

NDT of Wood, for a real Sustainable Development

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Sustainable development is a major topic from the last decades, binding the social, the environmental and the economical concerns.

Wood, as an engineered material, is one of the best examples of the two first concerns: as a social vector by promoting local jobs throughout the valorisation of a proximity primary resource, and as an environmental one by using a renewable material producing oxygen as long as consuming CO₂.

Concerning the economical point of view, wood was penalized by a late consideration of its full potential due to a lack of knowledge and to negative standards, what hamper this material from becoming a competitive one in many domains.

The reason why the standards are negative is because the material is difficult to evaluate due to its natural origin: species, knots, growing conditions, annual rings and other singularities that all affect wood mechanical performances.

From the years 1980, reliable NDT were born to evaluate wood mechanical performances. Nowadays, engineers, architects, standards commissions and others can be helped by wood NDT in order to make the material more competitive and economically interesting answering then to the third and last sustainable development concern.

In this paper, several NDTs for wood are presented and illustrated by innovative concepts such as:

- Forestry quality evaluation by the measurements on standing trees or logs
- Wood as a structural material with new constructive concepts developed especially for timber slabs or timber frames: an ecological and reliable material can be competitive,
- Expertise of historical monuments with examples of secular castles in Europe or the Forbidden City in Beijing, China,
- Wood poles used in overhead lines of power and telecom companies.

Thanks to NDTs, the quality management of wood is now possible and reliable, from the forestry to its different applications. Wood illustrates as best as possible the future's concerns by being a real asset in the sustainable development chain.