



## TIMBER CONSTRUCTION

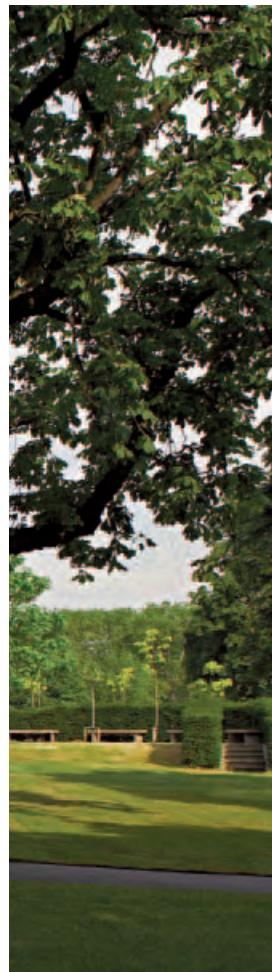


## **EXCELLENCE IN TIMBER SOLUTIONS**



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## finnforest merk

Finnforest is part of the Metsäliitto group, one of the largest forest industry group in the world, using annually 6 million cubic metres of our raw material, wood. The Metsäliitto group is owned by 131,000 private forest owners in Finland and employs more than 20,000 people in over 30 countries around the world. The total sales are 9,3 billion Euros within different business lines PA.

Metsäliitto wood products industry (Finnforest) is a solution provider offering Finnforest products and services to targeted customer segments. Our products are based on Nordic premium timber from our owners, the Metsäliitto Cooperative. Our sales are 1,4 billion Euros PA and we employ 4,500 people in 20 countries.

# GLOBAL LOCAL PLAYER

Finnforest Merk, part of Metsäliitto wood products industry (Finnforest) is a global player in the field of timber construction and acts with local knowledge.

With operations in over 20 countries the Finnforest group network has the resource flexibility that allows us to deliver your construction in locations worldwide.

## BUSINESS ACTIVITIES

**Finnforest Merk – Your partner for a wide range of timber structures all over Europe.**

Finnforest Merk assists architects and engineers within the development stages of projects offering their input into the design, engineering and cost advising. Finnforest Merk pushes the boundaries of the architects and engineers understanding of what is possible to be done with timber. With Finnforest Merk you will have the benefit of a partner for project development, for building solutions and the research of new products.

**At Finnforest Merk you will find a complete service, with innovations, competence and product know-how.**

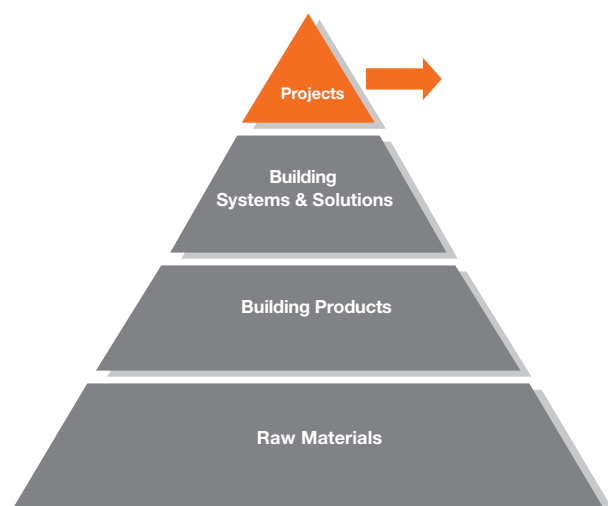
Ask us for more information and innovation for your design!

Our seminars and lectures are aimed at engineers and architects providing a continuous development platform showcasing the benefits and uses of engineered timber as a construction material.

Finnforest Merk's project division is at the leading edge of all experience and know-how within the Finnforest pyramid of business fields. We are your partner for advanced structures using timber to create an environmentally and economically friendly solution.



## PROJECTS



*Timber construction*



*Timber + glass construction*

# HISTORY OF FINNFOREST MERK

Engineered timber construction has been an essential part of Merk's business since they were established in 1867. This tradition will continue within the Finnforest group as Finnforest MERK promoting the use of timber as a construction material. Driven by experienced and highly motivated staff Merk, now Finnforest Merk has been a major driving force for developing and engineering timber construction for the last 30 years in Europe.



## EXPERIENCE

Our engineering department takes a leading role in the design and procurement of even the most complex timber structures. The diversity of projects demonstrates that timber can no longer be seen as a niche product for niche markets. By using engineered wood products in demanding applications it has shown that timber is more than fit for purpose.

