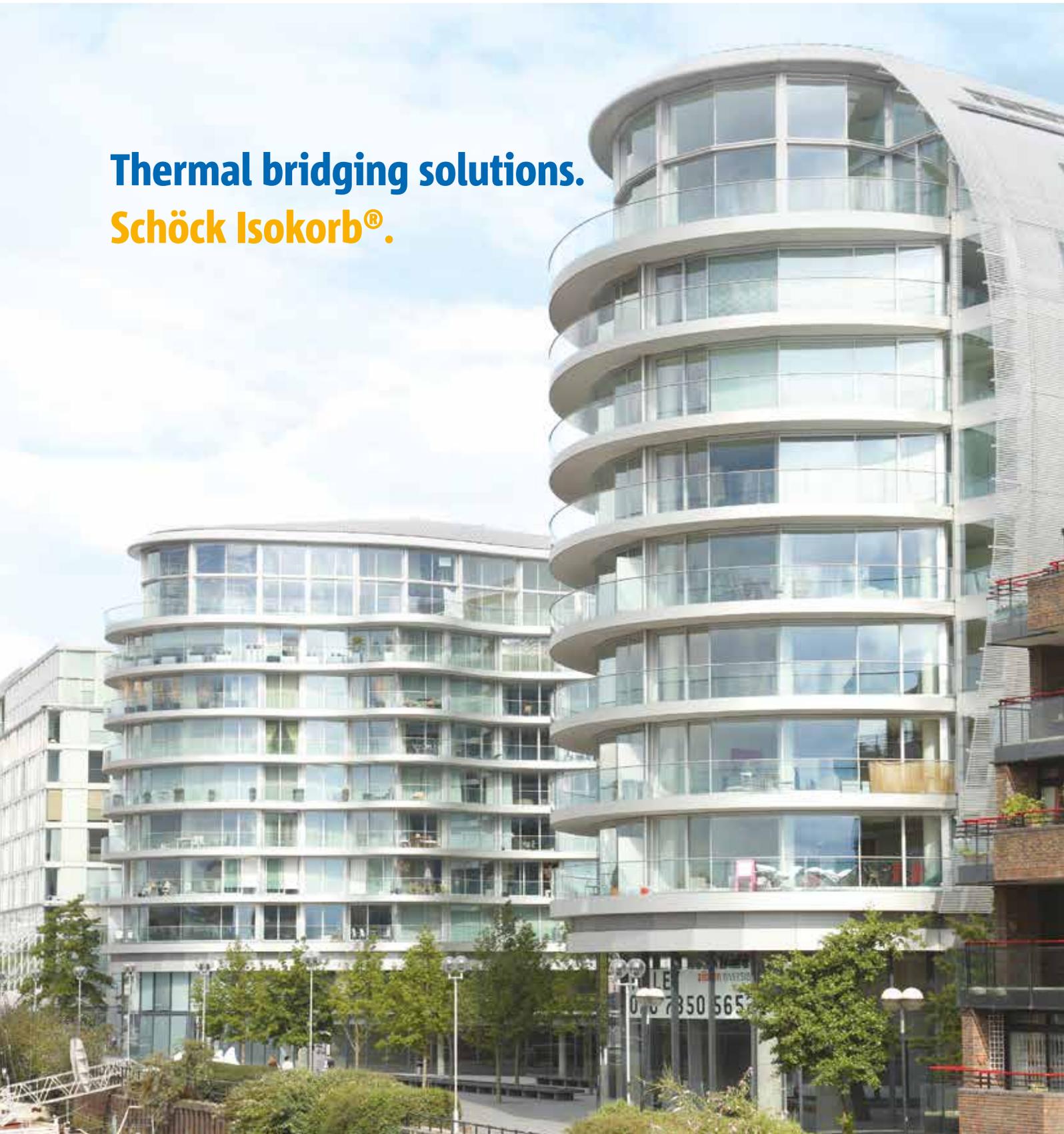




**Thermal bridging solutions.**  
**Schöck Isokorb®.**



# The purpose of this guide.

## Innovative thinking in practice.



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*In 1962, as a young structural engineer, Eberhard Schöck founded a specialist construction company at Baden-Baden, in southern Germany. His vision was to develop innovative construction solutions that would allow more effective and efficient processes on the building site. He dedicated his working time to considering every aspect of building physics and technologies, constantly looking for ways to improve construction techniques.*



**A leading European supplier**

Schöck has grown to become Europe’s leading supplier of innovative load-bearing insulation products. The main product is the Schöck Isokorb® – a thermal break for various types of cantilever constructions in new buildings and for renovation. The Schöck Isokorb® range offers load-bearing thermal insulation solutions for a variety of connectivity applications such as balconies, canopies, brise soleil and even parapets. Connections can be made between concrete-to-concrete, concrete-to-steel and steel-to-steel. There are also Passive House certified solutions. The range offers BBA Certification and LABC Registration and meets full compliance with the relevant UK building regulations.



