CLASSIC LINE

BATCH TIMBER DRYING KILNS

KATRES
Drying Technology

KATRES s.r.o. is a privately-owned company that was founded in 1991. Currently, the company has been on the market for 28 years, and over this period of time it has become one of the largest worldwide manufacturers and suppliers of drying technology for wood and other biological materials. In addition to the lumber industry, its drying systems have now expanded to the field of agricultural products, thermal treatment of biological materials, and technologies for bio-energy production. Its primary manufacturing programme, however, remains drying systems for wood and similar materials.

With its long history of successful concepts, KATRES has—since its foundation until now—completed over 3,500 orders worldwide. It currently employs over 90 employees and is active on the majority of significant markets both in Europe and on other continents.

Over the course of its existence, KATRES's primary philosophy is customer satisfaction. Katres offers its customers the highest quality for which it takes advantage of expert knowledge in the development of modern wood-drying processes. The company has its own development division that is dedicated to the continuing development and innovation of the products it offers, as well as its own construction department with 10 design engineers focused on the optimisation of the construction of the manufactured products.

The entire process from commissioning through manufacturing to installation is monitored by project managers, which allows for quick reactions to customer requirements around the world. Katres drying systems can be found past the Urals, in Scandinavia, Africa, as well as in South and North America.

KATRES worldwide

Company KATRES has sale representative in more than 20 countries around the world. More on the website **www.katres.cz**

CLASSIC LINE

The Kiln Series

KATRES
Drying Technology

CLASSIC LINE

Our classic series kilns include:
Standard kilns, hybrid kilns,
steam kilns and high-temperature kilns.

KATRES
Drying Technology

Excellent price/performance ratio
The most popular kiln models

These are our most popular kiln models, manufactured in a wide range of standard sizes and system designs. The kilns come both in standard dimensions as well as in atypical designs according to partners' specific requirements.

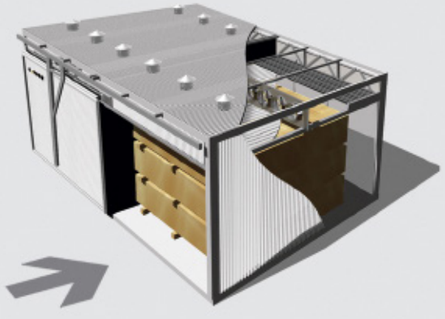
STANDARD KILNS

Always customised to the customer's needs

Kilns with volumes of 30–250 m^3 are designed for all types of European and exotic lumber. The sturdy and highly-durable construction and long-lasting insulation are a guarantee of perfect thermal insulation properties and longevity of our kilns. Materials can be placed into the kilns either by a front-loading forklift or by vagons on rails.

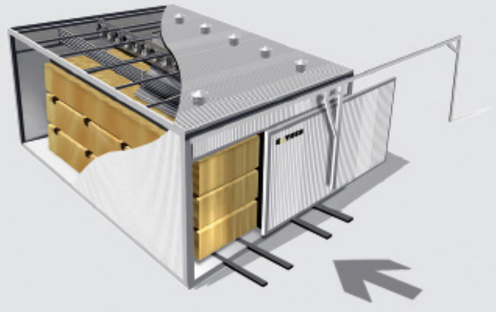
Type **KAD**

Kilns fed using front-loading forklifts
Modular dryer design



Type **KSR**

Kilns fed using rail trucks
Both drive-through, and closed models



HYBRID KILNS

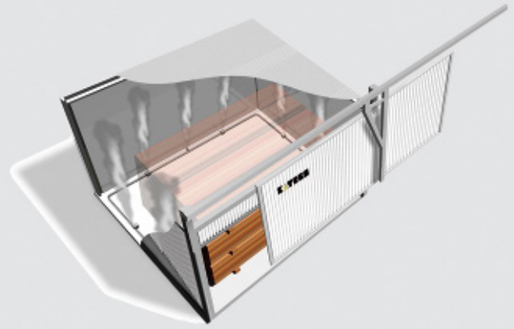
High-performance, short drying times, reduced power consumption

These kilns are the result of a combination of technologies from the Nordic Line series designed for the Scandinavian market with structure and a long history of experience in the production of standard drying kilns. These kilns utilise a higher rate of flow through the timber stacks in combination with a modified heating process and humidification of the drying environment of the kiln. The operating system uses the supplementary optimisation of drying processes: Optimac.

