

# LCA RESULTS FROM PROTOTYPES FOR FUTURE COMMERCIAL PRODUCTION: THE CASE OF THERMALLY MODIFIED TIMBER

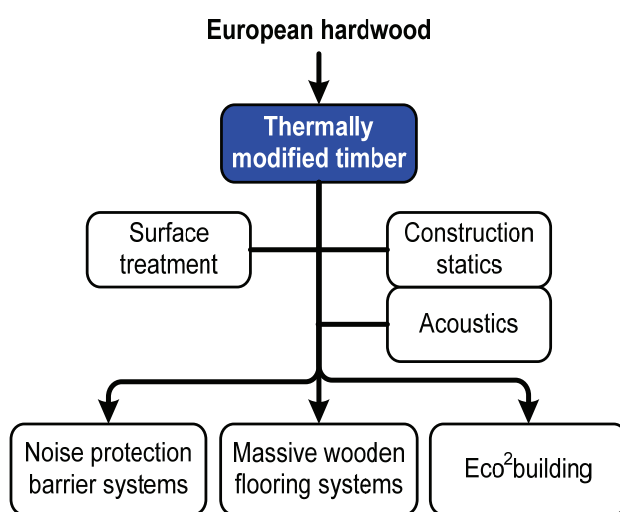


**Marloes Caduff and Hans-Jörg Althaus**

Empa, Technology and Society Laboratory, CH-8600 Dübendorf, Switzerland

## Introduction

The thermal treatment of European hardwood is an innovative process to improve wood properties, for instance in terms of a higher dimensional stability and better resistance against wood decay fungi. The EU-FP6 project HOLIWOOD aims at investigating the characteristics of thermally modified timber (TMT) and at realizing product prototypes (see figure 1). The environmental aspects of these products and processes are analyzed by life cycle assessments.



**Figure 1:** Overview of the developed processes and products within HOLIWOOD

## Objectives

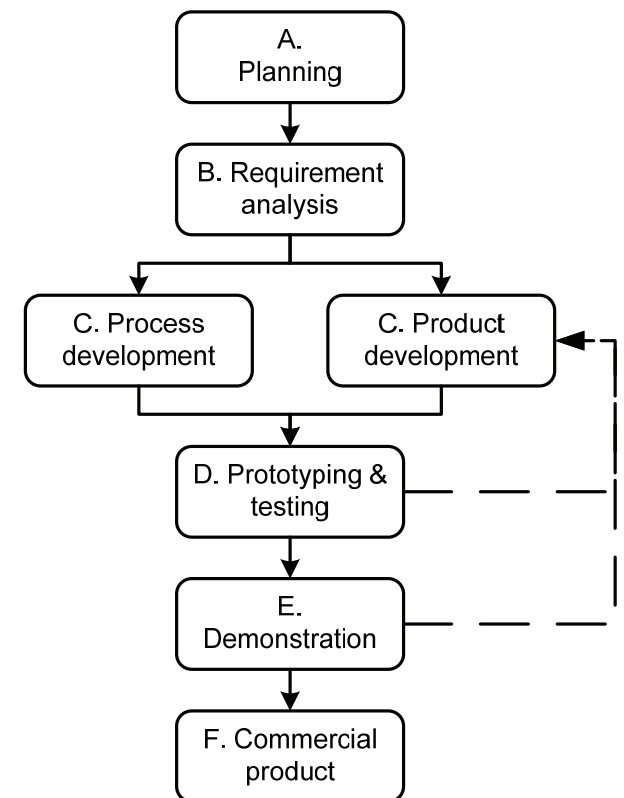
The overall objective is to elucidate the applicability of LCA studies for assisting early-phase development decisions. This poster aims to present:

- preliminary LCA results from prototypes
- the influence of these results on technology options and decision-making

The project started in 07-2005 and will last 4 years. Given that the project and hence product development is still ongoing, the results presented here should be interpreted with care, since it displays the current development state and not the final product.

