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Press release.

**Reliable control of balcony vibration**

**More planning reliability and design freedom. Schöck delivers reliable values for limiting the vibration of cantilevered balconies.**

**Baden-Baden, April 2023. – Cantilevered and free-spanning balconies are inevitably more susceptible to vibration due to their geometry. The vibration behaviour of the balcony slab is also influenced by the load-bearing connection of the thermal insulation at the floor. Since no normative regulations on the limitation of balcony vibration have existed to date, Schöck has investigated the influence of the Schöck Isokorb connection element on the vibration behaviour of cantilevered reinforced concrete balconies in a series of structural component tests at the MPA in Karlsruhe. Based on these tests, rigidity values were determined for the first time which allow clear recommendations to be made for vibration limitation and maximum cantilever length of a walkable reinforced concrete balcony. Schöck is the only manufacturer to supply consistent values for all relevant Isokorb types.**

Vibrations on walkable and cantilevered balconies are caused by humans merely walking or jumping on the balcony. The extent of the vibration is influenced on the one hand by the balcony geometry. Large cantilever lengths as well as slender and column-free load-bearing structures for aesthetic reasons are inevitably more susceptible to vibrations and thus raise questions as to their fitness for purpose. On the other hand, the balcony slab is connected to the floor plate with a load-bearing thermal insulation element. Since the connection is less rigid than the reinforced concrete slab of the balcony and the reinforced concrete floor slab of the building, this also affects the vibration behaviour of balconies. For this reason, not only the load-bearing capacity and deformation, but also the extent to which vibrations due to humans influence the serviceability must be examined when planning and designing cantilevered reinforced concrete balconies.

**In focus: balconies susceptible to vibration**

The question of whether a vibration is perceived as unpleasant is very subjective. There is no normative regulation to date in Germany that limits the vibration of cantilevered balcony slabs connected to a load-bearing thermal insulation element. Until now, structural engineers have had no meaningful and reliable connection data for a detailed examination of the limit state with regard to vibration behaviour.

**Series of tests with independent testing institute**

For this reason, Schöck as market leader in the field of load-bearing thermal insulation elements, carried out a series of structural component tests under realistic conditions at the MPA in Karlsruhe. The development and plausibility check of the tests, including extensive analytical evaluations, was carried out in cooperation with the MPA test centre. Dr.-Ing. Andreas Fäcke, test engineer and publicly appointed expert for building dynamics, and managing director of SMP Ingenieure im Bauwesen in Karlsruhe, was also involved in the tests. The results represent the first test-based and thus reliable, realistic and reproducible product properties for different Isokorb model variants.

They form the basis for Schöck being able to give clear and unambiguous recommendations for the maximum cantilever length of balcony slabs. This takes into account the product-specific rigidity of the Isokorb selected in each case and the specified load while complying with recommended limit values for the natural frequencies to reflect the state of the art.

**Reliable planning, more design freedom**

In the past, the structural engineer had to increase the slab thickness of the balcony in order to achieve a larger cantilever length. The comprehensible, new values for the Isokorb models CXT, XT and T now offer new possibilities for implementing larger component geometries and cantilever lengths – and therefore satisfying the aesthetic requirements for cantilevered, column-free and ideally slender balconies. If, for example, the recommendation for the maximum cantilever length used to be 2.15 m with a balcony slab thickness of 200 mm, a cantilever of up to 2.52 m is now possible, depending on the load-bearing level. This gives the engineer even more reliability when performing the vibration analysis.

**Services**

The individual values and the recommendation for the maximum cantilever length for each Isokorb are listed in the updated tables of the respective technical information bulletin. In the second half of the year, the values will also be integrated into the Isokorb concrete-to-concrete design program. This now provides engineers with the best possible support in assessing the vibration behaviour – quickly and reliably. As usual, the Schöck Technical Design Department is also available to assist engineers by sharing their know-how on the subject of vibration.

*4,621 characters (incl. spaces)*

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**Info box: Higher load-bearing levels for more balcony area**

The geometries of balconies are becoming increasingly demanding: for aesthetic reasons, they should cantilever as far as possible and be as slender as possible. The load-bearing levels with higher bearing loads of Isokorb XT/T types K, Q, Q-P and D offer sufficient load-bearing capacity for this geometry, and at the same time reduce the susceptibility to vibration. These values can be found in the technical information bulletins.

**Images**

**[Schoeck\_Schwingungsverhalten-Isokorb\_1]**

Ein Bild, das Himmel, Gebäude, draußen, Apartmentgebäude enthält.

Automatisch generierte Beschreibung

*Schöck is the only manufacturer to provide reliable values for vibration limitation of cantilevered balconies for all relevant Isokorb types.*

*Photo: Luuk Kramer fotografie*

**[Schoeck\_Schwingungsverhalten-Isokorb\_2]**



*In a series of structural component tests at the MPA Karlsruhe, Schöck investigated the influence of the Schöck Isokorb connection element on the vibration behaviour of cantilevered reinforced concrete balconies.*

*Photo: Schöck Bauteile GmbH*

**[Schoeck\_Schwingungsverhalten-Isokorb\_3]**

Ein Bild, das Musik, Klavier, Synthesizer enthält.

Automatisch generierte Beschreibung

*Product illustration – Schöck Isokorb XT*

*Photo: Schöck Bauteile GmbH*

**About Schöck:**

Schöck Bauteile GmbH is a company of the international Schöck Group that has more than 1,100 employees and is active in over 40 markets. It has its headquarters in Baden-Baden at the feet of the Black Forest where the company's success story began in 1962. Company founder Eberhard Schöck used his knowledge and experience of building sites to develop products that simplify the construction process and solve the physical problems of construction work. This mission has remained the foundation of the company’s philosophy to this day, a philosophy that has allowed Schöck to become the leading provider of reliable and innovative solutions to reduce thermal bridges and impact sound, for thermally insulating façade connections and reinforcement technology. Schöck products facilitate a more rational approach to construction and safeguard the construction quality over the long term. The focus is on the building-physical benefits and energy efficiency. Schöck is driving the digitalisation of the work flow from planning to the building site to support the construction work of tomorrow.

**For any questions, please contact:**

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