We are able to offer an extensive range of services:

- Engineering** – highly skilled and motivated engineers and designers
- Fabrication** – delivery of especially pre-fabricated elements and systems
- Construction** – the ability to act as design and build contractor

Finnforest Merk is part of

- the national research group DIN and EN
- university research projects
- ongoing training and development processes
- ongoing training process for engineers and design offices

Our investments ensure our customers are getting leading edge technology for engineered timber products to meet the demands of even the most complex timber structures on a pan-European basis.

Most of the Finnforest Merk projects are 'in-house' engineered structures with partly patented systems. Finnforest Merk has a highly regarded reputation on the international markets and enjoys the challenge of delivering the best value solutions on time.



# TECHNOLOGY



## SOFTWARE AND DESIGN

- experience in all common standards (BS, DIN, EN, etc) for timber and steel
- in-house service for structural design and workshop drawings
- CAD and 3D technology for advanced solutions
- close relationship to the leaders within the software industry
- direct link between CAD and CNC production

## KNOW-HOW / COMPETENCE

Close contact to universities, software companies and in combination with our own programmed software solutions give us the opportunity to deal with geometrically advanced structures. Our team of engineers are developing innovative and economic solutions within the design and production process as part of their day-to-day work, keeping our portfolio up to date and to serve customers best value for money. The R+D department of the Finnforest group and of Finnforest Merk provides the necessary material knowledge to make continual innovation a reality. Our engineers have a good reputation and the respect as timber construction specialists by well known engineering and architecture offices all over Europe. Finnforest Merk is known as a competent, reliable and trusted company for the development and implementation of timber structures and projects.



## PRODUCTION FACILITIES

The production facilities available to us are fundamental in our ability to process timber for challenging projects.

- 22,000 m<sup>2</sup> covered space, 60,000 m<sup>2</sup> site size
- large capacity/efficient gluing technologies
- precise and self-developed robotic processing facility, CNC machining centres
- self-engineered facility, which can achieve an industrial precision in production
- cranes up to a max. lift of 50 tons.



## QUALITY CONTROL

It is our ambition to serve only the best quality to the market. We have all the standard quality control procedures in process. But to achieve the best quality we do have additional quality procedures running in all stages of the project and prefabrication process. We do have all necessary certificates for the prefabrication processes and materials available, both for timber and for steel.

We do have a recording system for industrial data (BDE) running in our factory. This allows us to identify the current status of the different components in a project at any time, together with the percentage of completion.

The wide range of special projects constructed all over Europe is the demonstration of the possibilities and a testament to our reputation.



## INSTALLATION / HEALTH AND SAFETY

Our specialist installation team is able to supply the most complex structure as a supply and fit contract. We have a very experienced and well trained team for our projects. They are motivated to create the precise installation and quality, which is demanded by the market.

We have a long-term outlook for resource management to guarantee the best skills for the projects and to keep your programme on time and on budget.

Our team is well trained and experienced with health and safety management and has a broad range of experience. To guarantee this benchmark of quality we have a health and safety organisation working with internal and qualified external safety advisors.



# MATERIAL

To achieve the different requirements within a building structure it is important to have the knowledge of and access to the materials and products required for the different schemes. As one of the biggest timber construction companies for building products and solutions we have a vast knowledge about timber and timber construction.



Finnforest Merk, as part of Finnforest, is on a continuous research and development process to achieve the most environmental friendly and cost efficient products. Within this process we have developed a broad range of different materials and products for the building industry.

Timber can have a highly fire resistant behaviour, there are different strategies with which this can be achieved. The most important is the fire rating of a structure. A timber structure is much safer than an unprotected steel structure. In the case of a fire you can precisely predict the stability of the structure.

The charring rate of spruce glulam is approx. 0.7 mm/min. Therefore you can (generally) easily achieve a fire rating of 30, 60 or even 90 minutes.

The other strategy that is sometimes required is the 'spread of flame' treatment of the structure. If this is the case we have all the required possibilities available to achieve this. But in normally it is not really necessary to use protective coatings or other applications.

The core products of the Finnforest group are the ideal solution for modern, economic and sustainable structures.

If you would like to have more information about our products and systems, please order the brochures below.

## **KERTO®:**

Kerto is a laminated veneered lumber product (LVL), which has some of the best structural characteristics and it can be used in a wide range of applications.



