

Sound insulation and vibration isolation in the music theatre in Linz, Austria

The city of Linz continues the tradition of being able to show the audience a repertoire of operas available today in the new music theatre at the Blumau planned by London architect Terry Pawson. Due to the size of the stage, the large capacity and the top acoustics, the building is also attractive for international stars and guest productions.

The building, located on the Volksgarten, measures 162m in length and, at its widest point, is 82m wide. Up to 1200 places are available for the audience in the large hall, while a smaller stage offers space for approximately 200 visitors. Rehearsal rooms and offices are housed in the 5 aboveground and 2 underground floors which make up the new 26m high building. The 300 parking spaces in the two lower floors, the immediate proximity to the main train station, the motorway connections and the mini-subway right in front of the 60m long and 10m high glass façade of the foyer enable the guests' comfortable arrival and departure.

In the planning and implementation of music theatre, the conditions at the site in particular had to be considered. The route of the mini-subway line built in 2005 runs directly underneath the new building. The day and night operation of rail vehicles weighing up to 40 tonnes sent vibrations through the building which had to be minimised with appropriate measures. With this in mind, a concept was developed by the manufacturer, BSW, in cooperation with the planning office, which foresaw that to build the spacious forecourt of the music theatre, a tunnel would need to be built over the railway line and the outer walls of the building would require vibration isolation.



Vertical vibration isolation with Regupol®

The proven product, **Regupol® PL**, was used based on the technical solution developed. The vertical decoupling and use of the plate-shaped, soft elastomer ensures that there is no interruption to concert performances by vibrations from the subway line. The 50mm thick insulation mats, made from PU-bonded rubber fibres, were glued to the previously prepared concrete surfaces. The subsequent laying of dimpled membranes on the **Regupol®** plates or additional thermal insulation panels on the building's exterior wall protects components in contact with the ground from moisture by backfilling the excavation.



Under screed sound insulation of the workshop area

However, it was not only sounds arising from the outside that were taken into account in the planning and implementation of the Linz Music theatre. As usual with opera houses of this sort, the new building on the Volksgarten also has workshops where sometimes very elaborate decorations and costumes are made. Based on the acoustic requirements for the workshop areas adjacent to the concert hall recorded by the BSW consultants and their Austrian trading partner, Franner, the monolithic screed plates for the carpentry, metalwork and upholstery workshops and the props and painters' hall were fitted on **Regupol® BA** insulating screed sheets to reduce the sound transmission. The benefits of using these elastomer sheets with supervisory approval are their minimum compressibility, high resilience, high load capacity and high impact sound reduction of 26 dB. Due to the high static and dynamic loads that occur in workshop areas such as in music theatres, sound insulation must be used under screed surfaces to permanently ensure the required stability and associated sound properties. In addition, the tracks that were present in the music theatre for forklift trucks were acoustically isolated with **Regupol® XHT**.

Information at a glance

Property: Linz Music Theatre
 Development commissioned by: Musiktheater Linz GmbH (M.T.G.)
 Design architect: Terry Pawson Architects, London
 Construction architect: Architektur Consult, Graz
 Structural engineer:
 Prof. Dipl.Ing. Dr. Techn. Karl-Bernd Quiring
 Project management and on-site supervisor:
 Dipl.Ing Stefan Kubin,
 Spirk + Partner Ziviltechnikergesellschaft m.b.H., Salzburg
Regupol® Sales Austria:
 FRANNER LÄRMSCHUTZ HandelsgesmbH, Vienna

BSW products

Regupol® BA insulating screed sheets

- PU-bonded rubber fibre rolls
- 26 dB noise reduction level
- Compressibility of 2.0 mm
- Max. traffic load of 5000 kg/m²
- Fire class B 2 / Class E

Regupol® PL and **Regupol® XHT** insulating mats

- PU-bonded rubber fibre mats
- Fire class B 2 / Class E