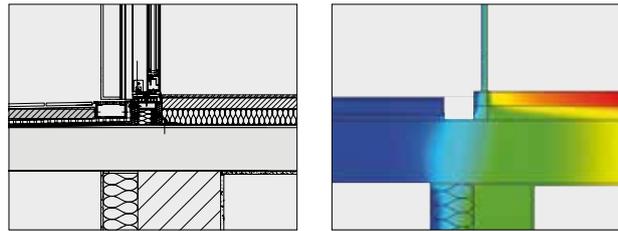
# Introduction to thermal bridging.

## Where thermal bridging occurs.

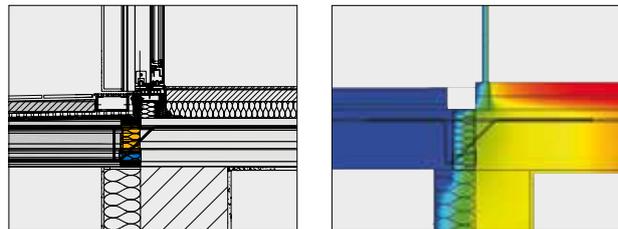
### What is a thermal bridge?

Thermal bridges can be defined as localized areas with higher thermal conductivity than the adjacent areas. A typical thermal bridge in a building envelope would be where a material of high conductivity, such as a structural attachment made of steel or concrete, penetrates the insulation layer. The presence of a thermal bridge in a building assembly would result in: Higher heat transfer through the assembly and colder surface temperatures on the warm side of the assembly. A thermal bridge may cause condensation on cold surfaces, which could lead to:

- ▶ Higher energy use for heating
- ▶ Higher energy use for cooling
- ▶ Noncompliance with Building Regulations
- ▶ Discomfort due to cold surfaces
- ▶ Corrosion of metal elements and structure
- ▶ Decay of wood-based materials
- ▶ Visible patterns on interior or exterior surfaces due to variations of surface temperature and drying potential
- ▶ Degradation of insulation performance (if condensation occurs within the structure)
- ▶ Mould growth and associated health concerns



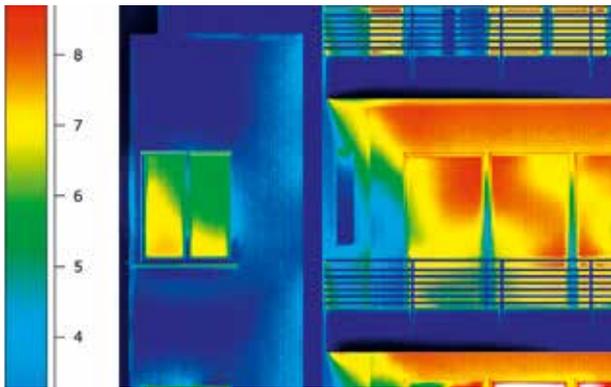
Uninsulated connection: If, for example, a balcony is designed without thermal insulation, an enormous amount of energy is lost, and the surface temperature drops at this point.



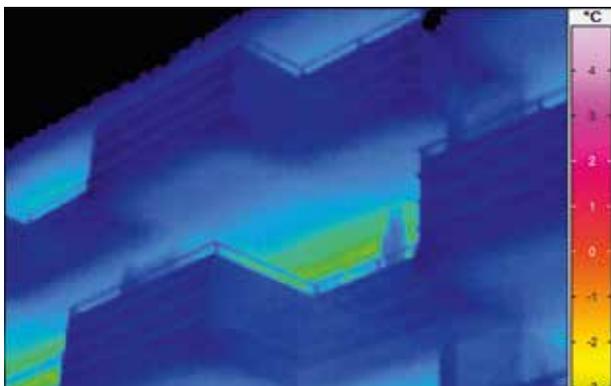
The Schöck Isokorb® is a thermal insulation and load bearing element in one, and separates the balcony thermally from the building. This reduces the thermal bridge to a minimum.



*Minimizing energy use in buildings, and therefore improving the thermal performance of building envelopes, has become increasingly important in the drive for sustainability and energy efficiency. We have seen the adoption of more stringent envelope thermal performance requirements in Building Regulations (Approved Documents Part L1 and L2 and Section 6 in Scotland), and voluntary certification schemes such as BREEAM and Passive House.*



Thermal image of a residential building with higher temperatures at the windows, doors and balcony slabs.



Thermal image of a residential building with minimized thermal bridges and an even temperature distribution along the envelope.



