Ongoing R&D projects in COST member countries

2008-2014

Jaan Kers, professor, Tallinn University of Technology

Tõnis Teppand, lecturer, University of Lifescience, Tartu

COST FP1303: Performance of bio-based building materials

Estonia

2008-2014

- Tallinn University of Technology (TUT), **Tallinn**
  - Faculty of Civil Engineering.
  - Faculty of Chemical- and Materials Technology.

- Estonian University of Life Sciences, Institute of Forestry and Rural Engineering. **Tartu**

- University of Tartu, Faculty of Science and Technology, Institute of Technology. **Tartu**

Estonia
Tallinn University of Technology

2008-2014

Faculty of Civil Engineering

- Healthy and energy-efficient Living in Traditional Rural Houses (2010-2013)
- Nearly zero energy buildings (nZEB) in Estonia: energy, durability and indoor climate performance analyses combined with cost optimality assessment for transformation (2012-2015)
- Nearly-zero energy solutions and their implementation on deep renovation of buildings (2013-2018) IUT1-15 project
- Reliability of Energy Efficient Building Retrofitting - Probability Assessment of Performance and Cost (RAP-RETRO) Annex 55 (2009-2014)

Estonia
Tallinn University of Technology

2008-2014

Faculty of Civil Engineering

Special test houses:
(KoKo Architects Mihkel Tüür)

- Sinking test for log wals
- Hygrothermal performance of logwals

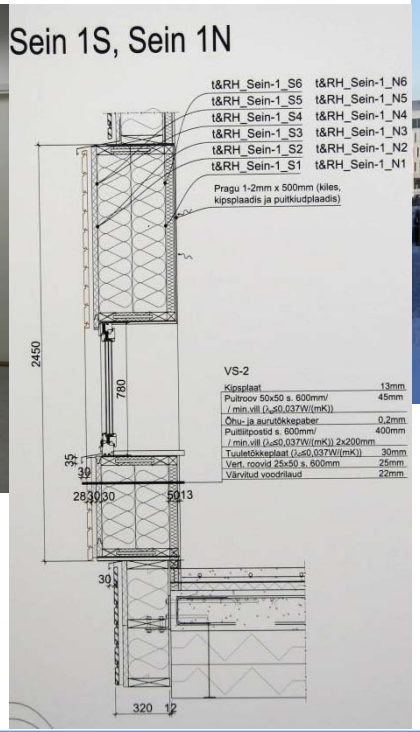
Estonia
Tallinn University of Technology

2008-2014

Faculty of Civil Engineering

Special test houses:

- Energy, thermal and ventilation analysis of buildings and wall constructions

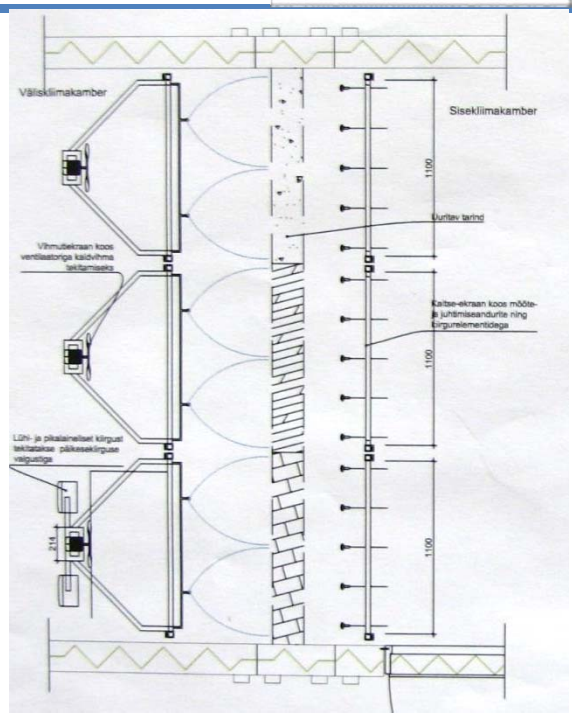


Estonia
Tallinn University of Technology

2008-2014

Faculty of Civil Engineering

Climate chamber 6x4x3m with large chamber for outside conditions and in small chamber room conditions simulating for artificial weathering of wall construction (3x3x0,5m) from both sides of the wall



