of cantilevered applications:

- **Egcobox** Mz and Vz for balconies and exterior walkways
- **Egcobox** W for walls
- **Egcobox** A and F for roof parapets

Egcobox – special elements:

- **Egcobox** for curved balconies
- **Egcobox** for diagonal balconies
- **Egcobox** for corbels

Steel quality, tension, compression and shear force rebars

All reinforcement steel is to grade BSt 500 S. This unique system with its continuous steel reinforcement (protected by a resin injected stainless steel sleeve) offers permanent corrosion protection and ensures that the reinforcement between the connected components has uniform material properties.

Reduced vertical deflection of the cantilever.

Protection against corrosion

1st protective coating:

A stainless steel sleeve protects the injection resin against mechanical damage. The stainless steel sleeve also provides very good resistance against chemical attack because of the high molybdenum content.

2nd protective coating:

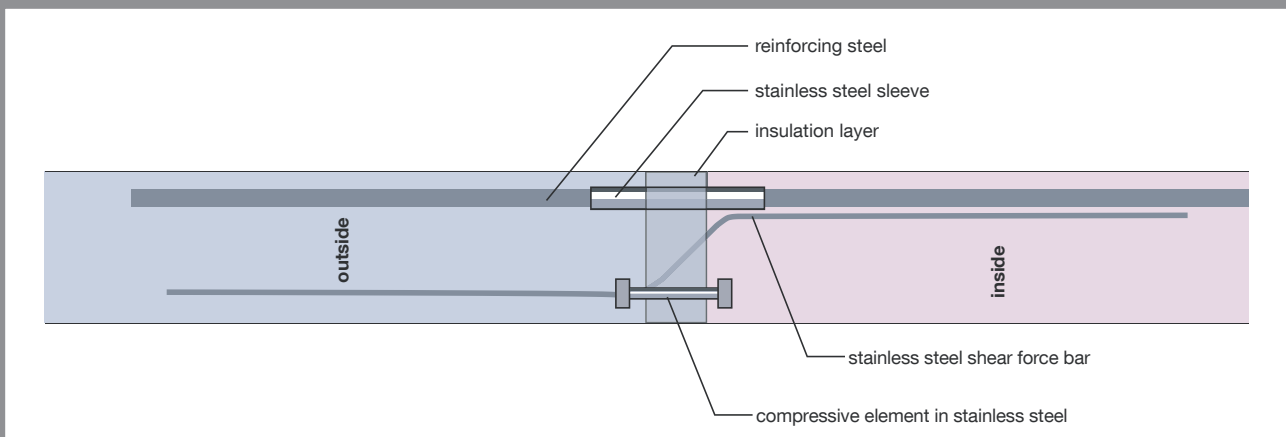
The reinforcement bar is protected against corrosion by the epoxy resin which is injected under high pressure.

This patented sandwich structure provides optimum corrosion protection of the reinforcement steel bar BSt 500 S in the area of the construction joint.

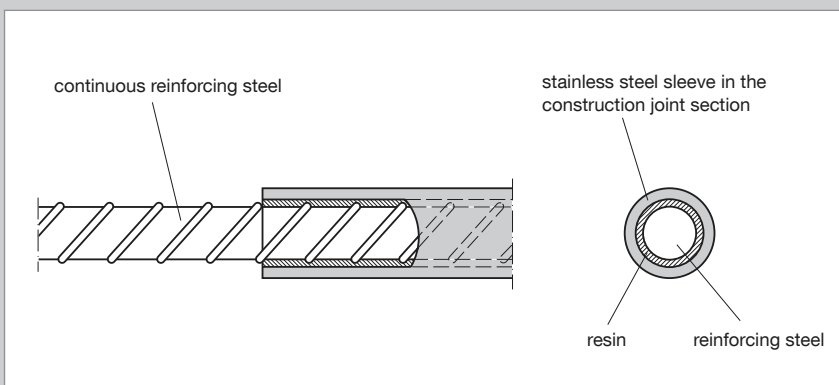
Dimensioning

Egcobox fulfils the requirements of the following standards:

- DIN 1045-1
- EC 2
- BS 8100



reinforcing steel



- Reinforcement steel BSt 500 S
- Stainless steel sleeve
- 2 mm injection area filled with a two-component resin as corrosion protection

Cold bridges

Cold bridges are those areas on the outside surfaces of a building through which the heat loss to the outside is particularly high when compared to the remaining surface.

