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**ACOUSTIC DESIGN OF A NEW MUSICAL HALL FOR THE MOSCOW THEATRE
GELIKON - OPERA**

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Acoustic design of a new opera house for 500 seats is being described. This project is not considered to be traditional from the point of view that the musical hall has to be located inside the historical environment for the first time in Russian practice. The hall is being supposed to be placed inside the existing rectangular yard of an old country seat in Moscow. The walls of this yard are made of ornamental brick and are considered to be a historical monument. The stage opening is being placed in one of these walls where the existing gates are located. The fly tower is to be built behind the mentioned stage opening. The hall itself is being constructed as an amphitheatre. The first row of this amphitheatre is going to be 4 meters deeper than the ground level of the existing yard. The historical brick walls are being increased in height and are covered with a concrete roof. The main problem of the acoustic design deals with the early sound reflections that have to take place on the seats area. For the solving of this problem several sound reflecting boards have been proposed to be suspended above the seats and the orchestra pit. The form of the new walls in the sides of the amphitheatre has been optimized as well. The acoustic design of the hall has been presented, and the results of acoustic calculations fulfilled with the help of computer model have been shown.

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**RESEARCH OF THE WAVE FIELD OF THE AIR INTERVAL
IN STRUCTURE OF THE FOLDED NOISE-PROTECTING CONSTRUCTION**

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Process of transmission of sound waves through a construction consisting of two parallel three-layer plates, divided by an air interval is considered. Total sound pressure in bottom halfspace is determined considering distribution of sound energy of the reflected and transmitted sound waves. Sound energy in an air interval can be determined through value by energy of top and bottom halfspace. The received expression is used for definition of sound insulation of folded noise-protecting constructions.

REFERENCES

1. Shenderov E.L. Wave problems of hydroacoustics. Leningrad, Shipbuilding, 1972. - 352 P. (In Russian).