Estonia
Tallinn University of Technology

2007-2014

Faculty of Chemical- and Materials Technology

Department of Polymer Materials:

- Drying of non conductive materials using high intensity magnetic fields (2011)
- Properties and development of synthetic and natural polymeric materials (2005-2010)
- Research and Development programme project "Improved impregnating technology for pinewood protection". Project code EU21307.
- R&D projects in wood polymer composite materials

Materials research centre:

- National R&D program „Materials technology". Smart aerogels based on the nanostructured wood cellulose – SmaCell (2012-2014)

Estonia
Estonian University of Life Sciences

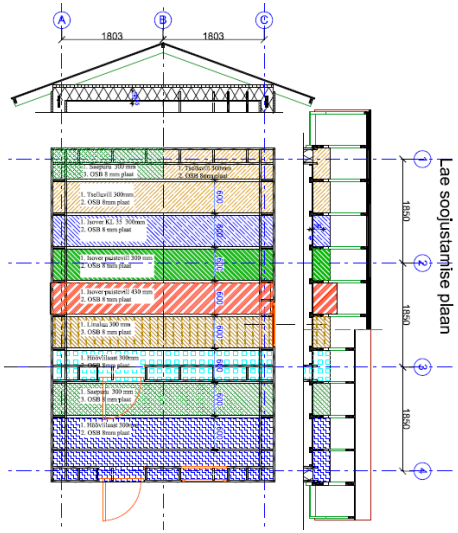
2008-2014

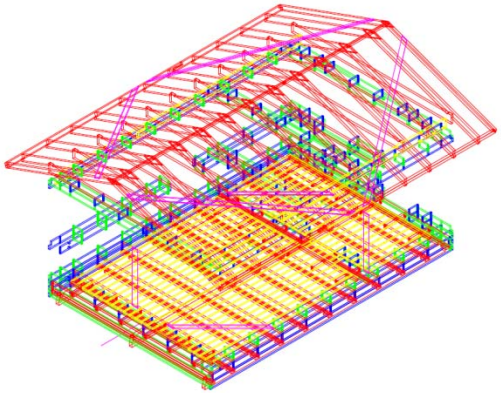
Institute of Forestry and Rural Engineering, Department of Rural Building

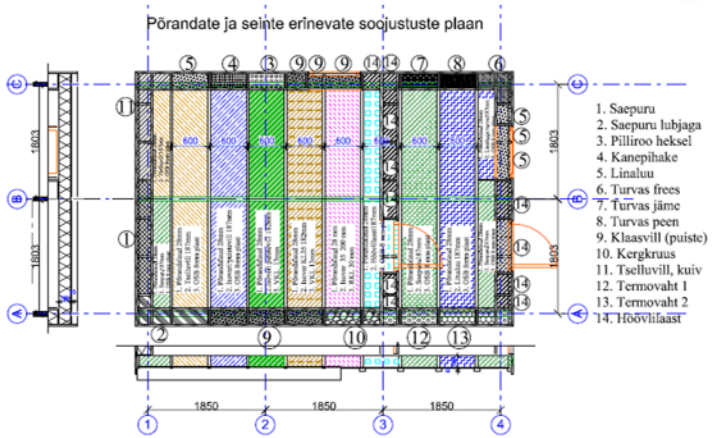
- „Assessment, Reinforcement and Monitoring of Timber Structures“
  COST FP1101 (from 17.05.2011 -);
- „Northern Clay Plaster Project, Professional Qualification for Working with Natural and Sustainable Building Material“
  Lifelong Learning Programme (from 01.10.2012 - 30.09.2014);
- „Fungi and Beetles in Buildings on Islands of Baltic Sea" (acronym FaBBi)
  Central Baltic Interreg IV A Programme 2007-2013 (from 01.11.2010 - 31.10.2013);
- „Concepts for using reed biomass as local bioenergy and building material“ (acronym COFREEN)
  Central Baltic Interreg IV A Programme 2007-2013 (from 01.05.2010 - 30.04.2013);
- „Assessment, analyses and modeling life cycle of buildings“
  Estonian Base Financing P8003 (from 01.01.2008 - 31.03.2012)