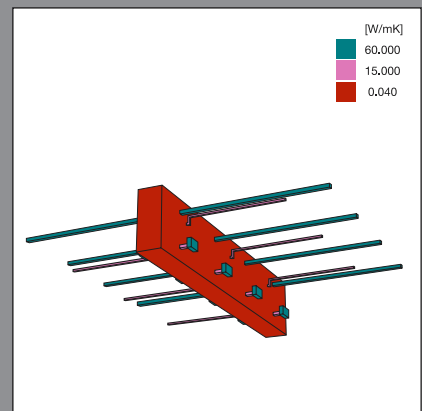
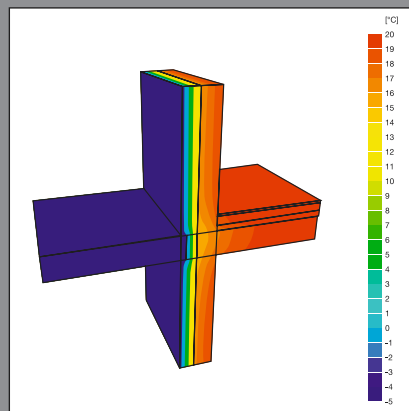
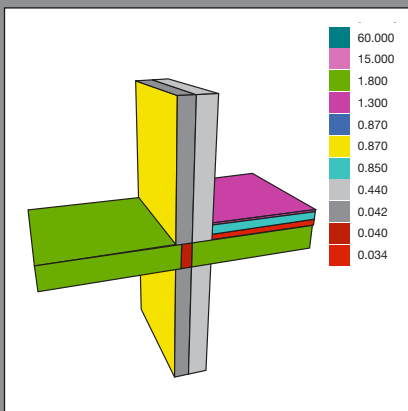
The risk of cold bridges is particularly high at protruding structures. Cold bridges can result in:

- Higher energy consumption
- Risk to the building (building failures)
- Risk of condensation and fungal growth

Especially in times of increasing energy costs it is vital to design building structures in a way to keep thermal losses to a minimum. In addition to the energy aspect, thermal insulation is important for hygiene reasons. As soon as surface temperatures at the inner walls near cold bridges drop below the critical temperature of 12°C – 13°C, water vapour contained in the air condenses on the structural elements. This water can cause damp in both plaster and masonry.

The continuous presence of moisture on the inner wall surface causes not only ugly spots on the surface, but also simultaneously damages to the plaster finish and wallpaper.

Damp spots on internal walls are an ideal medium for fungal growth. Fungus produces spores of microscopic size, which are then spread throughout the whole building via air circulation. When we breathe them in, they are likely to affect our health.



Structural calculation

Cut

Isometric

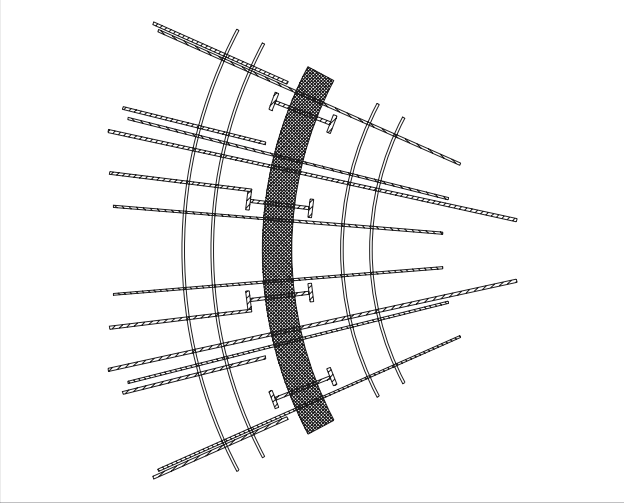
Egcobox solves the problems associated with cold bridging

When using conventional cantilevers, e.g. balconies of continuous concrete, there is a risk of cold bridging because of the geometry and the material used:

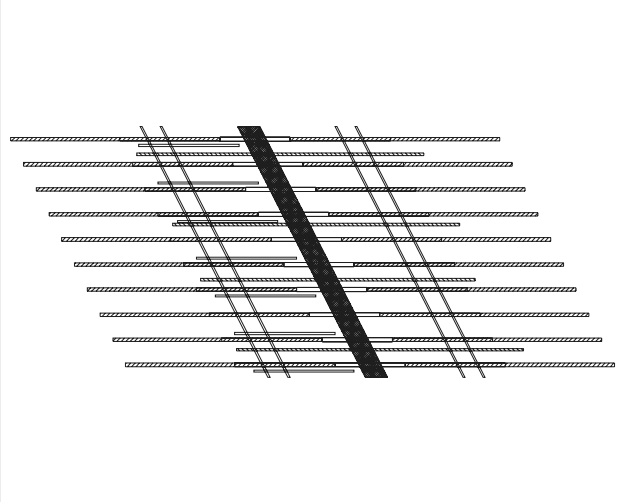
Geometrical cold bridges can be found everywhere where the outer surface of a building is much bigger than its inner surface, e.g. when cantilevers are used. This results in the so-called „cold ribbed effect“. Cold bridges such as masonry walls with integral reinforced concrete beams form a material-based cold bridge because the heat loss through the beam is much greater than through the masonry.