STEAM KILNS

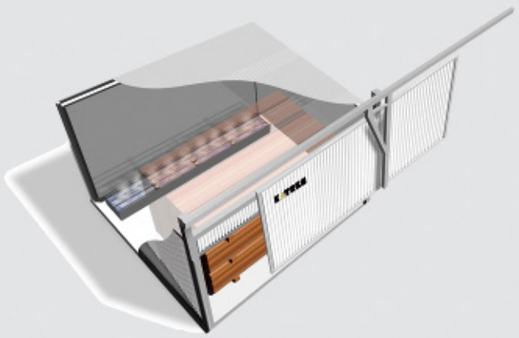
Hydrothermic hardwood treatment

Kilns designed for the steaming of hardwood. Steaming is used for wood colour unification or for changing the colouring of selected timber. These kilns are manufactured according to client specifications with the option of direct steaming or indirect steaming with hot-water heating. A combination of both options is also possible, including steam development support combined with high-pressure water systems: SteamPack HP.



DIRECT STEAMING

Steaming is carried out directly using low-pressure dense steam.



INDIRECT STEAMING

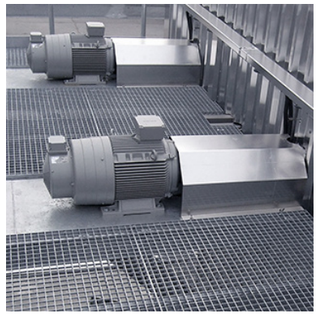
These kilns are equipped with one or two steaming vats with heating elements. These heating elements help bring the water to a boil with the simultaneous creation of steam.

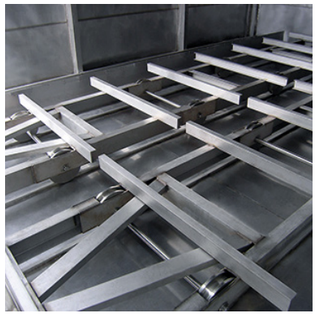
HIGH-TEMPERATURE KILNS

For the production of wood with increased durability against insecticides and moisture and decorative colour treatment.

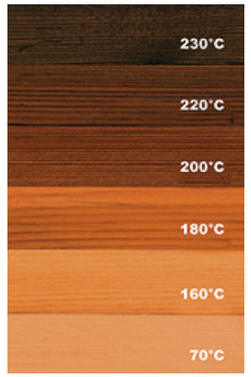
Kilns designed for the high-temperature treatment of already dried wood to a moisture content of 8–12%, at temperatures of 170–230 °C. The kilns have entirely stainless-steel interiors and a hermetically-sealed interior. Due to the high temperature of the thermal process, the fan motors are situated outside of the kiln.

High-temperature kilns are built for high-stress environments. In light of the extreme processing conditions, highly-durable components are used for the construction of these kilns.



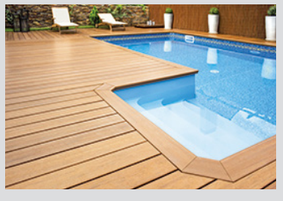


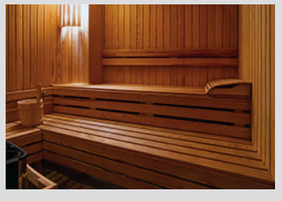
High-temperature treated wood is naturally safe-only heat and steam is used during the production process, and no supplementary chemicals or other ingredients are added. Temperature treatments of lumber can permanently improve many properties of wood, specifically its biological durability, dimensional stability, acoustics, as well as the reduction of equilibrium moisture, among others.



