

AUDITORIUM ACOUSTICS: A CASE STUDY

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1. INTRODUCTION

In the new, recently built, headquarters of Kaupþing Bank a 178 seat auditorium was carefully designed. An acoustic model of the auditorium was made in CATT-Acoustic and measurements were made with WinMLS2004 after the opening for comparison. A reasonable agreement was found between the measured and modeled results.

2. DISCUSSION

2.1. An overview of the design

The aim of the acoustical design of the auditorium was to design a hall that could easily be used for lectures without a sound reinforcement system. The speech intelligibility should be sufficiently high along with evenly distributed SPL from a source on the stage throughout the audience area.

The acoustical treatment of the hall was following: the side walls were made diffusive to avoid flutter echo, a sound reflector was placed in the ceiling to increase the SPL in a part the audience area and then sound absorption was placed in the circumference of the audience area to adjust the reverberation time.

Technical details of the auditorium are given below:

Length, L	16,6 m
Width, W	12 m
Height, H	6,1 m
Volume, V	915 m ³
Seating capacity, N	178
Seating area, Sa	123 m ²
Sa/N	0,7 m ²
V/N	5,1 m ³

Measurements were done in 4 receiver positions and compared to estimated results. A reasonable agreement was found as can be seen in figure 1.

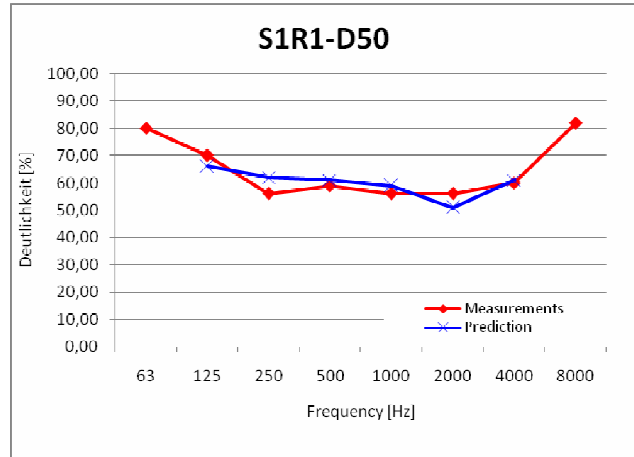


Figure 1. A comparison measured and estimated Deutlichkeit for receiver position 1.

3. CONCLUSIONS

In general a reasonably good agreement was found between the measured and predicted results. The agreement, though, varied though the audience area. When using computer models, acousticians must be careful when deciding what they should leave out and what they should model precisely. After design it is important to carry out measurements for comparison with estimated results in order to increase ones programming skills and to gain a deeper knowledge for the modeling program in use.