## **LENOTEC / KERTO IN LENO:**

LenoTec / Kerto in Leno is a solid timber panel for structural applications, consisting of cross laminated timber boards. It is available in dimensions up to 4.80 m x 20.00 m. It is commonly used for wall and floor structures.



## **GLULAM:**

Nordic premium glulam is sourced within chain of custody regulations as a PEFC certified product. It is possible to supply customers with all possible grades, meeting European standards.



## **TIMBER AND GLASS FAÇADE SYSTEMS:**

This is a combination of timber mullions/transom construction with a high quality glazing structure on the outside. It gives the warmth and natural beauty of timber on the inside and a fully maintenance free façade structure on the outside. Within the handbook for engineers and architects you will find more information about this unique façade system.



## **THERMOWOOD:**

Thermowood is a heat treated European redwood, which is commonly used for external installations of cladding, decking, battening etc.

## Charles de Gaulle Airport Terminal 2E, Paris

<b>Type:</b>	Civil Engineering
<b>Client:</b>	Aéroport de Paris (ADP)
<b>Main Contractor:</b>	Aéroport de Paris (ADP)
<b>Architects:</b>	Dominique Parent and Olivier Mas (ADP)
<b>Location:</b>	Paris
<b>Description:</b>	Engineering, manufacturing and installation of veneered Finnforest birch plywood arches
<b>Used amount:</b>	1.050 m <sup>3</sup> , 28.500 m <sup>2</sup>
<b>Year:</b>	2008





## City Academy, London

<b>Type:</b>	Education
<b>Client:</b>	Corporation of London
<b>Main Contractor:</b>	Willmott Dixon
<b>Architects:</b>	Studio E, London
<b>Location:</b>	London, Great Britain
<b>Description:</b>	Mullion stick system, type multi story, floating and spanderal panels; Rib-Box elements for the roof with accoustic soffit
<b>Used amount:</b>	3.500 m <sup>2</sup> façade area; 2.500 m <sup>2</sup> RIPA element swith accoustics
<b>Year:</b>	2005

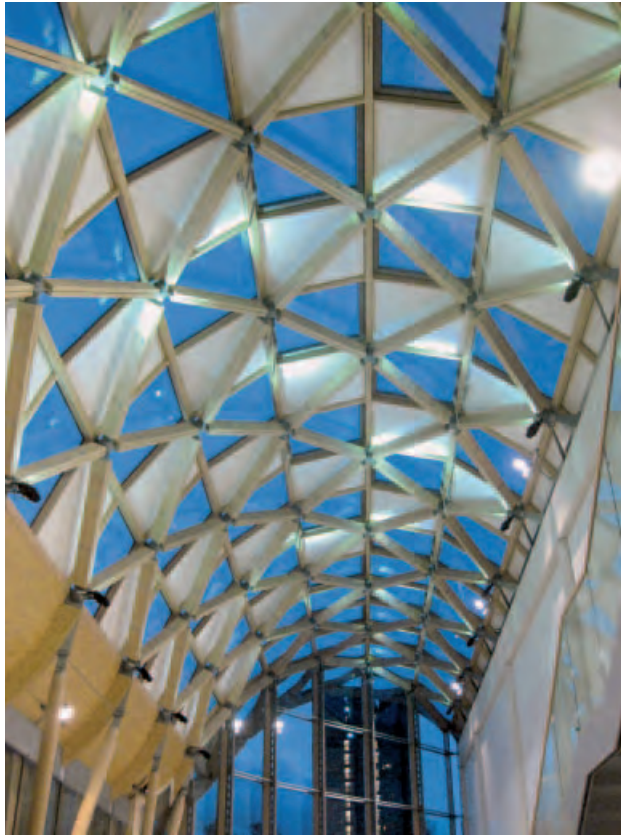


## University, Cambridge

<b>Type:</b>	Education
<b>Client:</b>	University of Cambridge
<b>Main Contractor:</b>	AMEC Capital Projects Limited, Ipswich
<b>Architect:</b>	Building Design Partnership, London
<b>Location:</b>	Cambridge
<b>Description:</b>	Structure out of curved glulam beams and timber and glass façade
<b>Used amount:</b>	200 m <sup>3</sup> ; 600 m <sup>2</sup> timber and glass façade
<b>Year:</b>	2004