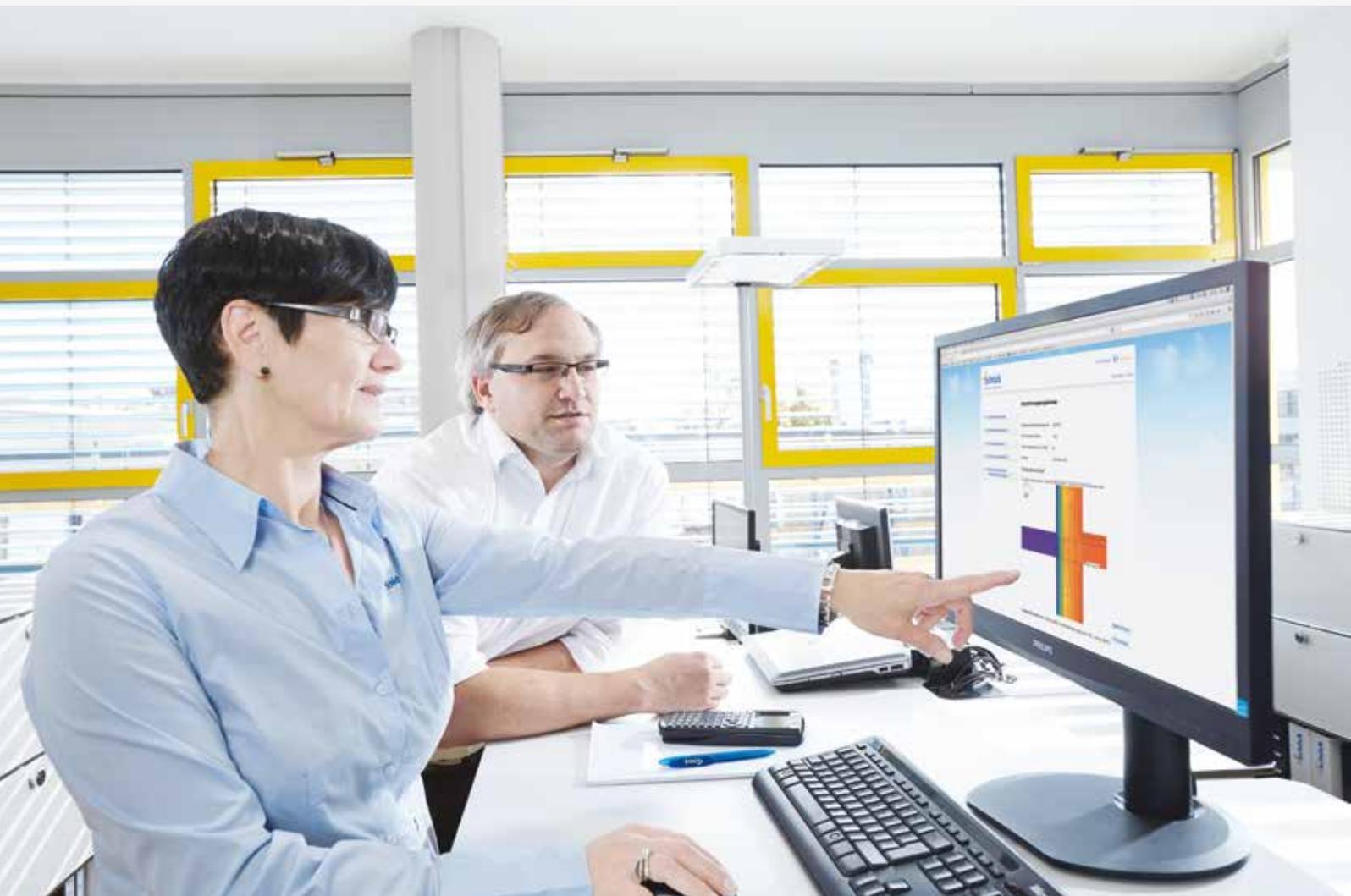
### **Thermal Bridging Portal**

This portal presents information on the nature and significance of structural thermal bridges in buildings constructed of concrete and steel.

[www.schoeck.co.uk/thermal-bridging](http://www.schoeck.co.uk/thermal-bridging)



# Build on our experience. Make the most of Schöck service for your individual requirements.



## **By professionals for professionals: Consulting**

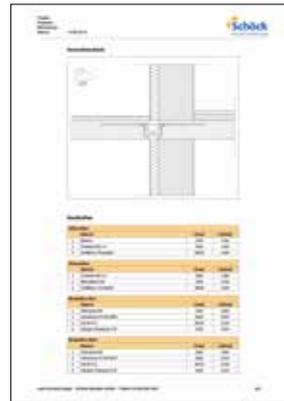
You will always find somebody at Schöck who can quickly and competently help you with your specific problem. Just click or call to contact one of our experts directly, regardless of whether you need help with planning issues or the installation of our products. And if you need support on site: we will come out to you wherever you are – irrespective of whether that is at an office, a building site, or a precaster.



