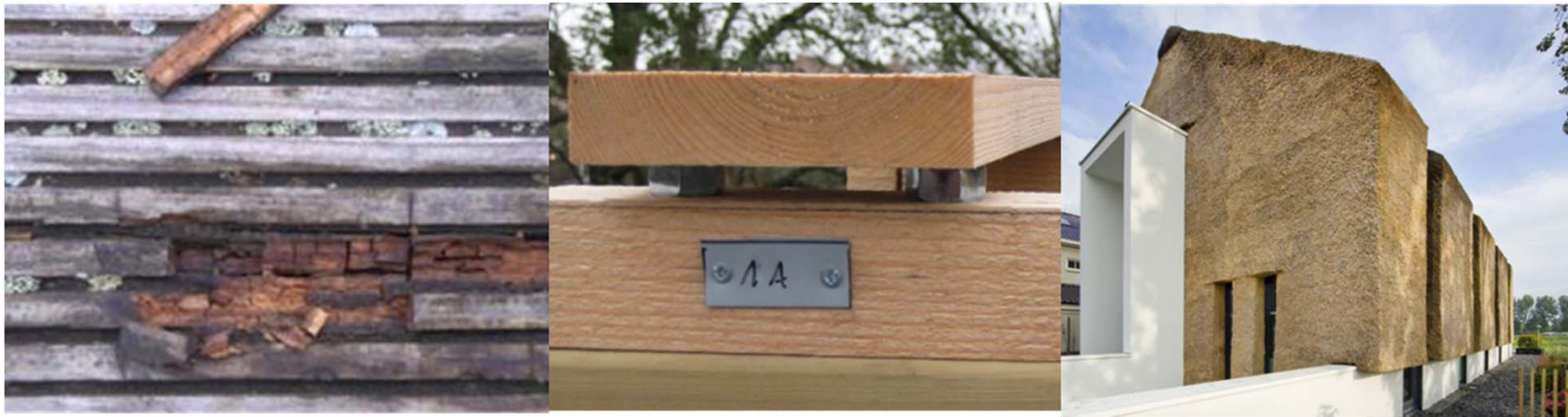


# Ongoing R&D projects in COST member countries

January 2014



COST FP1303: Performance of bio-based building materials



- Technological Educational Institution of Thessaly  
Dept. of Wood and Furniture Design and Techn.  
Lab. of Wood Technology
- Hellenic Agricultural Organization "Demeter"  
Institute of MFE & Forest Products Technology,  
Lab. of Wood Anatomy and Technology
- Aristotle University of Thessaloniki (AUTH)  
Faculty of Forestry and Natural Environment  
Lab. of Wood Products and Furniture Technology

Karditsa



**TEILAR**

Athens



**FRIA**

Thessaloniki



**AUTH**



Technological Educational Institution of Thessaly  
Dept. of Wood & Furniture Design and Technology  
Lab. of Wood Science & Technology



Department of Wood & Furniture Design & Technology

### ***Projects (ongoing)***

- *FP7 project Research for the benefit of SME associations FP7-SME-2012-2-315633-Fibre+ “Innovative paper packaging products for European SMEs based on functional modification of recovered fibres”*
- *Project LIFE09 ENV/ES/000454 WOODRUB “Utilisation of recovered wood and rubber for alternative composite products”.*
- *Project NSRF (National Strategic Reference Framework) 2007–2013 Archimedes III “TRENATOIL – Development of an innovative preservative treatment method using natural oils to improve wood properties. Application to outdoor wood furniture”.*
- *Project NSRF (National Strategic Reference Framework) 2007–2013 Thales “WOOLASER – Improvement of wood treatability in refractory to impregnation conifer species by surface drilling with laser”*



Hellenic Agricultural Organization "Demeter"  
Institute of MFE & Forest Products Technology (aka Forest Research Institute of Athens - **FRIA**)  
Laboratory of Wood Anatomy and Technology

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**Projects** (in progress)

- *Hydrothermal recycling of wood based panels (mainly UF bonded)*
- *Hydrothermal modification of wood, THM treatment of wood*
- *Impregnation of wood with nano-Zn compounds*
- *Impregnation and modification of wood with MF resins*
- *Alternative raw materials for the production of composites*
- *VOC emissions from WBP*

**Results**

<http://www.fria.gr/EngPage/files/lykidispubeng.html>



Aristotle University of Thessaloniki (**AUTH**)  
Faculty of Forestry and Natural Environment  
Laboratory of Wood Products and Furniture Technology

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***Projects (in progress)***

- *Hydrothermal recycling of wood based panels (mainly UF bonded)*
- *Long term loading effects on UF bonded boards*
- *Heat treatment effects on wood*