## Product development

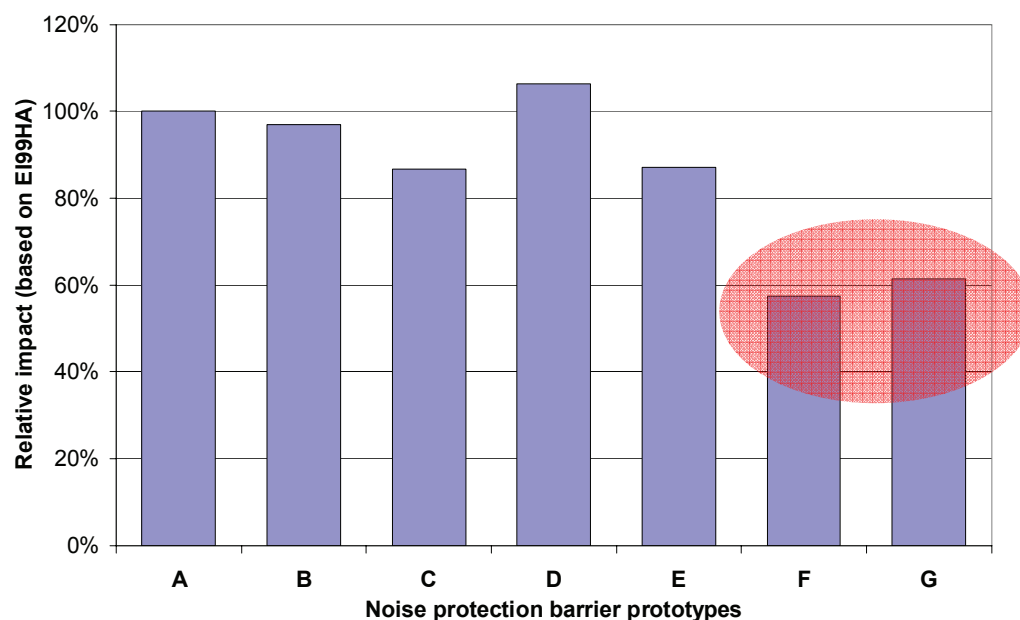
The chosen product development path designed within the HOLIWOOD project is displayed in figure 2. Currently, the developments are in phase D and E. Findings during the prototyping and demonstration phases flow back into the product development phase C, where these results are incorporated into a new set of prototypes.



**Figure 2:** Product development path

## Results

A total of 7 prototypes of a noise protection barrier were build and their properties and performance were tested. For each of the prototypes an inventory was established and the impacts were calculated. Figure 3 shows the relative results, based on EI 99 HA points. The results clearly show that the prototypes F and G are from an environmental point of view the most promising alternatives. These findings, together with the test results formed the basis for determining future developments.



**Figure 3:** Preliminary relative results of 7 noise protection barrier prototypes

## Discussion & Conclusion

Based on the LCA results, as well as on the technical performance, the involved partners chose to continue to develop the product according to prototypes F and G.

This example showed that LCA offers an additional criteria and the results can guide the decision-making process. A second series of prototypes will be made and again LCA will be part of the technology decision-making process.

Integrating LCA results within early product development, provides a basis where it can be assured that the final product is not only competitive economically and technically but also environmentally.

<sup>1</sup> More information on the project is available on the website [www.holiwood.org](http://www.holiwood.org)

### Acknowledgements

The results presented were developed within the IP-SME project Holiwood. This project is carried out with the financial support from the European Community within the 6th Framework Program (NMP2-CT-2005-011799). This publication reflects the authors view. The European Community is not liable for any use that maybe made of the information contained therein.

### Contact:

Marloes Caduff, Empa, Swiss Federal Laboratories for Materials Testing and Research, Phone: +41 44 823 48 12, Email: [marloes.caduff@empa.ch](mailto:marloes.caduff@empa.ch)