English Summary

The main objective was to develop various feasible solutions for office and public service buildings using timber as main material. They should satisfy all climatic and energetic aspects in an optimal way. However for those types of buildings timber was not used very often up to now. Unfortunately this is mostly caused for unjustified reasons and lack of knowledge of the planners.

The most important conclusion of this study is that it is very well possible to build office buildings in timber which are highly optimized in energy consumption and will provide an optimal room climate inside. Numerous case studies found in Europe can proof that those types of buildings satisfy the highest architectural qualities as well as the economic and ecological advantages for the use of timber in office buildings.

It is possible to archive passive cooling effects by using the mass of timber, if strategies as for example night-ventilation are considered during the planning phase. Simulations have proven that the effective mass of timber in an office with uncladded solid timber slabs is in the range between conventional office rooms with reinforced concrete slabs and cladded concrete slabs, if other constructive parameters are constant.

Optimization in design, building envelope, finishes and the usage of intelligent integration of building services will allow further increase of the potential of this construction system.

An easy-to-use digital tool was developed to assist the planner from the very beginning of the design phase. This guide will help to find the appropriate strategy to level the balance between the contrary design goals of maximal comfort versus best energetic optimization.