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Jakob Schoof (ed)

## **Engineering Nature**

Wood is not only a traditional building material - even being one of the oldest known to mankind - it also has future potential. Thanks to high-performance composite structures wooden buildings are now being erected far beyond the high-rise boundaries: world records are currently being broken in rapid succession, and an end to the increase in altitude is hardly in sight. Wooden structures are also on the uptrend in residential and office construction, sports halls, industrial buildings and bridges. Their future potential can also be seen in their ecological advantages: taking its entire life cycle into account, the raw material is carbon neutral. Timber structures therefore act as a kind of intermediate storage for a material that can be reused after dismantling, or at least utilised thermally.

The new title *Engineering Nature* showcases the current developments in structural planning with wood on the basis of around 20 outstanding engineering structures. High-rise buildings such as the Mjøstårnet in Norway - currently the tallest wooden high-rise in the world - are presented as well as sports centres, churches or markets with timber roof structures. The examples were not chosen for their superlatives, but rather to illustrate how wooden structures are increasingly establishing themselves in ever more types of buildings, and to highlight the issues of the constructive and regulatory frameworks they are confronted with.

The engineers involved in the planning of the projects describe the conception of the supporting structures as well as individual solutions for their implementation. They also go into the planning processes and technical developments that make contemporary timber construction possible in the first place. Among these are the use of hardwoods with their unrivalled load bearing capacity, but also the increasing number of composite structures in which wood, steel and concrete are utilised optimally in accordance with their respective material properties. Without steel joining elements and connecting pieces, tension cables, supports and girders or massive concrete floors the wooden structures would not up meet modern building standards when it comes to the length of spans covered, sound insulation or fire protection. New, rational prefabrication processes which make the structures competitive in terms of construction costs are also presented. Technical articles from research and technology round out the book.



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