

# TRIER INTERNATIONAL PROJECT GRANTS

## GREEN OAK BUILDING CONCEPTS

### WITH HIGH-TECH METHODS



## RESULT REPORT

### DESCRIPTION

A research trip to the University of Bath was aimed at scientific exchange with colleagues from the Department of Architecture and Civil Engineering. The focus was on topics of sustainable construction, wood material research and resource minimisation.

The trip took place from 20 to 25 May 2022 together with our research partner from Mainz University of Applied Sciences. The trip was part of a 39-month research project at Trier University of Applied Sciences entitled "Development of a new type of load-bearing system made of weak hardwood", which is funded by the Agency for Renewable Resources (FNR).

The concept for the cooperation with the Department of Architecture and Civil Engineering initially came from a student exchange within the framework of a cooperative doctorate, funded by RISE Germany/DKAD. Due to the UK's exit from the EU, ERASMUS funding is no longer available for such collaborations, although the International Office of Trier University can provide funding for international research collaborations, as can an internal funding line "Trier International Project Grants".

### OBJECT OF RESEARCH

One of the research objectives of the Trier Wood Competence Centre (H4T) is to show standardised timber construction methods in their production, construction and application. We also aim to develop new concepts for ecological and efficient timber load-bearing structures, primarily from naturally dried oak logs. In particular, the weak oak wood frequently found in the Palatinate Forest is available in large quantities as a raw material and has so far only been used for firewood or as "precarious assortments".

The inspiration for this research is the traditional timber construction culture in Great Britain. There, a so-called "Green Oak Building" exists, which, however, is largely based on handcraft tradition and requires complex timber joints made by hand. The object of the research presented below is to transfer such construction methods - with oak wood at wood moisture contents of over 20% - into a contemporary technology with the help of 3D scanning methods, strength tests and databases developed specifically for this purpose. This means that weak oak timber, previously considered to be of inferior quality, can be used for eco-efficient smaller engineering structures such as vehicle sheds, stables, carpools, production and storage facilities.

The University of Bath is one of the leading architecture and engineering faculties in the UK and is conducting more research in the field of timber construction. The working groups can draw on the experience of the historic "Green Oak Building" in England. A common interest in a scientific exchange on this topic emerged in advance of its establishment.

### TITLE

New building with oak weak wood - research exchange with the University of Bath.

### DEPARTMENT

Architecture and Civil Engineering

### PARTNERS AT HOME AND ABROAD

England: University of Bath - Department of Architecture and Civil Engineering

### CONTACT

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