Uses for high-temperature treated wood from KATRES kilns

- siding
- landscape architecture
- garden furniture
- building components
- exterior doors and window section
- acoustic barriers
- window shutters
- wall panelling
- saunas and bathrooms



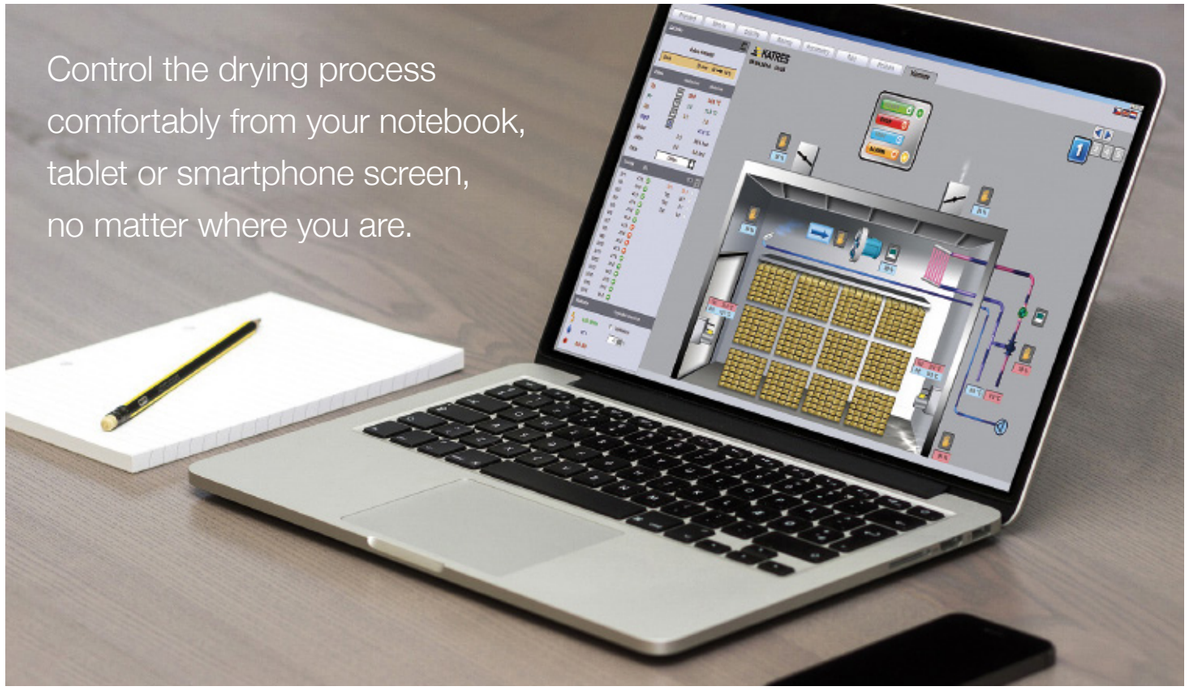


MK520 AUTOMATIC REGULATION

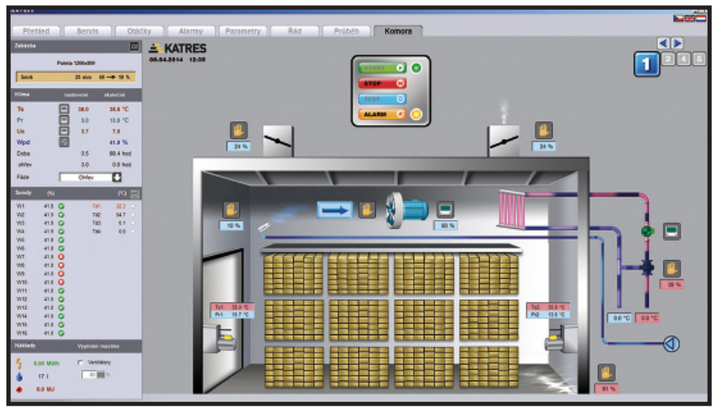
Clear and perfect regulation of drying processes – statistical economic regulation

