TimberTower

TimberTowers for multi-megawatt wind energy plants

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Agenda

TimberTower

- History & key facts
- Scope of services
- Glueing
- Construction and assembly

Key facts

TimberTower

The company

Corporate purpose of

TimberTower GmbH:

- Development
- Distribution
- Assembly of TimberTowers including foundations for wind energy plants (multi-mega watt class)

Key facts

TimberTower

- TimberTower GmbH is a spin-off of a Hamburg civil engineering office that operated since 2002 in wind energy sector
- March 2008: TimberTower GmbH was founded in Hannover (Managing Directors: Gregor Prass, Holger Giebel)
- December 2008: conclusion of financing, start of operative business
- December 2009: completion of certification process of the wooden tower with 100m hub height for a 1.5MW Vensys turbine by TÜV Nord

Key facts

TimberTower

- March 2010: proof-of-concept with the erection of a test tower at the premises of Holzbau Cordes
- December 2010: adoption and certification of a quality management system according to DIN standards (DIN EN ISO 9001:2008)
- December 2011: Impulsus clean Technologies takes over the company majority.
- Erection of first prototype by the end of 2012:Vensys 77, 1,5 MW, 100 m hub height in Hannover Marienwerder

Key facts

TimberTower

Why using a TimberTower?

The demand on new tower concepts is market driven:

- sustainable
- cost efficient
- local production content
- transportable

The TimberTower combines the market requirements as a product

Ecology

TimberTower

Energy production in tune with nature:

The TimberTower is a 90 per cent natural product.

It is carbon-neutral and easily recyclable.

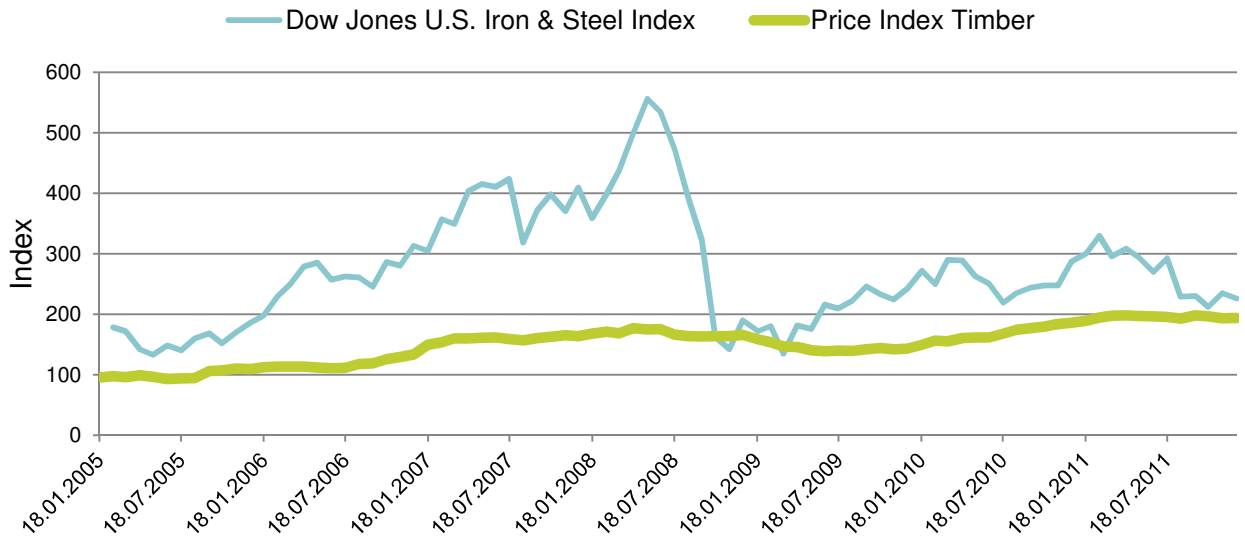
The certificates of our wood suppliers guarantee the origin of the used raw material from ecologically, economically and socially responsible forest economy.

