

A Variable Perforated Panel Proposal

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ABSTRACT

This paper is about the design process of a variable perforated panel system. The system aims to answer the need of variable acoustic solutions in multi-functional halls. Perforated panels were examined to obtain variable sound absorption coefficients in 1/1 octave bands. The prototype of the system was built with an Arduino board and a digital interface to drive the board was designed with Processing software. Design decisions of variable perforated panel proposal were evaluated and assessed with prototyping studies and tests on features of perforated panels. Properties of perforated panels like hole shape, perforation width, perforation ratio, distance of air gap, existence and placement of porous backing material were examined and discussed to obtain optimum variable perforated panel proposal. The prototype of the proposal was manufactured by CNC router and laser cutting machines and tested in Kundt's tube. This paper presents the design process of the variable perforated panel proposal with decision support mechanisms and prototyping studies.

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