

Dear reader,

This is the final newsletter from the WOTIM project. On 30 November, 2016, the third training module of WOTIM was arranged by VTT in Espoo. The purpose of this final conference was on the one hand to report on the conclusions reached regarding the manufacture and properties of foamed insulation panels from wood fibre raw materials and on the other hand to give a status report regarding sprayed-on cellulosic foams. The workshop also addressed the use of foam formed panels for acoustic purposes then also incorporating design as an important factor in utilizing the material. It can be concluded that the wood based fiber insulation materials have many advantages. For many applications there is, however, a need for further development.

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Project Coordinator*

Summary of the third training module

20 persons attended the workshop representing both the five participating organisations as well as representatives from external industry and universities.

The program included the following sessions:

- Insulation material markets and trends
- Commercial cellulose based insulation materials and manufacturing processes
- Comparison of foam formed insulation materials against commercial wood-based insulation materials
- Spray-on cellulose based thermal insulation foams
- Sustainability, cost efficiency and performance of developed insulation material in building applications
- Acoustic material markets and commercial cellulose based acoustic materials and manufacturing processes
- Comparison of foam formed acoustic materials against commercial acoustic materials
- Spray-on cellulose based acoustic materials
- Design driven development of cellulose based materials



The delegates at the third training module in Espoo.

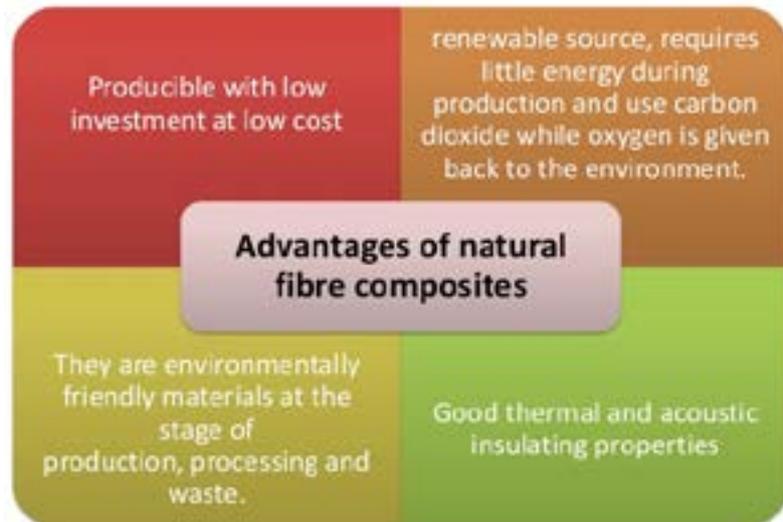
Training module presentations

The presentations are available on the WOTIM website: www.wotim.eu/News--Events/Training-module-WOTIM3/. Below is a summary.

The presentations gave first an overview of the market and trends for insulation materials both for Scandinavia and Europe as a whole with special focus on cellulose based materials.

It can be concluded that the natural fiber insulation materials are a niche product but a growing one. An asset as compared to other types of materials is the dynamic moisture storage capability. However the continued growth is dependent on the change of regulations as well as on the availability of the raw material.

Still there is need for improvements of the manufacturing process as well as need for adjuvants and a change in the habits and use related to installation protocols and storage of the material.



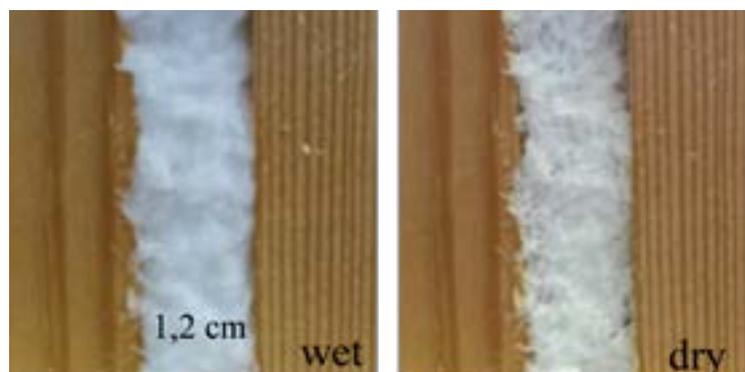
The manufacturing process of foamed formed cellulose insulation panels was presented and the material properties of the produced panels were compared with commercial products. It may be concluded that the wood based foam formed insulation material are well positioned among industrial wood containing insulation materials. Further development of foam formed materials is, however, needed with regard to the addition of fire retardants as well as with regard to decreased of water up-take.

Analysis, based on model simulations regarding the performance of the insulation materials in buildings showed that the cellulose based materials performed as well as more traditional ones. The simulated conditions, considering the yearly climate variations, showed that there was no risk of mould growth.

With the intention to explore the possibilities to create a new wood-based cellulosic in-situ spray-on thermal insulation foam to replace traditional spray-on plastics insulation foams on construction site, the development achieved was presented.

The main challenges of the project have been related to the issues of water based foams and the shrinking during drying. The material has to stick to the different surfaces and form a uniform bulk structure (no splits).

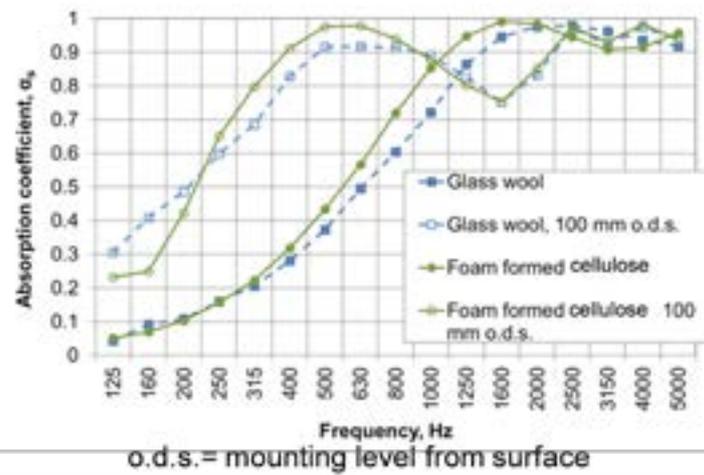
In conclusion it can be stated that there is not a ready solution for wood fibre materials to be sprayed into wall cavities to form closed foam structures. The solution developed in the WoTIM project is very promising, but not yet ready to upscaling. Further development is needed.



By the use of a refined pulp it was possible to produce fibre a foam which, although it shrank somewhat (10-20%) during drying, it still stuck tightly to the frame and kept the uniform bulk structure. However, thinning of the layer in the middle occurred.

The possibilities of using foamed formed insulation panels for acoustic purposes were presented. The sound absorption level of foam-formed cellulose fibre materials were at competitive levels compared to some current commercial materials

In many cases the cellulose foam-formed product offers lower material weight at the same acoustic performance as commercial materials.



Different materials produced with foam forming were displayed on an exhibition and caused a lot of interest and discussion.