*Efficient construction is only possible when top-class products are combined with top-class service. This philosophy has prompted Schöck to design a comprehensive portfolio of services to support the integration of our innovative solutions into your project. From pre-planning through to execution, make your day-to-day work easier, and put the experience and expertise of our specialists to use in your construction projects.*

### Schöck's thermal bridge calculator

Easy and professional calculation:  $\Psi$ , surface temperatures and  $f_{Rsi}$  values for your specific design. The thermal bridge calculator allows you to design condensation-free details and to validate the thermal separation in detail.



### Software

Automatic updates guarantee current status at all times.  
Download for free:  
[www.schoeck.co.uk/software](http://www.schoeck.co.uk/software)



### As important as our products: Schöck's Service

Outstanding product quality and pioneering services complement each other at Schöck. No matter what stage you are at in your project, we are there when you need us.

- ▶ **Contact and advice** – from our technical design department, sales managers, key account managers and product engineers
- ▶ **Seminars (CPDs)** – in-depth knowledge transfer for aspiring experts
- ▶ **Analyses of structural strength and building physics** – everything you need for a successful planning phase
- ▶ **Building site support** – our competent advice can even be provided on site
- ▶ **Thermal bridging calculator and portals** – digital tools and a wealth of knowledge online
- ▶ **CAD/BIM service** – all types of Schöck Isokorb® in 2- and 3-D model format for simple integration into your own software
- ▶ **Technical literature** – detailed data sheets and literature in hard copy or digital format

# Concrete-to-concrete balconies. Schöck Isokorb® Type K and KXT.

## All of the advantages at a glance:

### Broad range of types

You will find just the solution you need, no matter what the application.

### Easy to install

Drop-in fast installation – averaging less than five minutes per unit.

### Superb insulating performance

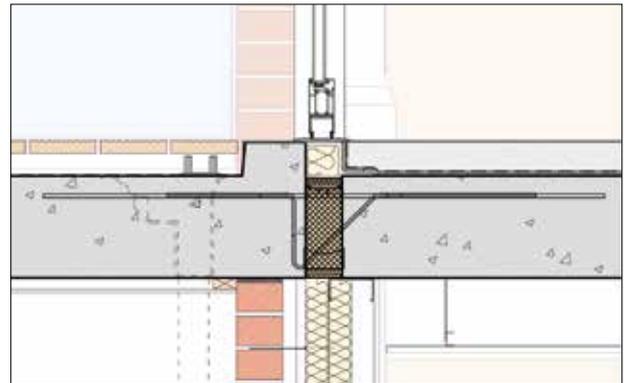
The product has a uniquely low thermal conductivity.



*The Schöck Isokorb® thermal break element, with its low thermal conductivity and integral load bearing capacity, offers the ideal solution to thermal bridging. Manufactured from state-of-the-art materials - stainless steel and HTE (High Thermal Efficiency)-modules with steel fibre reinforced UHPC (Ultra High Performance Concrete) - the Schöck Isokorb® guarantees the highest quality thermal separation of balconies and floor slabs. The dramatically reduced thermal outflow means energy savings and higher surface temperatures inside while minimizing the risk of condensation, damage and mould growth.*

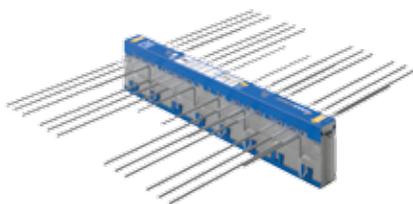
### **Schöck Isokorb® Type K**

The Schöck Isokorb® type K is a tried and trusted system you can rely on. It has been deployed successfully around the world for 30 years. The HTE module is made of high density microfibre reinforced concrete. The best quality steel guarantees better thermal insulation performance, while the new load capacity concept produces improvements in terms of both building physics and cost efficiency.

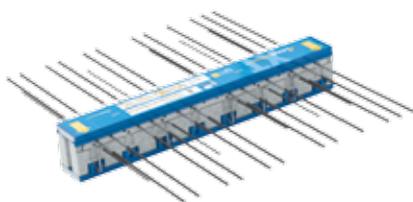


### **Schöck Isokorb® Type KXT**

For particularly demanding concrete-to-concrete specifications the BBA approved Schöck Isokorb® type KXT is available. With 120 mm insulation it is the company's most efficient thermal break ever, offering 30% more thermal performance compared with the Schöck Isokorb® type K.



**Type K**



**Type KXT**

► For more information and literature:  
[www.schoeck.co.uk/Isokorb](http://www.schoeck.co.uk/Isokorb)



# Efficient thermal insulation for concrete parapets. Schöck Isokorb® Type AXT.

## All of the advantages at a glance:

### Freedom of design

For narrow parapets, architectural concrete on the inside, and larger terrace areas.

### Certified

Parapets can also be designed to Passive House standard.