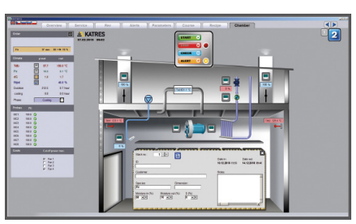
The regulation of the drying environment is controlled using the MK520 automatic system. The graphical environment on the computer monitor clearly displays all currently-running operations. The intuitive control of the drying process and immediate monitoring of data against the given expected outcome is immediately available, including access of archived data. The fully-automated process can be manually adjusted at any time. Our control system is created based on cutting-edge programming languages from Siemens TIA and AMAP. We applied the results of the latest research, which shows us how people perceive information on screens. This allows for simple, clear, and logical work for you as an operator.

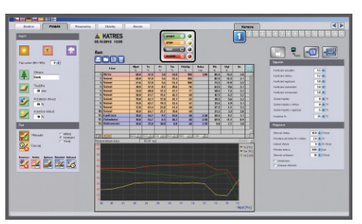
The principle of regulation itself is founded in the regulation of the parameters of the drying environment, i.e. the rate and direction of the flow, temperature, and moisture of the air. The perfect regulation of the drying environment, along with the precisely established drying procedures guarantee the production of high-quality timber characterised by even moisture distribution and dimensional stability. Standard, specialised low-temperature and systems for thermal treatment in accordance with ISPM 15. You can manage up to 32 kilns using a single computer with the option of remote data acquisition, processing, and assessment using a modem or mobile GSM network.

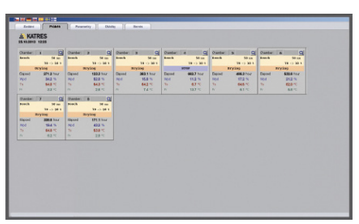


Choose from hundreds of pre-set drying programmes or design your own with up to 25 defining parameters.









LOAD-BEARING STRUCTURES

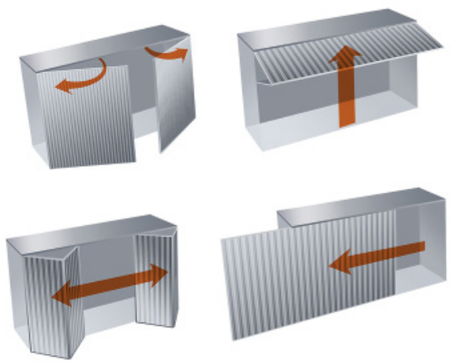
Ensure the longevity and stability of our kilns

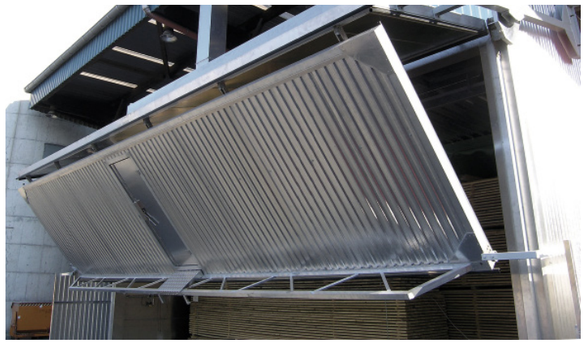
All of the load-bearing parts and support beams of our dryers are manufactured from the specialised aluminium alloy. All of the support beams are made from Die-cast thick-walled profiles. Roof structures are highly resistant against corrosion and meet international standards prescribed for snow loads and wind speed loads for the given area of installation. The structure is secured to the foundation using stainless-steel anchors. The cassette panels themselves are linked by an aluminium pressure plate between the columns of the load-bearing structure allowing the structure to give in relation to the differing temperatures during the drying process. High-temperature seals between the cassettes protect the walls against thermal bridges. Specialised rubber seals are used for sealing the walls and also for bottom cassettes that are in contact with the foundation. A special construction system and panel insulation allows for effective installation and ensures the long life and stability of our kilns.

KILN DOORS

A tight seal and ease of manipulation

The kiln doors are manufactured from a special profile for door frames with a gasket seal around the full circumference. Lifting mechanism choices include manual, hydraulic, and electric models.