Source: Raico



## Herbert Art Gallery, Coventry

<b>Type:</b>	Public
<b>Client:</b>	The Herbert Art Gallery & Museum, Coventry/UK
<b>Main Contractor:</b>	Galliford Try
<b>Architect:</b>	Pringle Richards Sharratt, London
<b>Location:</b>	Coventry
<b>Description:</b>	Dia grid roof construction; roof glazing; curtain walling with mullion stick façade; curved solid timber panels (Leno)
<b>Used amount:</b>	45 m <sup>3</sup> glulam, 190 m <sup>2</sup> façade (timber + glass), 550 m <sup>2</sup> Leno, 640 m <sup>2</sup> roof-glass structure with smoke vents
<b>Year:</b>	2008



## Law Court, Antwerp

<b>Type:</b>	Public
<b>Client:</b>	Justinvest Antwerpen
<b>Main Contractor:</b>	THV MBG – IEMANTS, Antwerpen
<b>Architect:</b>	Richard Rogers Partnership, London
<b>Location:</b>	Antwerp
<b>Description:</b>	Hyperbolic grid shell roof formed with crosswise combined timber lamellae and curved purlins
<b>Used amount:</b>	1.800 m <sup>2</sup>
<b>Year:</b>	2004





## Canteen, Karlsruhe

<b>Type:</b>	Education
<b>Client:</b>	Bau und Vermögen, Baden-Württemberg
<b>Architect:</b>	Architecture office J. Mayer-H, Berlin
<b>Location:</b>	Karlsruhe
<b>Used amount:</b>	LenoTec 200 m <sup>3</sup> , glulam laminated timber 220 m <sup>3</sup> , Kerto 250 m <sup>3</sup> , mineral wool insulating 800 m <sup>3</sup> , steel compo- nents 6,5 to, wall box slabs 1.200 m <sup>2</sup> , roof box slabs 1.700 m <sup>2</sup>
<b>Year:</b>	2005



### Mariinsky Theatre 3, St. Petersburg

<b>Type:</b>	Public
<b>Client:</b>	Mariinsky Theatre, Saint Petersburg
<b>Main Contractor:</b>	Neviss Komplex, Saint Petersburg
<b>Architect:</b>	Fabre & Speller, Paris
<b>Location:</b>	St. Petersburg
<b>Acoustics:</b>	Nagata Accoustics, Inc., Los Angeles
<b>Used amount:</b>	600 m <sup>3</sup> Kerto-Q, 2.500 m <sup>2</sup> of birch plywood
<b>Year:</b>	2006





## Müritzeum, Waren

<b>Type:</b>	Public
<b>Client:</b>	District Waren/Müritz
<b>Architect:</b>	DGI Bauwerk mbH, Berlin
<b>Location:</b>	Waren
<b>Engineer:</b>	FB Engineering AB, Göteborg
<b>Used amount:</b>	1.900 m <sup>2</sup> Kerto, 830 m <sup>2</sup> Leno & glulam
<b>Year:</b>	2006



## Sports Hall, Buttenwiesen

<b>Type:</b>	Education
<b>Client:</b>	Gemeinde Buttenwiesen
<b>Architects:</b>	Löhle Neubauer, Augsburg
<b>Location:</b>	Buttenwiesen, Germany
<b>Used amount:</b>	450 m <sup>2</sup> exterior façade, 250 m <sup>2</sup> interior façade
<b>Year:</b>	2004



## Bridge Ponte, Valbrembo

<b>Type:</b>	Infrastructure
<b>Client:</b>	Comune di Valbrembo
<b>Architects:</b>	Architetti, Bergamo, Italia
<b>Location:</b>	Valbrembo, Italia
<b>Description:</b>	Pathwalk Bridge
<b>Used amount:</b>	pressure impregnated Kerto
<b>Year:</b>	2004