### Installation benefit

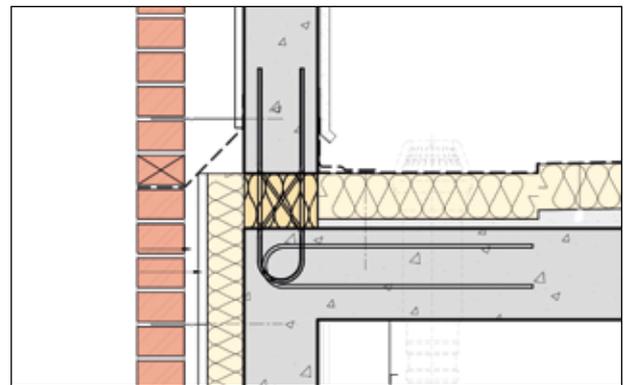
No longer any need to tediously wrap with insulation material.



*Designing parapets to Passive House standard is a particularly demanding challenge and the Schöck Isokorb® type AXT offers just the right solution. Which is why it is the only load bearing thermal insulation element for parapets to have been certified by the Passive House Institute in Darmstadt.*

### **Schöck Isokorb® Type AXT**

The Schöck Isokorb® type AXT eliminates the need for tedious wrapping with insulation material. Thus making sure that no additional thermal bridges are created by fastening elements or railings. And giving you more scope for design – for narrow parapets, architectural concrete on the inside, and larger terrace areas.



### **The right product for any situation**

The Schöck Isokorb® types AXT 1 and AXT 2 have been designed specifically for the different requirements of parapets in respect of building physics and structural stability.

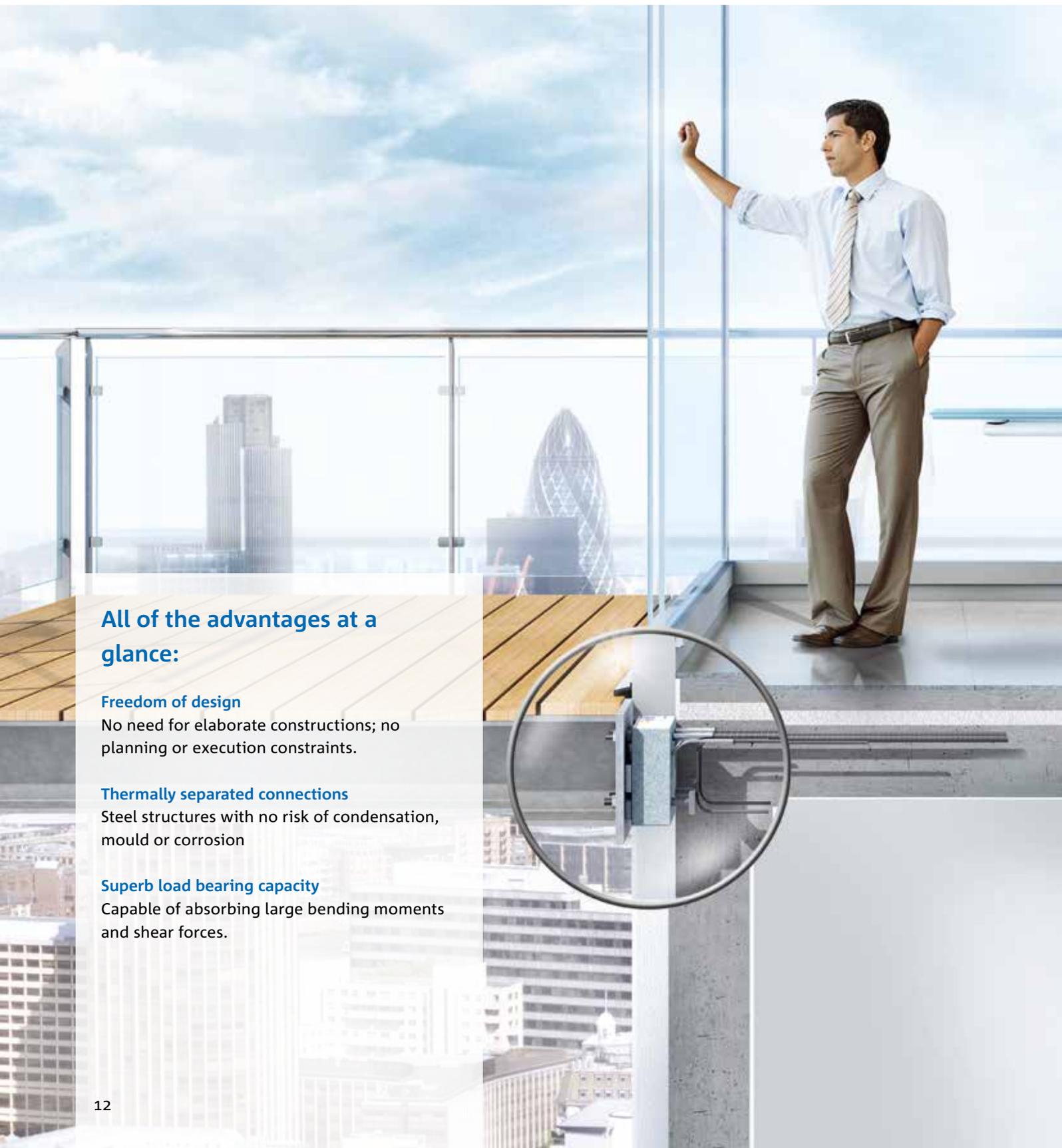


**Type AXT**

► **For more information and literature:**  
[www.schoeck.co.uk/Parapet](http://www.schoeck.co.uk/Parapet)