Estonia
Estonian University of Life Sciences

2008-2014



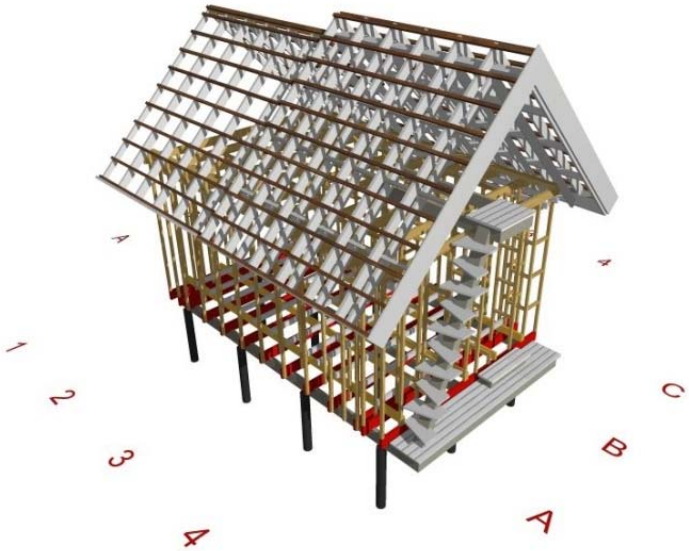




- Long term field testing of 14 different thermal insulation materials.
- The test house was built of tenoned details.

Estonia
Estonian University of Life Sciences

2008-2014



- Long term field testing 4 different concepts for using reed biomass as building material (walls, floors, ceilings, roof (1/2).
- Carrying structures are made of timber.
- The walls are covered with clay plaster, the roof is covered with reed or shingles.

Estonia
University of Tartu

2008-2014

Faculty of Science and Technology, Institute of Technology

- „Promotion of the use of sustainable and low energy buildings and constructions in Latvia and Estonia - Active through Passive!“
  INTERREG Estonia-Latvia Programme (from 01.02.2010 - 31.07.2011)
- „Promotion of the Very low-energy house Concept to the North European Building Market (NorthPass)“
  Intelligent Energy – Europe (from 01.09.2009 - 31.08.2012)
- Different projects about Passive house technology

Specialist equipment

2008-2014

- **Test wall and floor** (max 250 kN per point or length meter; step of fixing holes or buses 1,0m; H=5,0m, L=12,0m) to test constructions for loads. EUoLS, Tartu
- **Climate chamber** to test conductive heat transfer through the materials. EUoLF, Tartu
- Equipment with **sensors, loggers and software** to test heatflow and moisture content through or inside the constructions. EUoLF, Tartu
- **Resistograph** for assessment condition of the timber structures using a non-destructive inspection procedure. EUoLF, Tartu

List equipment that is important to the development of collaborative activities in this Action

e.g. *pilot plant facilities*
processing methods
analytical tools
etc

Specialist equipment

2008-2014

	Properties						Environmental				
INSTITUTE	Natural Durability	Moisture / sorption studies	Resistance to mould	Fire resistance / reaction to fire	Insect/ termites/ pests/ rodents	Dimensional stability	Life Cycle Assessments	Whole Life evaluations	Product accreditation	Emission testing	Environmental Product Declaration (EPD)
Tallinn University of Technology	x	x	X				x		x		
Estonian University of Life Sciences	X	X	X		X	X	X	X			
University of Tartu											

Specialist equipment

2008-2014

INSTITUTE	Laboratory tests						Field tests				
	Natural Durability	Mould resistance	Insect/ termite/ rodent testing	Leaching / weathering	Sorption studies	Dimensional stability	In ground contact tests	Out of ground contact tests	Natural weathering	Surface performance / coatings	Moisture data logging
Tallinn University of Technology	x	x		x		x			X	X	X
Estonian University of Life Sciences	X	X	X	X		X	X	X			X
University of Tartu											