THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Advanced acoustic barriers**
Author's name:	**Wolf Van Der Bauwhede**
Type of thesis :	master
Faculty/Institute:	Faculty of Mechanical Engineering (FME)
Department:	Ústav mechaniky, biomechaniky a mechatroniky
Thesis reviewer:	Ing. Jan Králíček, Ph.D.
Reviewer's department:	Department of Environmental Engineering

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment **extraordinarily challenging**

How demanding was the assigned project?

Fulfilment of assignment **fulfilled**

How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.

This is a very comprehensive diploma thesis. The student describes the theory, setup of the experiment, the issue of the experiment and the process of 3D printing. It also shows the processing of the results and, in the final part, the results of the experiment.

Methodology **correct**

Comment on the correctness of the approach and/or the solution methods.

The methodology of the experiment is correct, but it should mainly aim at defining the value of sound absorption of selected elements (fulfilled), but especially the sound insulation of the structure, as this is the parameter for which the element is developed.

Technical level **A - excellent.**

Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?

The student did a wide range of work. From the compilation of measurements to the production of an element using 3D printing and performing measurements with a given element, including the evaluation of results.

Formal and language level, scope of thesis **A - excellent.**

Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?

Selection of sources, citation correctness **A - excellent.**

Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?

Additional commentary and evaluation (optional)

Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.

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III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

The work is perfect. This is probably a part and a linkup of the original research. However, the definition of sound insulation of selected elements should be included in the evaluation, or the effect of 3D structures on increasing or decreasing the value of Rw (weighted sound reduction index). I assume that the project aims to replace the walls of the acoustic covers with these 3D structures, which may be very interesting in the future. However, this must go in parallel with the discharge of effective 3D printing, or 3D printing of non-plastic structures, eg metal structures.

QUESTIONS:
Is it possible to use Kundt tube to define weighted sound reduction index of the construction? Can you use the plotted transfer function at page 57 to determine the sound insulation index Rw of the construction?

The grade that I award for the thesis is **A - excellent.**

Date: **21.6.2022** Signature: