

Department of Wood & Furniture Design and Technology (WFDT) www.wfdt.teilar.gr

Research Lab of Wood Science & Technology - T.E.I. of Thessaly, Karditsa (Greece)

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Lab Description

The **Research Lab of Wood Science and Technology**, at the Tech. Educ. Inst. (TEI) of Thessaly (Greece), carries out basic and applied research and provides technical services within the wood-, furniture- and packaging- related areas, from raw materials to final products. It deals with the study of wood as a raw material and its conversion into products covering the subjects: natural and macroscopic characteristics, wood and fibre identification, chemical composition, microscopy and ultrastructure of wood, production of wood in trees and variability, wood defects, properties of wood such as density, hygroscopicity, dimensional stability, mechanical strength, heat-sound insulation, natural durability; also, protection and improvement of wood, i.e. modification, preservation, as well as quality and strength grading of timber, recycling of waste wood & paper, wood as a raw material for the paper-timber industries, properties and control of glued and composite wood products, wood as an energy source (firewood, pellets, briquettes). In addition, the Lab offers technical services, to third parties, in the areas of quality control both of final wood products and furniture pieces & end products, as well as indoor or outdoor testing of several wood-derived materials and final products according to the international standards.

Published work (during the recent years)

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Research Lab of **Wood Science & Technology (WST): facilities & equipment**



Partial view of a testing room at the Research Lab of WST



GANN moisture meter



View of the wood-impregnation pilot plant (600 L) at WST



Zwick-Roell 2020 testing apparatus



PROTHERM lab-scale ashing furnace



Quality control (QC) equipment for furniture products



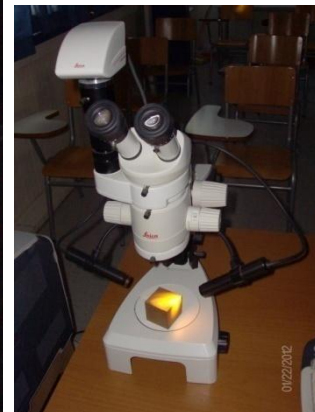
Partial view of the lab with conditioning room & chambers



Desiccator apparatus for HCHO emission



Liquid chromatography – Mass spectrometry equipment at the WST



LEICA light microscope



Large conditioning room



STETON hot-press apparatus for glued wood products



ATLAS Xenon equipment



Outdoor cladding-test area at the WST lab



Soil test area for in-ground experiments



"Block-test" set up for outdoor fungi test



Small conditioning room



Lab-scale Shimadzu spectrophotometer



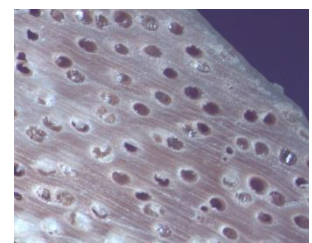
Lignostation™: device for wood density measurements



LINTAB 5™: analysis of tree rings



Research microscope ECLIPSE 50i with a digital camera & relative software, and Stereoscope NIKON SM2 800 equipped with photographic digital system



Wood cross section



Microtome LEICA MICROTOME SM 2010R



Microtome SLEDGE MICROTOME G.S.L. 1



GRINDOSONIC Mk5 device for non-destructive MOE measurements of wood



Device RESISTOGRAPH 4452-S for defects control Mobile device IML MICRO HAMMER for tree defects



SYLVATEST for timber grading (EN338) Atomic absorption PERKIN ELMER AAAnalyst 200 equipment



