

# MASTER'S DISSERTATION AT ENGINEERING ACOUSTICS

DEPARTMENT OF CONSTRUCTION SCIENCES | FACULTY OF ENGINEERING | LUND UNIVERSITY



**MALIN HALL**

## PRESENTATION

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## REPORT

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**THE WORK IS PERFORMED AT  
AND IN COOPERATION WITH  
ÅF SOUND AND VIBRATION**

## ACOUSTIC DESIGN OF SWIMMING HALLS

### BACKGROUND

Swimming halls is constructed for a very specific purpose. This leads to constructions with hard surfaces and large volumes which creates a noisy environment for visitors and employees. The acoustic perspective is not a priority. The sound waves bounces between walls, ceiling, floor and water surface since they are all hard surfaces. Absorbents are frequently used to improve the acoustic environment in buildings but due to the climate in swimming halls this isn't common as a solution.

### PROJECT AIMS

The purpose of the Master Thesis is to investigate the current state of the acoustic environment in swimming halls and detect possible improvements. It will be a study of room acoustics. Questions to be answered are what kind of parameters are important, what is experienced as good acoustics in swimming halls and how the design of the swimming hall effect the acoustic environment. The thesis will investigate the design of swimming halls in order to develop design guidelines and improvements.

### APPROACH AND METHODOLOGY

In order to investigate the acoustic environment in swimming halls measurements, questionnaire and interviews will be performed. Measurements will be performed in several swimming halls.

*Measurements:* Speech transmission index, Reverberation time, background noise, noise during working hours

*Questionnaire:* Questions with multiple alternatives and some with text answers for visitors and employees in swimming halls.

*Interviews:* Interviews with more investigating questions for construction and absorbent developers.

The questionnaire will detect connections between the acoustic experience in swimming halls and the result from the measurements. The interviews will show how the acoustic work is included in the development of swimming halls, give an explanation for the current situation and present possible improvements.



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