International best practices for the use of hardwood in construction

Innovations with wood from deciduous trees

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Assessment of the value of hardwood in construction

1. Necessity
2. Difficulty
3. Simplicity
Necessity
Today we build with bricks, concrete, steel and glass with a high content of grey energy and a huge resource consumption.
Arguments for more Hardwood

- Hardwood will make up a larger proportion of forests than softwood in future
- Green Building is an international obligation for the construction of buildings
- The ecological footprint in the use of resources must be reduced
Difficulty
The use of hardwood today: common in interior design rare in construction

Common for furniture, flooring . . .

Rare for constructions
Personnel costs in hardwood processing are higher for each processing step and the waste proportion is greater than in softwood processing.
Beech is known for its "wild" behavior when drying
Simplicity
Simplicity: Learning from nature
Inspired by nature:
system performance

>100 m
Giant Eucalyptus

84 m
Wooden skyscraper in Vienna
Inspired by nature: climate bionics

Termites nests require a uniform temperature with variations of less than 1.5 degrees Celsius.
Inspired by nature: Process bionics

Natural metamorphosis

Human metamorphosis

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The potential of Hardwood
Many hardwoods are weather resistant
High strength with Baubuche

3 Stk PORTALKRÄNE 5 Tonnen 17,50m / STÜTZENRASTER 5,00m

HEA 260
280/320 GL70h
280/520 GL24h
Compressibility

Cracking of Beech wood on drying
Adjunctive treatment of beech wood in outdoor use
To do:
providing derived timber products in hardwood
Use of hardwood for the partial reinforcement of softwood laminated beams
Laminated beams and cross laminated timber
Medium density fibreboard from hardwood fibre
To do: Mechanization in small and large enterprises
Opportunities for Hardwood: the digital mechanization
Even "Individuals" can change the Hardwood World
To do:
Development of multi-functional system components
Vertical log wall with beech

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Timber and concrete as a hybrid
To do:
development of connection techniques
For constructing with Hardwood we need new joining techniques
Baubuche with BSB connections in steel slimness

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Coal storage hall with beech node near Hamburg
Wood-wood connections
Tamedia Zurich - Omega Biel
Center Pompidou in Metz

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Projects using Hardwood
Werkhof Albisgütli
Fahrländer Scherrer Architekten

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A design staircase in Acacia
Chestnut facade
Aspen Art Museum
Shigeru Ban
Competition airport Zagreb with Shigeru Ban 2nd place
My recommendation for the first step

In each High School a chair of “wood material engineering” will be installed
Think tank Buchholz and Biography

Thank you