

# LUXHAMMAR WOOD MODIFICATION KILNS

Model	Load width	Load height	Load length	Load volume*
HT-240-15-12	6,4 m (20'-10")	2,6 m (8'-6")	26,8 m (88")	240 m <sup>3</sup> (167000 fbm)
HT-060-15-12	3,2 m (10'-5")	2,6 m (8'-6")	13,4 m (44')	60 m <sup>3</sup> (44000 fbm)
HT-060-15-12	3,2 m (10'-5")	2,6 m (8'-6")	13,4 m (44')	60 m <sup>3</sup> (44000 fbm)
HT-044-15-12	3,2 m (10'-5")	2,6 m (8'-6")	9,5 m (31'-2")	44 m <sup>3</sup> (31200 fbm)
HT-028-15-12	3,2 m (10'-5")	2,6 m (8'-6")	6,2 m (20'-8")	28 m <sup>3</sup> (20300 fbm)
HT-018-11-11	2,4 m (7'-10")	2,4 m (7'-10")	6,0 m (19'-8")	18 m <sup>3</sup> (11000 fbm)

Luxhammar provides a two year limited warranty. \*\*

\* Sizes are only examples. Other sizes, as well as custom sizes are available.  
\*\* Warranty extension available up to 20 years.



## Services for kilns

Preventive maintenance for industrial production equipment together with regular calibrations of measuring and control equipment ensures reliable operation and high quality of final product month after month and year after year.

## Calibrations

Measuring and control devices under high temperature, high humidity and acidic conditions require regular maintenance and periodic calibrations for reliable operations.

## Spare parts in stock

We have a variety of spare parts for heat treatment kilns, boilers, heaters and steam generators to insure the rapid availability in emergency situations.

## Updates for control units

Components of industrial parts are designed for a long time use. However, due to extended use, some parts may not be available any longer on the market. Therefore, some updates may be needed for control units to guarantee the availability of spare parts.



## Recipes for new wood

New wood species, new dimensions and improvement of existing recipes are easiest to develop in laboratory scale. In our R&D laboratory we are able to test and develop new recipes with laboratory size kilns to ensure perfect quality of modified wood products from the first production patch.

## Consultancy

We have experience of over 15 years for designing wood processing and heat treatment plants for wood industry, preparing business plans and work as advisor for preparing profit and cost as well as financial calculations.

## Training for kiln operators

New staff going to run your kilns? Don't worry! We will organize training for new operators of treatment plant.

## 24/7 Hotline

With continuous 24/7 Hotline, we offer availability of expert support with telephone and remote access any time as needed.

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# Luxhammar

## Thermal Modification Technology



Luxhammar delivers complete thermal modification units. Thermal modification is ecological method to protect wood against Bacidiomycetes. The treatment is based on natural method that makes wood protect itself. It combines thousands of years known phenomenon of improvement of woods decay resistance by heating with modern high technology.

## THERMAL MODIFICATION KILNS

*Luxhammar is company specializing in production of thermal modification equipment for wood. Typically, the power plants and cleaners are included in the delivery of treatment plants.*

Luxhammar Kilns can be built on any sizes and for all fuel types. We supply hardware and software for the production of quality products. We carry out the installation, starting the operation as well as perform maintenance and consulting on delivered units. For cost-efficient, unmanned production a remote operation of a plant is possible.



The Luxhammar operation is based on enabling the innovations into viable business by intensive, continuous research and development work. Extensive experience in producing thermally modified wood gives the basis for producing highly reliable, high quality equipment. Instead of chemically treated wood and tropical hardwoods, modified wood can be used.

## THERMAL MODIFICATION

*Thermal modification changes the properties of wood permanently. It improves resistance to decay and to weather, reduces moisture deformations and increases dimensional stability.*

The modification level can be chosen according to the requirements of the particular end use. The most common applications for modified wood are exterior constructions such as wall claddings and prefabricated wall elements, terrace floors, garden furniture, window frames, doors, playground, noise barriers and various jetties. Also indoors thermally modified wood can be used for a great number of various purposes such as parquets, wall panels, kitchen cupboards and sauna interiors. It is also suitable for furniture, various accessories and decorative goods. Musical instruments and boats are also being made.

Furthermore, thermal modification results in improved heat insulation and a darker shade of color. No impregnant agents are used in the process and therefore, it is best material to use in various applications. The excellent resistance to decay and good dimensional stability, characteristic of modified wood makes it the ideal environmental friendly alternative in outdoor applications where wood is exposed to high levels of moisture, wetting and changing weather conditions. With thermal modification you can enhance the natural beauty of wood and add many excellent properties to your products.

## LUXHAMMAR MODIFICATION PROCESS

*Luxhammar Thermal Modification process takes place in a air tight stainless steel kiln chamber, where lathed timber is treated with high temperature up to 250°C (482°F).*

This is extremely difficult physiochemical treatment process is easy to control with fully automatic Luxhammar control system. This PC-based system monitors and controls the kiln as well as all the needed peripherals like boilers. Process control equipment insure that every batch processed meets the quality requirements in regard to physical and chemical properties as well as final moisture content of the wood material.



## RESISTANCE TO DECAY

*Thermal modification improves the resistance to decay which results from changes in the woods internal structure.*

Depending on the treatment level resistance to decay is many times better compared with untreated wood. (See table 1) Decay resistance of modified wood is determined both with exposure test according to European standard EN 113 and with soil container test according to European standard ENV 807. The durability of thermally modified wood is uniform throughout the whole piece of wood.



## TREATMENT LEVELS

*Five different treatment levels result in different properties, which makes it possible to use modified wood for all kind of applications.*

The higher treatment levels are denoted with the letter D (durability), which particularly describe improved durability and the durability class reached according to standard EN 350-1. These treatment levels are recommended for applications requiring good durability typically in exterior use. The milder treatment levels are denoted with letter T (treatment). These modification treatment levels are intended to improve primarily other properties besides the durability. They are suitable specially for interior applications where certain color shade is important and both low water absorption speed and reduced moisture deformation is required.

Luxhammar modified wood		Durability classes according to the standard EN 350-1
Treatment level	Durability class	
D 1	1	1 Very durable
D 2	2	2 Durable
D 3	3	3 Moderately durable
T 4	≈ 4	4 Slightly durable
T 5	≈ 5	5 Not durable

## DIMENSIONAL STABILITY

Deformations caused by condition changes are reduced by 30-90 % in thermally modified wood compared with untreated wood. This results from a reduction both in the maximum shrinkage of the wood and its equilibrium moisture as well as from slower moisture absorption. This property is useful in many applications; floors made of wood do not split and window and door frames remain stable and easy to use. Thanks to great dimensional stability modified wood is very suitable for applications exposed to this kind of exceptional and hard conditions.



## COLOUR

*In thermal modification timber acquires a darker attractive shade of colour, which is uniform throughout the boards. Desired shade of colour is obtained by choosing the right treatment level.*

Different types of wood darken to a different extent during the process depending their natural properties. Thermally modified wood is beautiful material also for interior applications, such as for material of floors and walls. Thanks to the visually attractive appearance thermally modified wood is also alternative for naturally dark-coloured timber species.



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