Economy

TimberTower

Groundbreaking cost effectiveness:

Depending on size and location, the TimberTower can produce savings of up to 20% for each project.



Logistics

TimberTower

A logistic revolution:

Delivered on-site in 40 ft containers, the TimberTower allows for easy access to almost any location worldwide.

Logistics

TimberTower

A logistic revolution:

Only a small work area is needed while lifting timber panels

Local Employment

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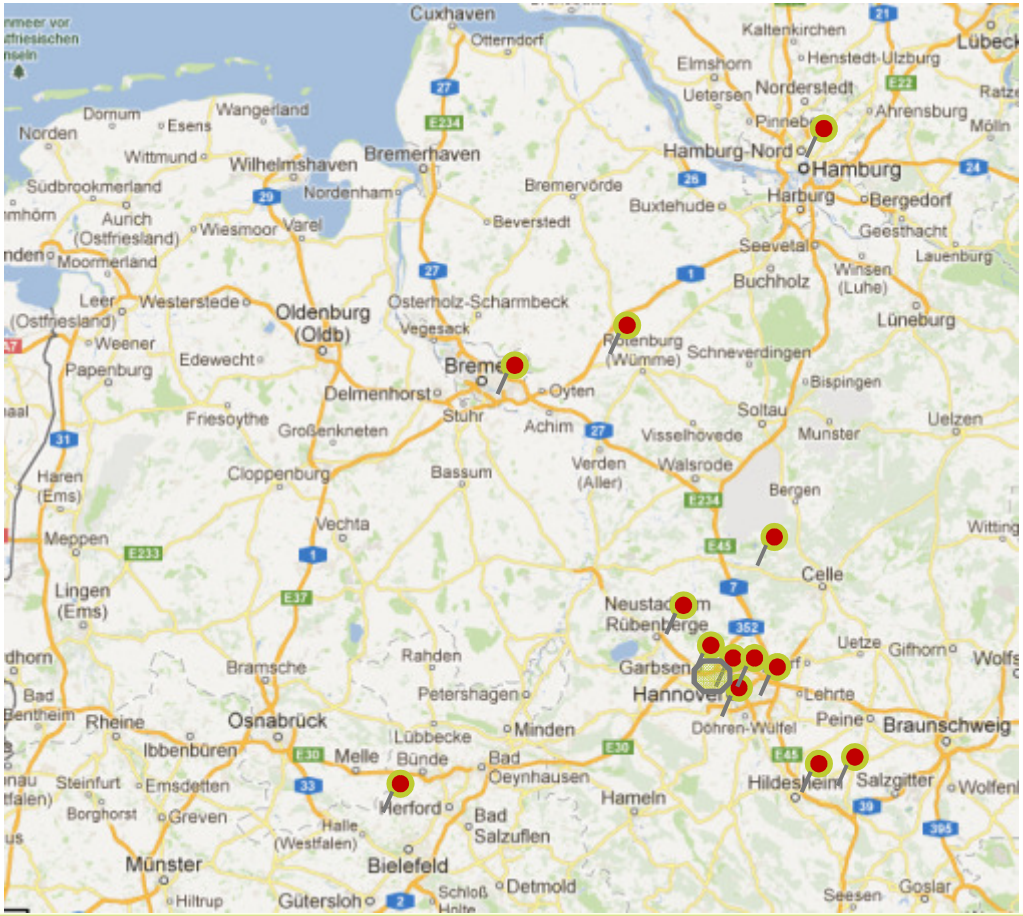
The TimberTower supports the regional added value:

Location Prototype

Partners in Lower Saxony



Agenda

TimberTower

History & key facts

Scope of services

Glueing

Construction and assembly

Scope of services

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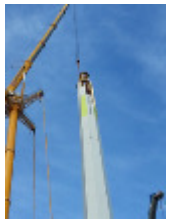
Design & Engineering | Certification | Project management | Quality management | Environment protection | Health & Safety