AIR BAFFLES

Make the utilisation of airflow

Air baffles are installed above the ceiling of the kiln as well as in the side walls to prevent the leakage of airflow outside of the timber stacks. They ensure a reinforcement of air circulation through the timber stacks and maximise the active airflow process in the stacks. Their installation leads to an improvement in the quality of the drying while reducing power consumption. Air baffles come in various materials and mechanical models. The final recommended combination is offered according the specific conditions of each client. Air baffles are a very important part of our kilns and have a significant impact on the final quality of the dried material and economy of the entire drying process.

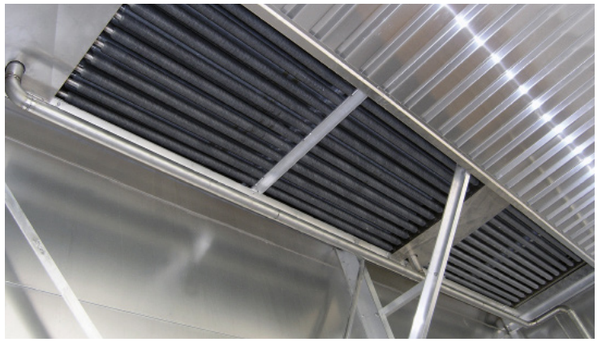
FANS

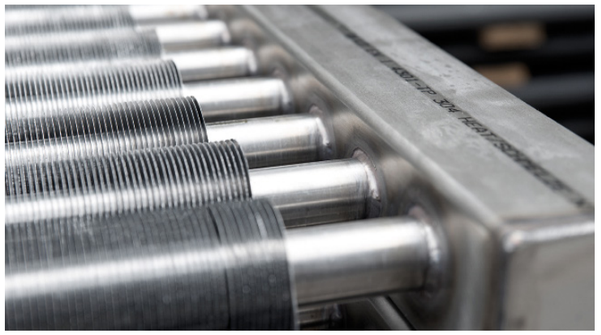
Supported by the EcoTronic system

The flow of drying air in the kiln is ensured by axial fans with an established necessary output and energy efficiency. They are installed in a fan beam above the ceiling of every kiln. The fans are designed in order to provide maximum airflow with optimum energy efficiency. The fan impellers are manufactured from aluminium alloys (lightweight, high-strength aluminium alloys based on an aluminium-silicon combination). According to the type of kiln, fans diameter sizes range from Ø 800–1250 mm. The fan impellers are installed directly onto the motor shafts. For most of our installations, these fans are controlled by frequency converters to regulate the fan speed.

HEATING COILS

Ensure the output and distribution of temperatures in the kilns



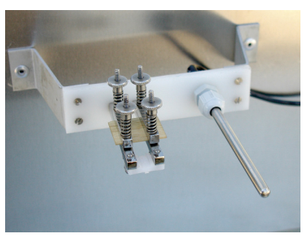


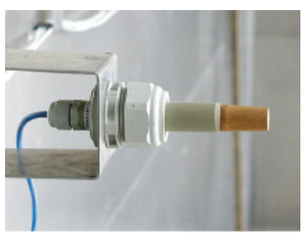
Our heating coils are made from stainless-steel pipes onto which an aluminium surface is rolled into the shape of ribs. The pipes lead into a collector that is connected to the supply and return pipes of the heating system. The heat output of the registers is proportioned for the maximum necessary heat output i.e. for the heating phase.

MEASURING TEMPERATURE AND HUMIDITY OF THE DRYING AIR

Very important for accurate regulation of the process

The two primary elements of the drying air (temperature and relative humidity) are measured in the drying area of the kiln. The following may be used for their measurement: a so-called UGL system (sensing the equilibrium moisture content of the limb plate), psychrometers, and electrical lithium sensors. All of the listed methods ensure temperature and relative humidity measurements of the drying environment. The choice of measurement method depends on the specific conditions and needs of each customer.