Egcobox is the ideal solution to these problems. With an 80 mm thick insulation and a lattice of reinforcement, the risk of cold bridges can be eliminated at the design stage.

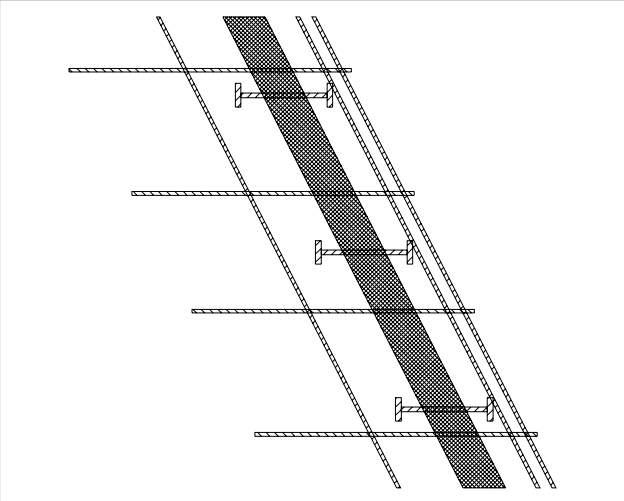
Egcobox for curved balconies



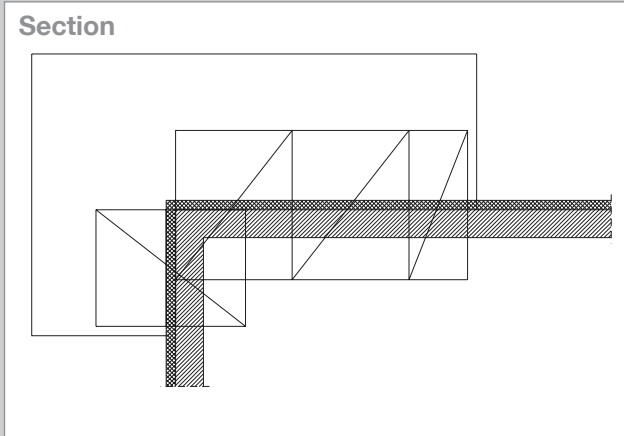
Egcobox for diagonal connections



Egcobox for diagonal wall connections

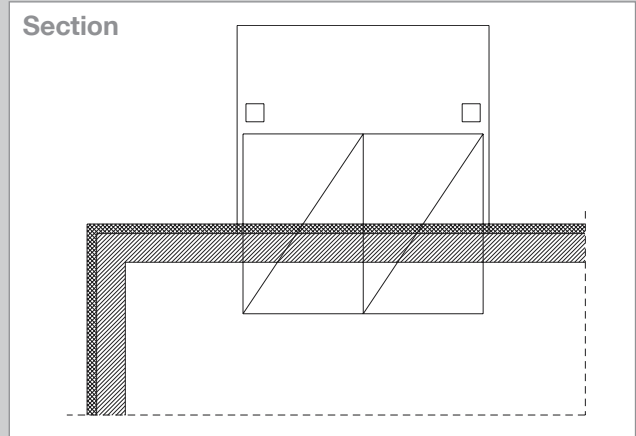


Egcobox Mz-DK-Eck



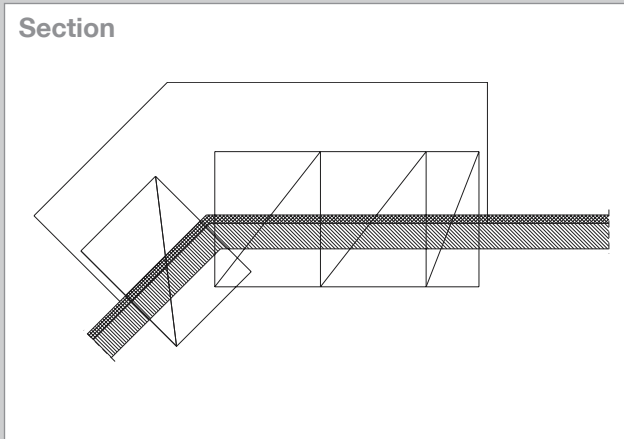
balcony corner consisting of corner elements left + right