Infrastructu-ral works | Soil works | Foundation | Construction | Interior

Steel adapter | Nacelle placement | Power supply

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Glueing

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Glueing

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Bridge over Drôme, Crest

Glueing

TimberTower

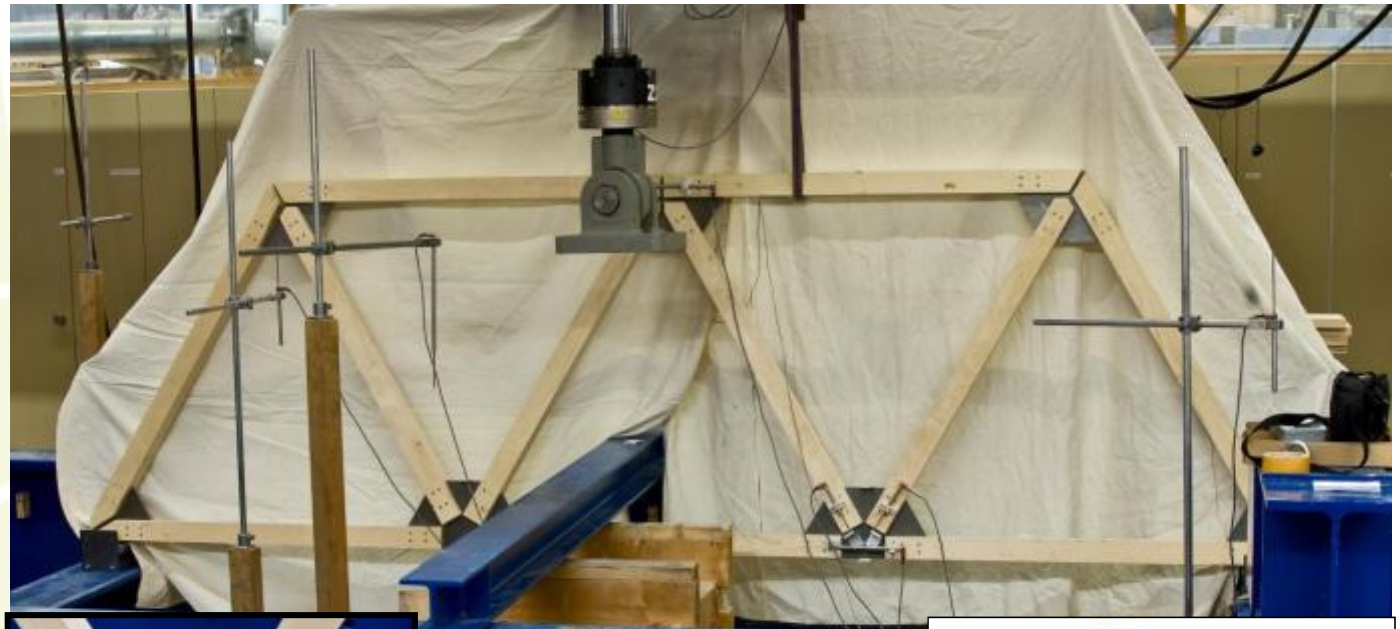
Bridge over A7, Sneek

Glueing

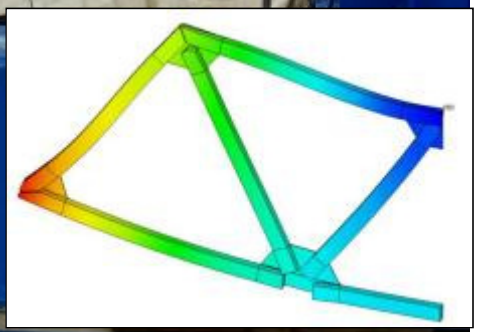
TimberTower

Bonded timbertrusses

Fraunhofer IFAM



T. Vallée, T. Tannert and M. Schwendimann: Adhesively bonded timber trusses: Experimental and numerical investigation, WCTE2010, Italy.