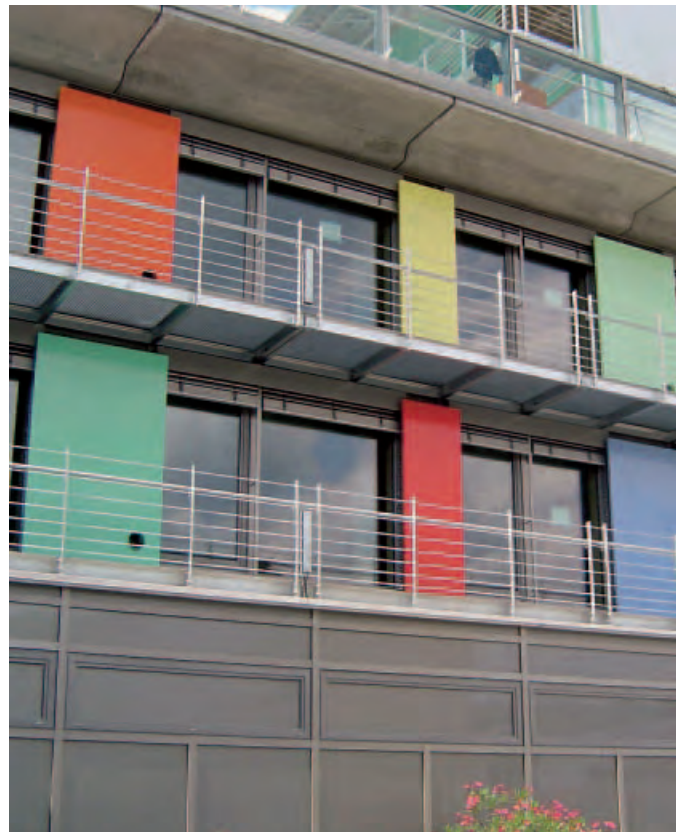


### Woodcoaster, Soltau

<b>Type:</b>	Public
<b>Client:</b>	Heidepark, Soltau
<b>Engineer:</b>	Ing.-Büro Stengel GmbH, München
<b>Location:</b>	Soltau, Germany
<b>Description:</b>	tracks of pressure impregnated Kerto-Q
<b>Size:</b>	ca. 450 m <sup>3</sup> Kerto-Q
<b>Year:</b>	2001

### Sonnenschiff, Freiburg

<b>Type:</b>	Office building
<b>Client:</b>	Solarsiedlung GmbH
<b>Architects:</b>	Rolf Disch, Freiburg
<b>Location:</b>	Freiburg, Germany
<b>Description:</b>	mullion stick system, low energy house, floating aluminium panels, passiv house
<b>Size:</b>	3.500 m <sup>2</sup> façade area with high insulated panels
<b>Year:</b>	2005



# ENVIRONMENTAL CREDENTIALS

It is within the nature of our 130,000 forest owners that taking care of the environment is an important part of Finnforest group responsibility, and thus environmental issues are a vital part of our business operations. As well as meeting all our obligations, we seek continuously to improve our performance and to reduce the environmental impact of our operations throughout the entire life cycle of our products.

Wood is our primary raw material and the one we are most associated with, so we take its origin seriously for our own and the following generations.



Finnforest's wood procurement is handled by the Metsäliitto cooperative. The Metsäliitto group started a continuous process with the launch of their own Energy Efficiency Optimisation (EEO) project. This will guarantee that all processes within their group parts are more energy efficient and timber will only be used sustainably.

Finnforest group supports forest certification as a valuable instrument for demonstrating that the wood products have originated from sustainable sources. Finnforest are fully committed to encouraging and promoting sustainable forestry practices.

Global warming caused by the build up of "greenhouse" gases, such as carbon dioxide is recognised as one of the most serious environmental threats. By using timber in a wide variety of applications within the building industry will be the best solution for an environmental friendly and sustainable construction.

## **TIMBER HAS THE FOLLOWING MAIN ADVANTAGES TO COMBAT THE THREAT OF THE CLIMATE CHANGE:**

- Through photosynthesis trees absorb carbon dioxide and release oxygen. A young tree growing in a managed forest is more effective in absorbing carbon dioxide than a mature forest.
- Within Finnforest's managed forest, growth in 1 day is approx. of 71,000 m<sup>3</sup> certified timber.
- Converting timber into a re-useable building material takes up far less energy than other materials.
- Wood could be re-cycled into other materials, which can be used in the construction industry or in other applications.
- Once installed, wood is an extremely effective insulating material with very high thermal efficiency.
- Wood creates less production pollution and disposal problems compared to other construction materials.
- Wood can be used as biomass energy after the end of its lifetime as a construction material.
- Timber is the only renewable construction material, given by the nature.

Handover by:

**finnforest merk**

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*All guidelines, technical and illustrated information represents the current technological knowledge and our own experience. The applications described are examples and must be checked on site for the respective area of use. Finnforest Merk GmbH may not be held liable in any way. This applies to print errors and subsequent changes to technical information.*

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