

Case Study



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Preventing impact sound at major Austrian hospital

One of the critical design elements during renovation work at the Mauer Regional Hospital was the need to prevent impact sound being generated on the staircases. This was successfully achieved by using the Schöck Tronsole integrated impact sound insulation system.

The Landeskrankenhaus Mauer Hospital is a major psychiatric hospital in Amstetten, Lower Austria. Housed in a building that is an outstanding example of art nouveau design and originally opened in 1902 by the Emperor Franz Joseph, it now has listed status. Inevitably though, after more than 100 years of continuous operation, the functionality of the hospital has changed. It no longer meets the requirements of a contemporary hospital and major refurbishment is required. The restructuring and renovation being funded through a €69 million investment by the province of Lower Austria. It was important that the patients medical care remained uninterrupted during the transition and three new temporary structures were built to ensure there was no disruption. To remain discrete and not compete architecturally with the grandeur of the original main building, the temporary hospital is restricted to no more than two storeys and the design style deliberately subdued.

A quiet environment is essential

The residential time for patients can be several weeks, or even months, so it is essential for the well-being of the patients that the environment is

conducive to their recovery. Although an aesthetically welcoming and relaxing atmosphere in both the public areas and the patients' rooms is important, the overriding requirement is to provide a calm and quiet environment. As the structure is of solid reinforced concrete, incorporating effective impact sound reduction into the design was particularly important. The only way to guarantee optimum impact sound protection is to uniformly separate the staircase acoustically from the surrounding structure; and in this case, all the staircases in the building were insulated acoustically from the supporting structure by using the Schöck Tronsole system.

An integrated impact sound insulation solution

Tronsole is an integrated impact sound insulation system for all structural subsections on both straight and winding staircases. It cleverly utilises seven main product types that can be mixed and matched to form a fully integrated impact soundproof solution. Central to the performance of the Tronsole system is Elodur, an elastomer support formulated to ensure optimum acoustic insulation and low deflection. At the Mauer Regional Hospital the landings were supported on Tronsole type Z; the staircases on Tronsole type F, or type B, to prevent sound generation to the individual floors. The gaps between the stairs and the stairwell walls were sealed with Tronsole type L, or were designed to have a sufficiently large air gap of more than 5cm. A noise test completed in the clinic confirms the excellent impact sound damping values.

A verifiable 'excellent comfort' classification

The measurements produced a standard impact sound level for the treads of $L'nT,w = 29 \text{ dB}$ to 35 dB . This confirms that the values are well within the legally binding minimum requirements given in the OIB (Austrian Institute for Building Technology) Guideline No. 5 for impact sound protection from stairwells to recreation rooms in hospitals and residential buildings. According to the Austrian standard ÖNORM B 8115-5, the tested stairs achieved sound proofing class A and therefore fall within the "excellent comfort" classification. Solitair Kluth, Building Physics Specialist at Schöck comments: "The Tronsole range offers high performance values

and easy installation, but another major benefit is how easy it is to check the correct installation. This is as a result of the 'blue line' clearly visible after fitting and before the stairs are finished. As long as this is continuous and unbroken, the component is successfully acoustically insulated from other structural elements”.

Images and Captions



To remain discrete and not compete architecturally with the original main building, the temporary hospital design style is deliberately subdued. Schöck Bauteile GmbH



As long as the blue line is continuous and unbroken, the component is successfully acoustically insulated from other structural elements. Schöck Bauteile GmbH



Noise tests on site confirm the sound proofing achieved class 'A' and therefore the 'excellent comfort' classification. Schöck Bauteile GmbH

For questions and feedback, please contact:

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