***Results***

<http://wbp-recycling.web.auth.gr>



# Specialist equipment

January 2014



**TEILAR** std. equipment: <http://www.wfdt.teilar.gr/material/Exoplismos-STEX.pdf>



**Impregnation & drying  
units**



**NTD testing**



**Product design  
and testing**



COST FP1303: Performance of bio-based building materials



**FRIA** (std. equipment: [www.fria.gr/woodtech](http://www.fria.gr/woodtech))

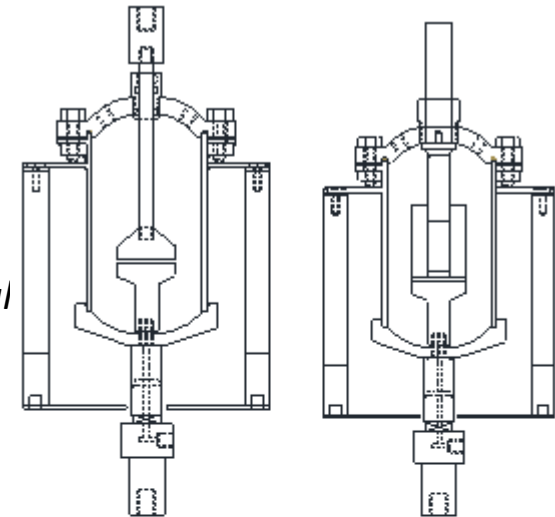


## **1L custom Stainless Steel Reactor**

*Dry - wet heating, cooling, vacuum, pressure, in-line mechanical characterization, thermal, hydrothermal, thermo-hydro mechanical treatments, densification, impregnations ....*

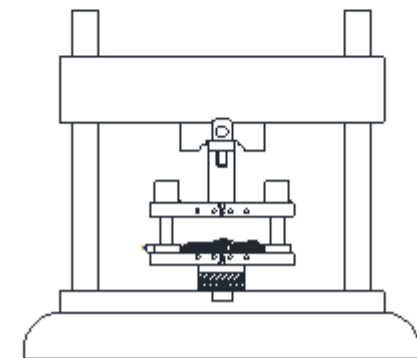
*(Temperature up to 225°C, Pressure up to 18bar, vacuum up to 50mbar-abs)*

*Adjustable to Universal Testing Machines,*



## **10cm x 10cm Mini – hot press**

*Adjustable to Universal Testing Machines, accurate pressure and thickness control, even distribution - accurate temperature control accurate, reproducible production of composites with minimum raw material (lab trials), surface densification of wood*



# Specialist equipment

January 2014



**AUTH** (std. equipment: <http://wood-technology.web.auth.gr>)



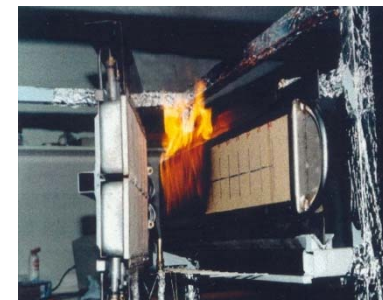
## ***50L Stainless Steel Reactor***

*thermal, hydrothermal treatments, impregnations ,  
waste cooling and collection*

*(Temperature up to 167°C, Pressure up to 8bar, vacuum  
up to 100mbar-abs)*



***Fire properties: Ignitability apparatus (cone), flame  
spread apparatus***



***Strand forming: orientation apparatus***

***LignoStation: high-resolution recording of ring  
parameters and wood density***





COST FP1303: Performance of bio-based building materials



# Specialist equipment

January 2014






INSTITUTE	Properties						Environmental				
	Natural Durability	Moisture / sorption studies	Resistance to mould	Fire resistance / reaction to fire	Insect /termites / pests	Dimensional stability	Life Cycle Assessments	Whole Life evaluations	Product accreditation	Emission testing	Environmental Product Declaration (EPD)
 <b>WDFT</b>	x	x				x			x	x	x
 <b>FRIA</b>		x				x				x	
 <b>AUTH</b>		x		x		x					

# Specialist equipment

January 2014



INSTITUTE	Laboratory tests						Field tests				
	Natural Durability	Mould resistance	Insect /termite testing	Leaching / weathering	Sorption studies	Dimensional stability	In ground contact tests	Out of ground contact tests	Natural weathering	Surface performance / coatings	Moisture data logging
 <b>WDFt</b>	x			x	x	x	x	x	x	x	x
 <b>FRIA</b>					x	x	x	x	x		x
 <b>AUTH</b>					x	x			x		