Testing machine SHIMADJU UH-300 kNI for mechanical properties of wood materials



SOXHLET extraction system for chemical analyses



Machine WPM 150J for wood impact tests



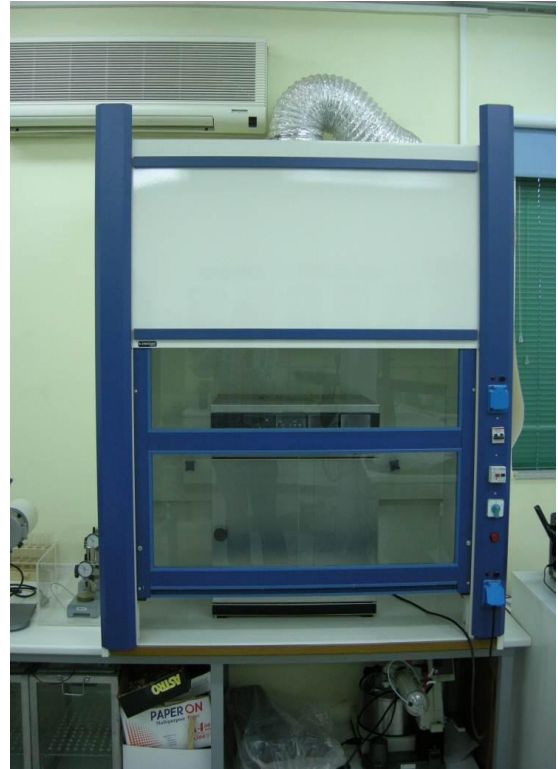
Conditioning room ELVEM (0-50°C, 25-98%RH)



Vacuum chamber VACIOTEM



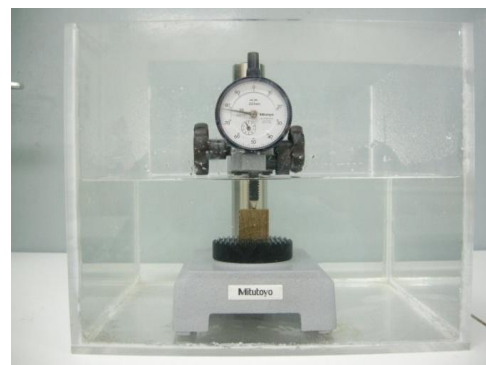
Conditioning room BINDER KBF 115 (10-100°C, 10-90%RH)



Chamber MEMMERT with hood



Wood mill POLYMIX PX-MFC 90D



Caliper for wood swelling studies



Lab small devices: balances, oil-baths, FALK, PH-meters, micrometers, and other.



*Chamber POL-ECO-APARATURA SLW 53, and
High-temperature chamber THERMCONCEPT KLS 03/10*



Desiccator test apparatus (JIS 233)



Laboratory-size water bath



TABER abraser apparatus for HPL & other surfaces



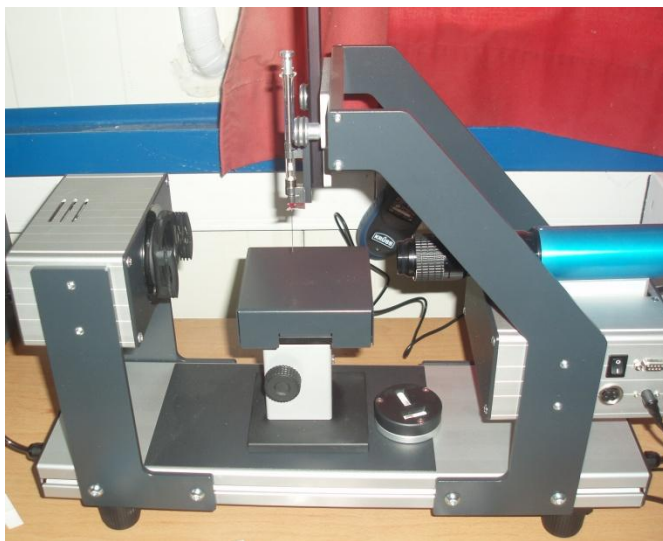
Erichsen impact tester



Erichsen scratch-resistance tester



Perforator-test lab apparatus (EN 120)



Contact-angle apparatus (goniometer) with digital camera



Lab size spectrophotometer



MEMMERT small-scale conditioning room



PPM portable Formaldemeter™ 400



WESSEX Pendulum skid resistance tester



Laboratory size oven dryers



BYK-Gardner colourimeter for several wood experiments



Vacuum apparatus for wood-impregnation experiments



STÄUBLI Robotic system for furniture QC (quality control) & other automation tests



Brookhuis MTG system for timber grading (EN 338)



3-axis CNC machine for furniture manufacturing



SECAL pilot-scale kiln dryer



QC system for furniture testing & grading (CE)



Quality control (QC) system for wooden windows and doors