Glueing

TimberTower

Adhesives enable composite action

Adhesives enable hybrid structures

Adhesives puts materials in their best context

Glueing

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Demonstrate possibilities

Establish advantages

Glueing on site

Verification

Develop implementation

Fraunhofer IFAM

Glueing

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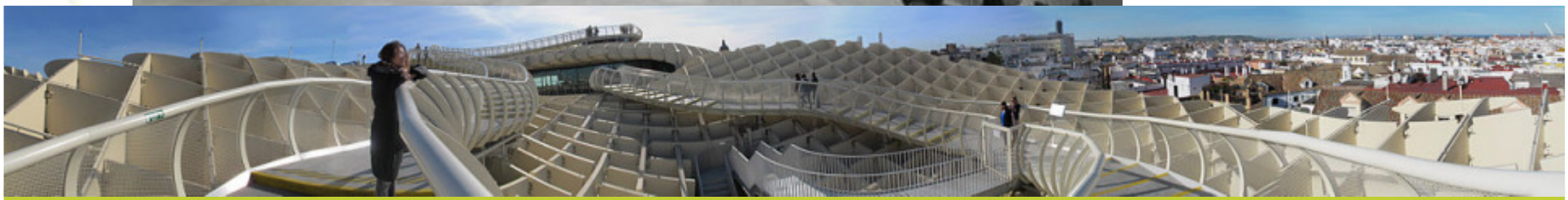
Parasol, Sevilla



Glueing

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Parasol, Sevilla

Glueing

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Earth System Science Building, Vancouver

Glueing

TimberTower

ESSB,
Vancouver

Agenda

TimberTower

History & key facts

Scope of services

Glueing

Construction and assembly

Construction / assembly

TimberTower

Specifications:

- The tower is a closed hollow body with a polygonal profile
- The material is a composite consisting of cross-laminated timber panels and surface components
- Prefabrication of timber panels including fasteners in the production
- Heights of 160 meters will be economically feasible
- Assembly of the elements at the building site
- Transportation with conventional trucks

Construction / assembly

TimberTower

Foundation

Construction / assembly

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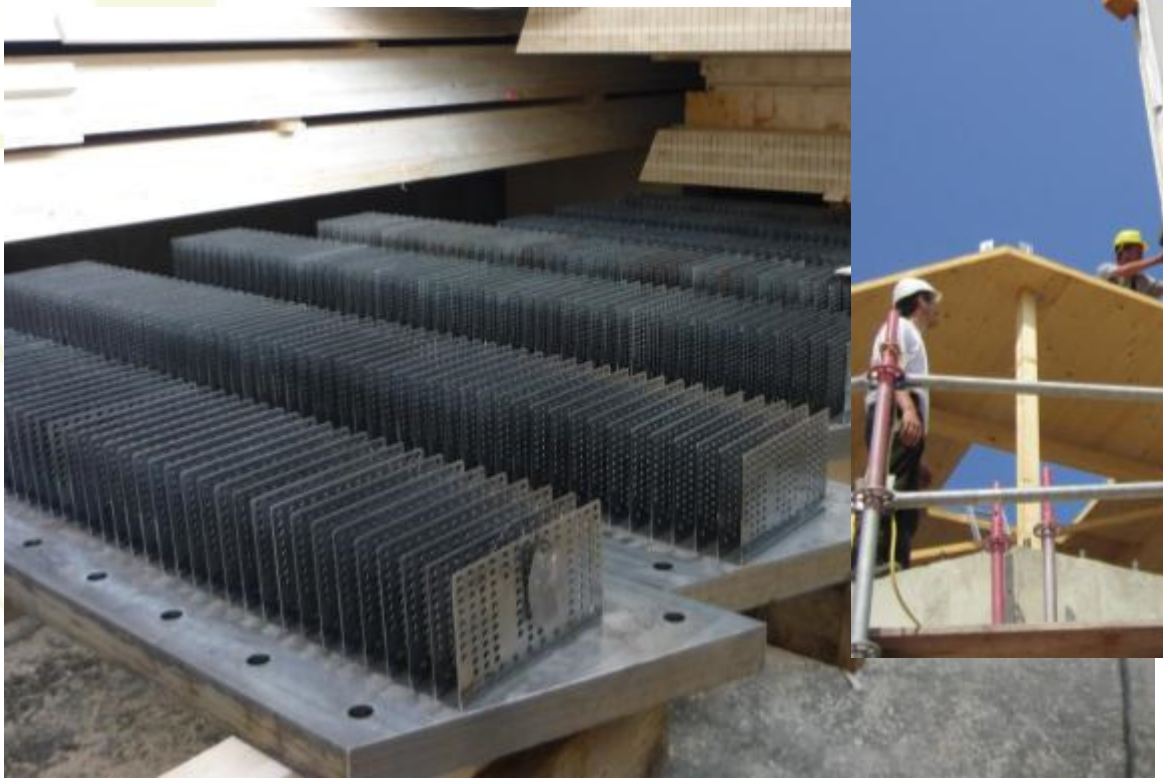
Foundation