# Concrete-to-steel balconies. Schöck Isokorb® Type KS.



## All of the advantages at a glance:

### Freedom of design

No need for elaborate constructions; no planning or execution constraints.

### Thermally separated connections

Steel structures with no risk of condensation, mould or corrosion

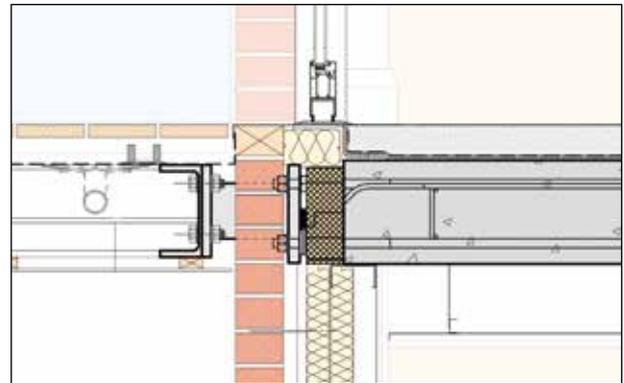
### Superb load bearing capacity

Capable of absorbing large bending moments and shear forces.

*Schöck Isokorb® Type KS is ideal for connecting steel elements to reinforced concrete structures. It minimizes thermal bridges between the components while at the same time transferring high loads. Making it easy to solve the thermal and structural issues of designing modern balconies.*

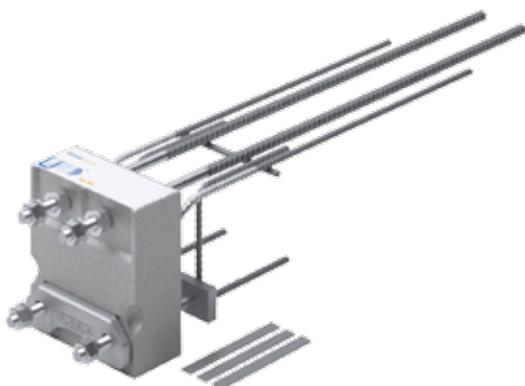
**Schöck Isokorb® Type KS**

The Schöck Isokorb® type KS minimises thermal bridges between cantilevered steel constructions on reinforced concrete components. Since it can be prefabricated to a large degree, installation time on the building site is reduced. Thanks to its superb load-bearing capacity, the engineering and structural design is easy – even for modern balconies. Also, benefitting from a faster build time using innovative off-site manufacturing, the Schöck Isokorb® type KS are ideal for use in hollowcore floor systems.



**Schöck Isokorb® type KS installation jig**

The Schöck Isokorb® KS installation jig gives you the reassurance that the Schöck Isokorb® KS is correctly seated both before and while applying the concrete, thus improving installation accuracy.