Egcobox Vz-D±



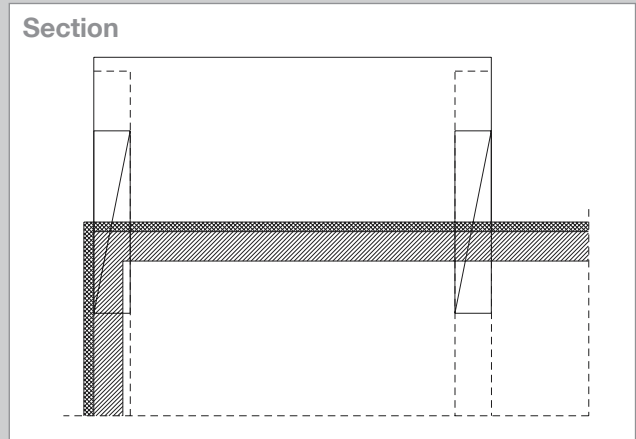
balcony slab with changing shear loads

Egcobox Mz-D-Eck



all angles are possible with two corner elements

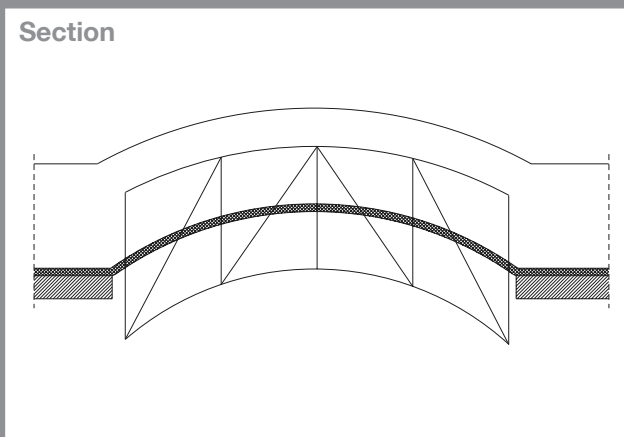
Egcobox S for cantilevered beams



balcony slab with main beams

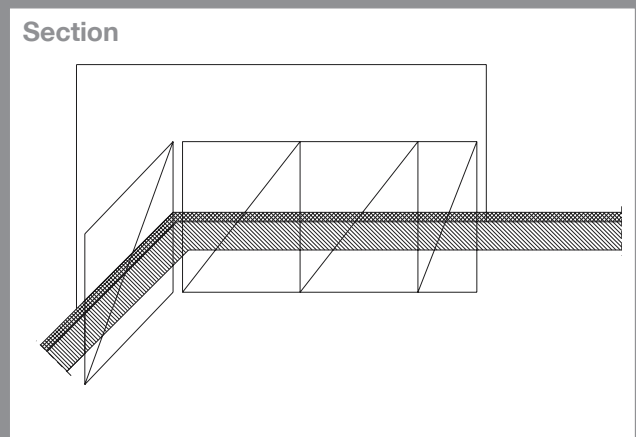
Egcobox special elements are specifically made for each problem

Special arched Egcobox components



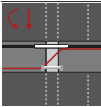
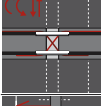

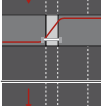
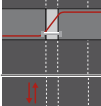
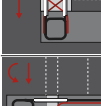
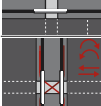
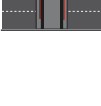
element with radiused insulation

Diagonal Egcobox special elements



element with rebars parallel to the reinforcement on site

Egcobox product range

	Designation	Product	Wall thickness mm
	Cantilever construction elements for moment and transverse force transmission	Egcobox Mz-D	160-250
	Cantilever construction elements for moment and transverse force transmission	Egcobox Mz-G	160-250
	Cantilever construction components to transfer positive and negative moments and shear forces	Egcobox Mz ±	160-250
	Corner elements for cantilever connectors for moment and transverse force	Egcobox Mz-DK-Eck	170-250
	Cantilever connectors for cantilevers supporting transverse force transmission	Egcobox Vz-D	160-250
	Short cantilever connectors for supporting transverse force transmission	Egcobox Vz-DK	160-250
	Construction elements for supported cantilevers to transfer positive and negative shear forces	Egcobox Vz-D±	160-250
	Short construction components for supported cantilever connections to transfer positive and negative shear forces	Egcobox Vz-DK±	160-250
	Cantilever connectors for segmental arches	Egcobox A	160-250
	Cantilever connectors for wall corbels used for supporting masonry cladding	Egcobox O	160-250
	Cantilever connectors for parapets	Egcobox F	160-250
	Cantilever connectors for beams	Egcobox S	400-500
	Cantilever connectors for room height glass wall panels	Egcobox W	

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