

The Italian standard UNI 11119:2004 for the in-situ diagnosis of timber structures: pros and cons after 5 years of practical application and proposals for emendations.

Massimo Mannucci¹, Michele Brunetti², Nicola Macchioni³

Abstract The Italian Standard UNI 11119:2004 (Cultural Heritage – Wooden artefacts - Load-bearing structures - On site inspections for the diagnosis of timber members), was firstly published in July 2004 after some years of discussions within a quite large group of experts from different entities involved in the recovery of ancient timber structures (universities, private companies, professionals, public administrations, etc.). The standard contributed to cover the lack of rules and/or guidelines with specific regard to the principles and criteria for the inspection of timber structures and for the preparation of reliable inspection reports. The standard represents a basic document for protection and conservation of the cultural timber heritage, which can be integrated by further information if required according to the other Italian standard UNI 11138:2004 (Cultural Heritage - Wooden artefacts - Load bearing structures of buildings - Criteria for the preliminary evaluation, design and execution of works). According to UNI 11119 standard, the object of the inspection is to obtain some relevant information as follows, relative to each load bearing timber member, in order to evaluate its integrity and mechanical performance:

- a) wood species (or taxon)
- b) wood moisture and moisture gradients
- c) class of biological risk, according to UNI EN 335-1 and UNI EN 335-2
- d) geometry and morphology of the element, position and extension of main defects, decay or possible damage
- e) position, shape and dimension of critical zones and critical sections
- f) strength grading of each critical zone and/or of the element as a whole.

Aim of the paper is to give a brief description of the standard and a state of the art after almost five years of use, based on the experience of hundreds of different ancient timber structures inspected all over Italy. The analysis is addressed to underline the potential extent and the limits of the standard, as well as the need of a larger diffusion at national level and, possibly, at international level. Finally, taking into account the results of some recent laboratory trials, authors want to propose some suggestions that could be matter of discussion in view of the next revision of the document.

¹ Massimo Mannucci, LegnoDOC srl, Italy, massimo.mannucci@legnodoc.com

² Michele Brunetti, CNR-IVALSA, Italy, brunetti@ivalsa.cnr.it

³ Nicola Macchioni CNR-IVALSA, Italy, macchioni@ivalsa.cnr.it