**Type KS**

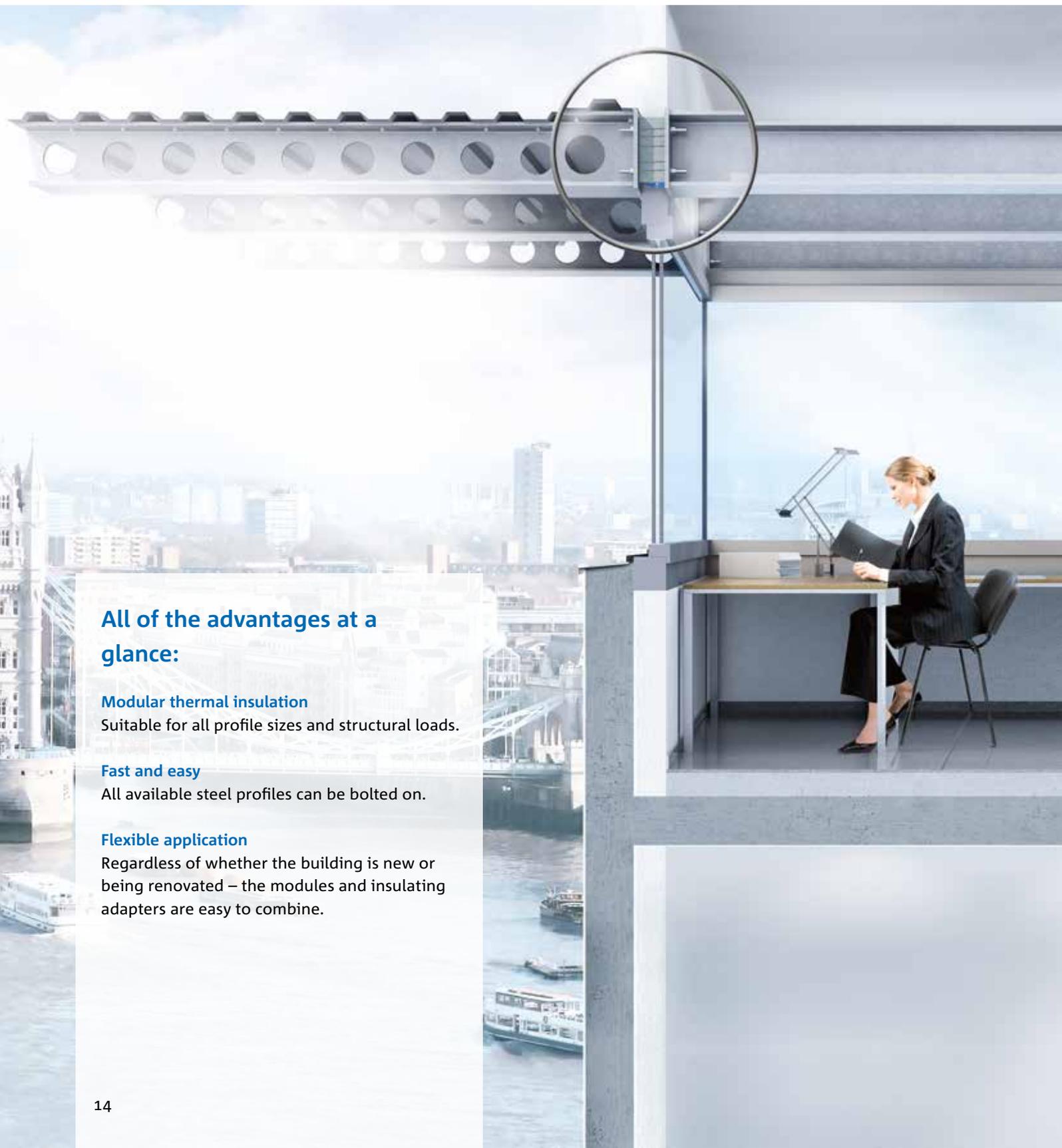


**Type KS installation jig**

► For more information and literature:  
[www.schoeck.co.uk/concrete-to-steel](http://www.schoeck.co.uk/concrete-to-steel)



# Steel-to-steel canopies and balconies. Schöck Isokorb® Type KST.



## All of the advantages at a glance:

### Modular thermal insulation

Suitable for all profile sizes and structural loads.

### Fast and easy

All available steel profiles can be bolted on.

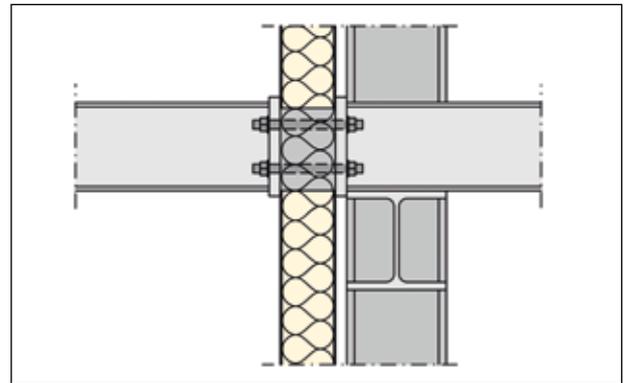
### Flexible application

Regardless of whether the building is new or being renovated – the modules and insulating adapters are easy to combine.

*Canopies and balconies, cantilevered or supported structures: the Schöck Isokorb® type KST is ideal for steel-to-steel connections – secure and structurally optimized. This modular thermal insulation element reliably mitigates the risk of condensation, mould formation and corrosion.*

**Schöck Isokorb® Type KST**

Schöck Isokorb® type KST is a load bearing thermal insulation element that offers 100 percent planning reliability while minimising energy costs and preventing damage to the building. Consisting of modules KSTZ for tensile forces and KSTQ for transferring shear and normal forces, it can be adapted for any profile size and structural load.



**Strong construction**

The Schöck Isokorb® type KST offers complete freedom of design when it comes to steel construction. The unit is able to withstand extremely demanding loads and is effective against bending moment and shear force. Its stainless steel components mean that the unit is completely protected from corrosion.



**Type KST**

► For more information and literature:  
[www.schoeck.co.uk/steel-to-steel](http://www.schoeck.co.uk/steel-to-steel)



# For balcony renovation. Schöck Isokorb® R.

## All of the advantages at a glance:

### Freedom of design

Free cantilever balconies with optimised thermal insulation can be retrofitted.