Construction / assembly

TimberTower

Foundation



Construction / assembly

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Construction / assembly

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Construction / assembly

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Wall elements

Cross laminated timber:

- Better damping
- Higher fatigue strength
- Based on the weight, a higher specific strength
- Greater fire resistance – steel rapidly looses strength when heated
- Sustainability
- → CO_2-neutral
- Easy to handle
- Easy to recycle

Construction / assembly

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Production of wall elements

Construction / assembly

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Assembly of timber components

Construction / assembly

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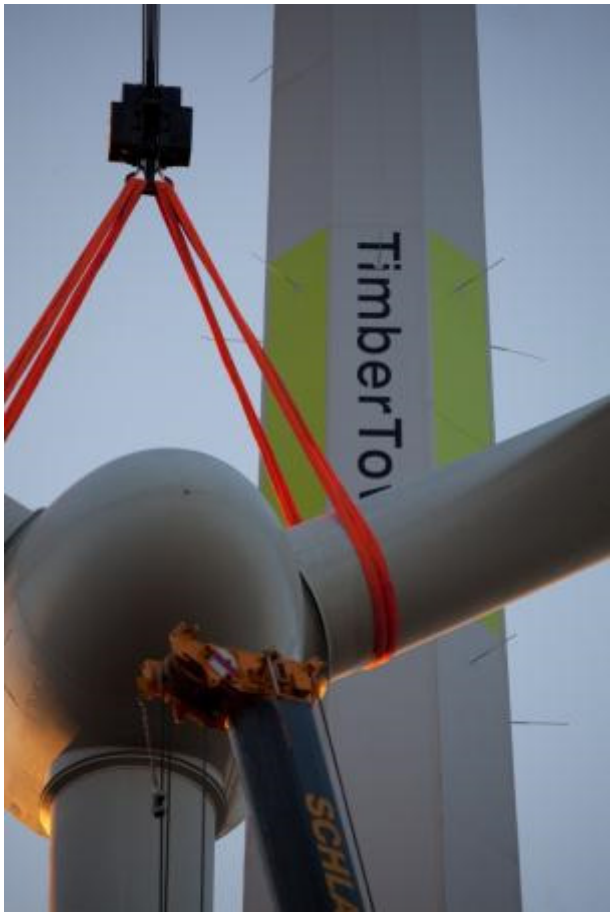
Assembly of timber components



Construction / assembly

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Connecting the timber components

Construction / assembly

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Connecting the timber components

Construction / assembly

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Steel adapter

Construction / assembly

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Steel adapter

Construction / assembly

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Surface protection

By welding the joints, the surface of the tower is closed

Construction / assembly

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Construction / assembly

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proven by Nature

strong by design