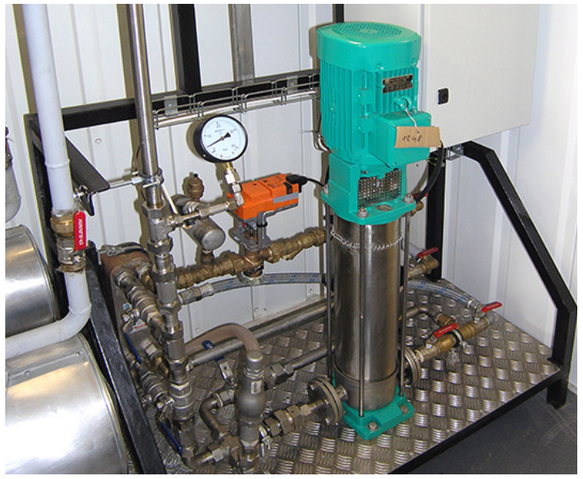




HUMIDIFICATION SYSTEM

Significantly influences the speed and quality of the dried wood

Currently, water-based humidification systems are used. Steam humidification used in the past is no longer used today. Our water-based humidification system is stainless steel, including distribution, regulation components, as well as nozzles.



The humidification system comes in two standard models:

- a system with a standard water supply pressure of 3-6 bars
- a high-pressure system with water pressure from 40-100 bars.

High-pressure systems are also equipped with supplementary pre-heating of the humidification water to allow for quick humidification of the drying area in a short span of time, primarily for fast drying processes. Special high-pressure humidification systems are also used as a supporting source for steam kilns–SteamPack HP.

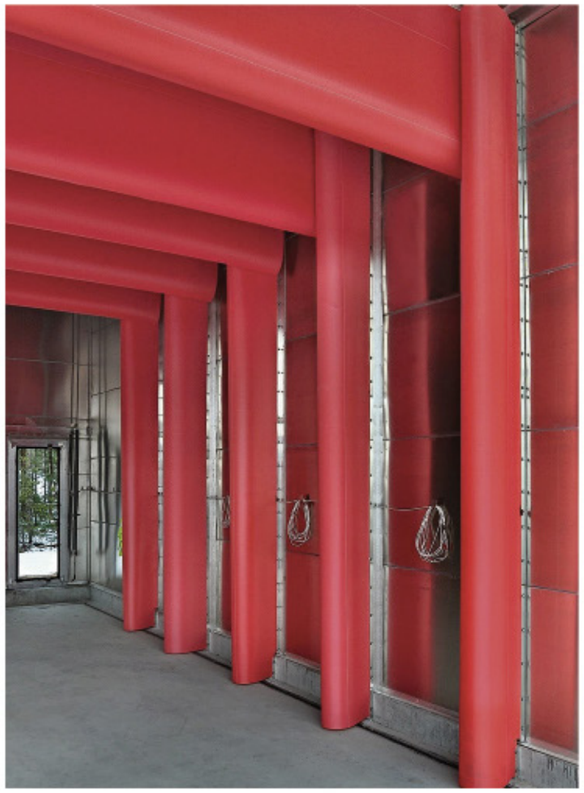
AIR EXCHANGE SYSTEM

Impacts the precision and economy of the drying process

The air exchange system is made up of two rows of pipes in the ceiling of the kiln that draw in fresh, dry air, and release air saturated with evaporated water. These pipes are also manufactured from aluminium and are fitted with a regulating flap that is controlled automatically by a servo drive. The air exchange system may be connected to a heat recovery unit that allows for pre-heating of the intake air, conserving some of the heat energy. The heat recovery unit itself uses a large-area counter-current flow system for ventilated and intake air. This system was specially developed to allow for the recuperation of heat in the lumber kiln. The heat recovery units of this type are dimensionally larger and structurally more complex than lamellar heat recovery units, however their system makes them the only truly effective heat recovery option that can be used for lumber kiln conditions.


Linde


KATRES



HIGH-PERFORMANCE TECHNOLOGY IN ECONOMIC PACKAGE

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