

ACOUSTICS IN WOODEN BUILDINGS - STATE OF THE ART 2008

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1. INTRODUCTION

Acoustics is an important performance characteristic for building with wood and a prerequisite for the acceptance of wooden buildings by building industry, building owners and consumers. However, the research in this area has been limited in Sweden during recent years. Therefore, a national consortium was initiated by SP in 2007 in order to utilize available resources more efficiently and to maintain and develop the competence in the field of acoustics in wooden buildings. The consortium consists of all national R&D performers, leading industry companies within building, building materials and wood sectors and leading consultants.

The aim is to present the state of the art, define industrial needs for producing wooden buildings with high acoustic performance and to define further research needs to reach that goal.

The work has been financed jointly by Vinnova and the participating companies.

2. STATE OF THE ART REPORT

Generally wood buildings can be divided into three main building systems:

- Wood frame systems
- Solid wood systems
- Hybrid systems

For these systems the state of the art report lists issues for wooden buildings related to air-borne sound, impact sound, flanking transmission, service equipment noise and vibrations.

3. INDUSTRIAL NEEDS

For the industry, it is important to have improved knowledge concerning current requirements, easily

accessible data on the acoustic properties of building materials and reliable prediction tools in the early stage of a building project. There is also a need for an improved quality of foundations and it is necessary to extend the acoustics knowledge in the groups involved in building projects as well as to have properly educated acoustic consultants.

4. SUGGESTIONS FOR FUTURE WORK

There is a need to study the large variations between 'identical' measurement places, develop prediction models for the sound insulation, study low-frequency sound insulation, develop the evaluation of sound insulation in lightweight buildings, establish engineering prediction model for industrially produced volume buildings, develop noise-reducing devices and study vibrations in lightweight long span floors

5. PARTICIPANTS IN THE PROJECT

Industry and consultants	R&D performers
CBBT - Centrum för byggande och boende med trä	CTH - Chalmers University of Technology
Gyproc	DTU - Technical University of Denmark
NCC Construction	KTH - The Royal Institute of Technology
Paroc	LTH - Lund University
Saint-Gobain - Isover	LTU - Lulå University of Technology
Setra Group	SP Akustik - SP Acoustics
WSP	SP Trätec - SP Wood Technology
ÅF-Ingemansson	VXU - Växjö University