Acoustical design of the multifunctional auditorium in Cultural Center at Podkarpacie

Giovanni La Porta, Lucyna Leniowska, Michał Szarecki

Uniwersytet Rzeszowski
Al. Rejtana 16C, 35-310 Rzeszów
arch.giovannilaporta@gmail.com

The article presents a room acoustics study developed for a multifunctional hall, which is currently in the design phase. The hall is part of the Cultural Center building, which will be constructed in Zagórz, a small town located in the southern part of Poland in the Podkarpacie region. The architectural design was created by Studio Świeciński Architekci, based in Krosno. The results of the acoustic simulation of the auditorium were obtained using the I-Simpa and Odeon computer programs. In order to conduct the acoustic study, the auditorium was geometrically modeled as a 3D shape, and then the sound absorption and diffusion coefficients of the internal surfaces and the settings of the sound source and receiver were assigned. The created three-dimensional geometric acoustic model was tuned using absorption and diffusion coefficients through an iterative process based on technical standards and calculated reverberation time values in octave frequency bands. Several acoustic parameters were calculated, which provided a quantitative measure of the acoustic efficiency of the auditorium in accordance with its future use. Certain geometric improvements were proposed to improve the audience's sound reception.