

Heavy duty sound insulation in the children's ward

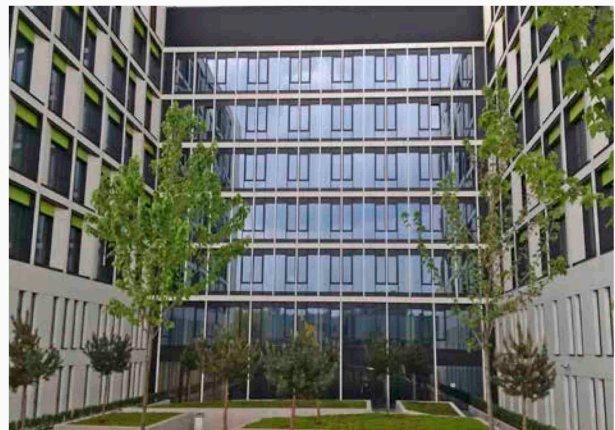
The construction of the children's ward of the University Hospital in the Zwirki i Wigury district of Warsaw took a total of three years. As well as the accommodation facilities for patients and relatives with a total of 527 beds, there are teaching rooms and research areas for scientific work. The modern building complex consists of three wings, each with eight floors, and the three parts of the complex are connected by underground passages. There is also a multi-storey car park, a restaurant and a halfway house in the area. In addition, there is a helicopter landing pad on the roof of the building complex.

Floor screed insulation from BSW

It is not just the obvious strain from people walking down the corridors which produces noise and impact sound which, without specific countermeasures, can spread throughout the building. Impact sound is also produced by other movement and impact on the floor surfaces. The wheels of the beds, trolleys and carriers, and even televisions and hi-fi systems have an impact on the floor surfaces. Structure-borne sound is produced by shocks and vibrations, and is transmitted by hard, solid materials until it can emerge elsewhere as unpleasant noise in the form of secondary airborne sound. The basic principle is that it is more difficult to isolate structure-borne sound and impact sound than airborne sound. If a ceiling is well insulated against airborne sound, it does not mean that this insulation is effective against impact sound.

In Poland, the standard PN-B-02151-3 regulates the minimum requirements for impact sound insulation, and so increased impact sound insulation is required, in particular for corridors and technical rooms. Compliance with this standard should ensure protection against risks to health which are caused by noise, and avoid unacceptable levels of noise pollution. However, compliance with the minimum requirements through the legal standard is insufficient in terms of the subjective, sensitive human perception. Thick concrete subfloors usually have good sound insulation properties, but the ceilings must already have a minimum thickness of 40 cm in order to meet the minimum requirements of the standard. In Poland, ceilings with a thickness of between 15 and 18 cm are typically used for such buildings.

In order to compensate for the physical disadvantages of a thin and economical ceiling construction, the architectural firm responsible, Open Architekci sp.zoo, has decided in its plans to use special impact sound insulation produced by BSW. In the technical rooms, the corridors and the hospital archives, the floor screed was acoustically insulated using **Regupol® E48** screed insulation. These insulation strips made out of PU-bonded fibreglass rolls were used solely for corridors with a surface area of 1,300m². Floor surfaces insulated in this way permanently and effectively prevent the spread of unpleasant



impact sound to other areas of the building complex. As well as its durability, the particular advantage of using **Regupol® E48** screed insulation is that this material is soft enough to ensure a high level of sound insulation, and at the same time strong enough to permanently withstand a high load-bearing capacity of up to 3,000kg/m².

Information at a glance

Object: Children's ward of the Warsaw University Hospital

Architect: Open Architekci sp.z.o.o

Design company: Ove Arup & Partners

Construction company: Warbud S.A.

BSW products

1,500m² **Regupol® E48** insulation strips

- PU-bonded fibreglass rolls
- Temperature stability between -20°C and +80°C
- Noise reduction $\Delta L_w \geq 20\text{dB}$
- Deflection 1.6mm (at 30kN/m²)
- Maximum continuous load up to 3,000kg/m²
- Fire class B2/Class E