### Standardised and reliable solution

You can rely on tried and trusted Schöck Isokorb® technology even for renovation projects.

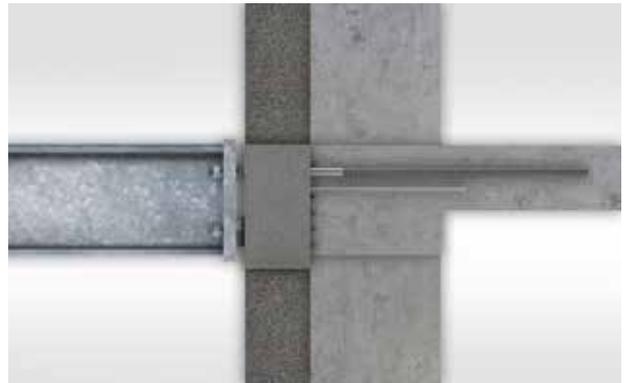
### Connecting balconies from the outside

Tenants and occupants can keep using the building during the renovation.

*Renovation projects usually focus on energy efficiency. Investments only pay off, however, if the whole building is included in the renovation. Failing to consider the thermal insulation of a balcony connection will result in a serious thermal bridge being left untreated. Schöck Isokorb® type R offers clever solutions for reliably preventing unnecessary energy loss and possible damage to the building.*

### **Schöck Isokorb® Type R**

The Schöck Isokorb® type R is a series that minimises thermal bridges during renovation, or when installing new balconies onto an existing building. The range includes the RK for connecting cantilever concrete constructions and RKS for steel constructions. The retrofit installation can be performed without damaging the building interior. The Schöck Isokorb® type R therefore offers much more scope for design on existing buildings and, at the same time, has excellent structural properties.



### **Schöck Isokorb® Type RKS**

The Schöck Isokorb® type RKS was specially designed to minimise thermal bridges on concrete-to-steel connections on cantilever balconies when renovating buildings. As a load bearing thermal insulation element, the Schöck Isokorb® type RKS transfers negative moments and positive shear forces, thus guaranteeing enormous scope for design and efficient thermal separation of the components.



**Type R**

► For more information and literature:  
[www.schoeck.co.uk/renovation](http://www.schoeck.co.uk/renovation)



# Schöck Isokorb® in modern architecture.

## Case studies.

### **Olympic Village, London**

Ensuring the long-term protection against thermal bridges, and involving in 10,000 thermally broken structural connections of various types, this project gave Schöck the perfect opportunity to demonstrate the many possible applications of the Isokorb® series of load bearing thermal insulation elements. The Isokorb® types K and KS were among those installed. The winter garden balconies in particular posed a big challenge and that was overcome by incorporating a specially developed steel bracket.



### **Canaletto, London**

Thirty one floors, 190 luxury apartments, cinema, restaurant, leisure centre, and a terrace on the 24th floor – London's Canaletto has a lot to offer. The concrete construction of the building is enveloped in a glass and metal façade and the balconies were designed as steel-to-concrete connections. The Schöck Isokorb® type KS20 was the perfect solution for the task. It absorbs the huge tension and shear forces between building and balcony, creating a thermally insulated and load bearing connection.



### **NEO Bankside, Southwark**

NEO Bankside – a breathtaking building offering 6,000 square metres of luxury residential space in Southwark – presented Schöck with the special challenge of designing a sturdy and thermally insulated solution for the winter gardens. In addition to several variants of the type K, the type KST was also used. This is usually a steel-to-steel connection, but because of the forces involved, it was adapted on this occasion for concrete-to-steel connectivity.



*The Schöck Isokorb® remains the solution of choice when it comes to designing, planning and executing architecturally sophisticated, technically safe and structurally faultless cantilever constructions. Numerous flagship projects prove that architects and planners trust Schöck – time after time.*

### **Chester Balmore Project, London**

The Chester Balmore Project in North London is one of the largest residential developments in the UK to comply with the Passive House standard. Preventing thermal bridging along the parapets was a critical consideration for such a high performance development, because as with balconies, parapets can allow conductive materials to transfer energy through the thermal barrier. The Schöck Isokorb® type A, the forerunner to the type AXT, was used as the load bearing thermal insulation element to connect the parapets.



### **72 new balconies, Munich**

The architecture of this nine-storey apartment building in Munich is dominated by the continuous loggias along both longitudinal sides of the building. When renovating the balconies, care therefore had to be taken to preserve this special feature of the building. This was successfully achieved with the Schöck Isokorb® type R - and without having to interfere with the interior of the apartments. The building not only got a face lift; it was also efficiently renovated to enhance energy performance and security technology.



**Further fascinating case studies can be found online**

Further examples of outstanding architecture using Schöck products are available at [www.schoeck.co.uk/case-studies](http://www.schoeck.co.uk/case-studies).



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