

Case study

Revitalisation of a high-rise block in Halle

Schöck Isokorb - the optimum solution for balcony connections

Visible from afar, a group of five linear high-rise blocks lends Halle-Neustadt a distinctive skyline. On behalf of the principal, SLS Vermögensverwaltungsgesellschaft Halle mbH, the middle building is being extensively renovated after lying unoccupied for at least 20 years. “Block C” – built at the beginning of the 1970s in the GDR era – was originally built as a student residence and now this use will be reinstated, and the building is to be powered entirely with renewable energy. A particular challenge here is the building fabric which is partially inadequate. Schöck Isokorb was used to create a reliable, load-bearing energy-efficient connection for the new balconies of each room. The Schöck Stacon dowel is used as the transverse structural connection between balcony slabs.

59 metres long, 16 metres wide and 18 floors high: the key data of “Block C” is impressive. Students will occupy the building once again from the end of 2024. It will contain 280 modern one-room flats with integrated bathrooms and 28 two-room flats. The design by Nuckel | Architekten, Hamburg, also includes communal areas for cooking, studying and leisure activities, etc. A roof area with catering facilities is also planned.

Research project for future-orientated refurbishment

The "Variowohnungen" model project is being funded as part of the Zukunft Bau innovation programme of the Federal Ministry of Housing, Urban

Development and Building (BMWSB). The programme focuses on the sustainable and energy-efficient development of the building sector and responding to demographic change. "Block C" is to be refurbished as an ideal KfW Efficiency House 40 and supplied entirely with renewable energy. Instead of demolition, the old self-supporting balconies were cut off and the building was gutted to conserve resources. The existing reinforced concrete walls and floor slabs were retained and now form the grid for the room modules which are prefabricated in series and inserted. In addition, the residential units have already been structurally prepared in such a way that they can be easily adapted and, if necessary, combined and used as living accommodation for the elderly.

Expansion of the building volume

In order to create contemporary living space, "Block C" was extended by two metres on both long sides. However, the planners discovered that the upper reinforcement layer in the floor slabs had been installed five centimetres too low. The load-bearing capacity of the slabs was therefore not guaranteed. Slots were therefore cut 20 centimetres apart into which reinforcing bars for strengthening were inserted and filled with a specially developed mortar. "Due to the old building fabric, we often came up against our limits. Time and time again, we had to develop individual solutions to stabilise the structure and the first thing we had to do was familiarise ourselves with the old GDR standards in order to get to grips with the building," recalls Jens-Marno Heimann of Brakemeier construction engineers. "On the other hand, however, that gave us an enormous increase in knowledge in general," he remarked, and acknowledges that they were in the fortunate position that the structural engineer had already worked in GDR times and, thanks to his expertise, was able to provide invaluable support in the search for solutions.

Schöck Isokorb – the solution for even the most demanding applications

In-situ cantilevered balcony slabs measuring 1.83 x 3.50 metres are attached to the extended slab. A precamber is required in order to compensate for deformation. The forces of the relatively heavy slabs are

transferred to a 60-centimetre-thick load beam. Heimann was in no doubt that the best solution in this case was Schöck Isokorb XT type K-O: "I know that Schöck products work and was familiar with the Isokorb. With the cranked tension and shear force bars with head bolts, Isokorb XT type K-O can be optimally anchored in the slab with a short installation depth and allows the downstand beam to be manufactured afterwards."

Reliable load transfer

Schöck Isokorb XT type K-O reliably transfers the loads of the balcony to the neighbouring floor slab. Various load-bearing levels of Isokorb XT type K-O were used in this project. For structural reasons, the building extension could only be constructed in lightweight concrete, the composition of which was closely coordinated with Schöck in advance. As Schöck Isokorb is approved by the building authorities, it was necessary to ensure that the concrete used had the required properties.

Reliable compliance with the EnEV values

"With Schöck Isokorb, we fulfil the requirements of the Energy Saving Ordinance (EnEV) for a KfW 40 building," explains architect Leander Kadoke from the firm of architects, town planners and project coordinators in Lübeck commissioned to carry out the construction planning. As a load-bearing thermal insulation element, Schöck Isokorb minimises thermal bridges and thus ensures that cold exterior is thermally isolated from the heated, warm interior of the building. The architect relies on Schöck Isokorb for many of his projects: "Not only was it the first product on the market, since then it has been continuously developed and improved. What's more, the advice we receive from the manufacturer is also invaluable."

Schöck Stacon – the strong solution for expansion joints

In addition to Schöck Isokorb, project manager Michael Schmidt used another Schöck product for the challenging refurbishment: the Stacon type LD shear force dowel. Stacon ensures the constraint-free transfer of shear forces in the expansion joints without the need for conventional measures such as brackets or additional columns. Schmidt developed his own

solution for the installation here: namely to cast the balcony slabs in one operation, instead of the usual two steps, which saves time.

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Project information

Project: Block C, Halle, refurbishment as a student residence

Construction period: 11/ 2021 until end of 2024

Principal: SLS Vermögensverwaltungsgesellschaft Halle mbH, Berlin, Germany

Architectural design: Nuckel | Architekten PartG mbB, Hamburg, Germany

Construction planning: Haake Kadoke Architekten Stadtplaner Projektsteuerer, Lübeck, Germany

Structural engineering: Brakemeier GmbH, Ingenieurbüro für Bauwesen, Hamburg, Germany

Products: Schöck Isokorb XT Type K-O, Schöck Stacon Type LD

Images

[Schoeck_Scheibe-C_Halle_1]



*As one of five linear high-rise blocks, “Block C” has a striking presence in the Halle-Neustadt skyline. After over 20 years lying unoccupied, “Block C” is now being refurbished and converted into a student residence.
Photo: Schöck Bauteile GmbH*

[Schoeck_Scheibe-C_Halle_2]



*Revitalisation instead of demolition: The students are due to move in to “Block C” in Halle from the end of 2024.
Photo: Schöck Bauteile GmbH*

[Schoeck_Scheibe-C_Halle_3]



The construction team used Schöck Isokorb XT Type K-O to extend the cantilevered balcony slabs.

Photo: Schöck Bauteile GmbH

[Schoeck_Scheibe-C_Halle_4]



Schöck Isokorb XT Type K-O reliably transfers the loads of the balcony to the neighbouring floor slab.

Photo: Schöck Bauteile GmbH

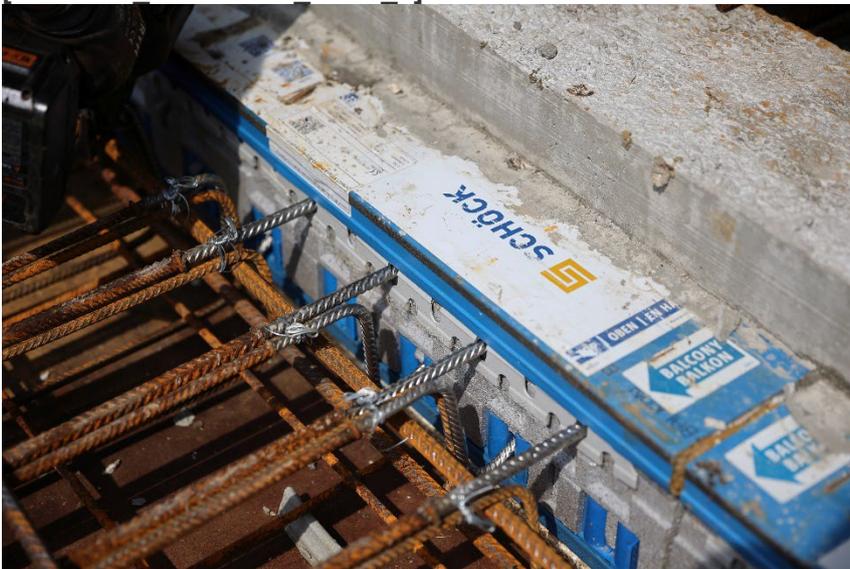
[Schoeck Scheibe-C Halle 5]



Schöck Isokorb XT Type K-O can be effectively anchored in the slab with a short installation depth.

Photo: Schöck Bauteile GmbH

[Schoeck Scheibe-C Halle 6]



Thanks to Schöck Isokorb, it was possible to satisfy the requirements of the Energy Saving Ordinance (EnEV) for a KfW 40 building in the "Block C" project in Halle.

Photo: Schöck Bauteile GmbH

About Schöck:

Schöck Bauteile GmbH is a subsidiary of the multinational Schöck Group with 14 international sales offices and approximately 1,000 employees. The company's success story started in 1962 in Baden-Baden at the edge of the Black Forest. The company's founder Eberhard Schöck applied his knowledge and construction site experience to develop products that streamline construction and solve complex problems in building engineering. This mission has formed the foundation of the company's philosophy to this day. It has made Schöck into one of the leading providers of reliable and innovative solutions to reduce thermal bridges and impact sounds and to create thermally insulating and secure facade fasteners and reinforcement technology. Schöck products make smart construction methods possible and ensure consistent construction quality. Addressing building engineering and energy efficiency are the company's top priorities. To meet the construction needs of tomorrow, Schöck is driving the adoption of digital technologies in all areas, from workflows and planning to the construction site.