



**HILDEBRAND
BRUNNER**

Drying Technology by HILDEBRAND
Heading to the future with reliability



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For 70 years HILDEBRAND has been known all over the world as a leading manufacturer of kiln drying facilities. Over the years, many patents were granted to Hildebrand and more than 15,000 kiln dryers were installed. The Quality and longevity of our kilns is legendary.

1958: World's first lumber dry kiln in full aluminum design

1960: Premiere of first kiln dryer with intermediate ceiling and reversible airflow

1976: First supplier with computer-controlled "smart" kiln drying

1979: Introduction of frequency drives in lumber kiln drying

1994: Non-stressful quality drying with super-heated steam and vacuum

2002: Introduction of unique HIGH VAC with steam pulsation – the world's largest vacuum kiln in rectangular design

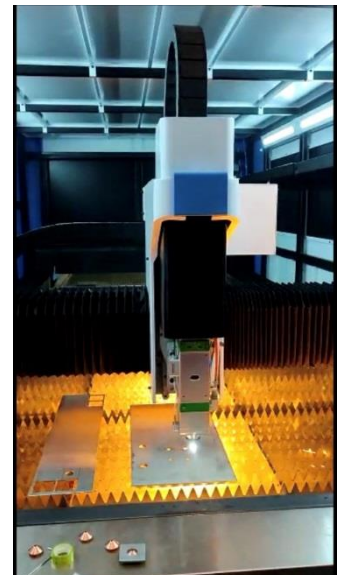
2011: Hildebrand initiative – **Greenkilns®**

2015: Launch of Hildebrand Turbo Technology (HTT)

2019: New generation of control software system Brunner Vector EW with patented Hildebrand Weight Precision Technology (HWPT)

Today: Introducing the kiln that incorporates all of our innovations – unrivaled all over the globe!
Hildebrand Continuous Kiln – fully automatic continuous kiln with highest level of efficiency

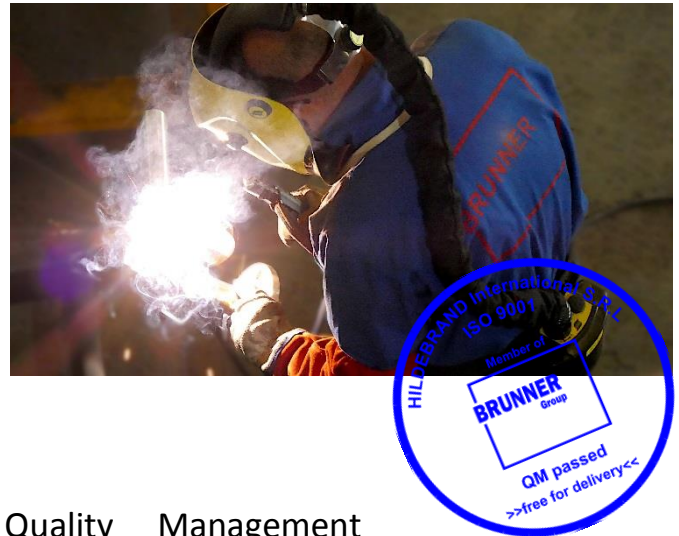
Welcome to **HILDEBRAND BRUNNER!**



State-of-the-art laser cutting system for precise processing of aluminum and stainless steel

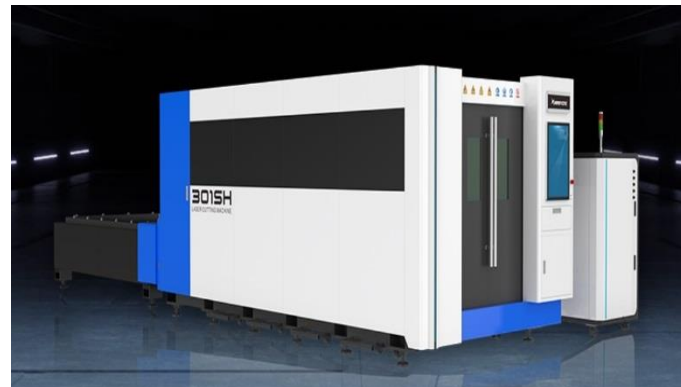
Our quality standard – 90% vertical range of manufacture

To ensure high quality of goods in times of multiple global crises we rely on one-stop production as much as we can. Our drying facilities are 90% manufactured by companies belonging to the BRUNNER group. Whether mechanical processing, switch cabinet manufacturing or design of in-house electronics and software solutions. This provides our competitive edge: fast and flexible response to our customer's demands.



Quality Management and Certification

Quality is never a given but rather the outcome of continuous improvement and steady monitoring. We collaborate closely with TÜV (German Association for Technical Inspection) always embracing new technologies and processes. Our production is ISO 9001 certified. However, quality management starts much earlier and does not stop with production. It extends all across to our service department and the feedback we get from our customers.



After Sales Service

This is an important part of what we understand as premium quality. Responding to your demands fast and competently will enable you to fully utilize the performance of our products.

While relying on more than 70 years of experience in lumber drying we provide you with spare parts for older systems, counsel you with optimization of your drying processes or even retrofit your entire drying facility after 20 years or more!



HTR 100 – reliability for decades

Be it lumber kilns, pallet kilns or steamers, our quality specs are always the same: well insulated aluminum or stainless-steel shells, specially designed fans and installation parts by well-known certified suppliers.

Our products are safe, high-grade and eco-friendly. Operating in numerous countries all over the globe, the HTR 100 model is proving its efficiency every single day!



Heat Recovery

We recommend you focus on progress by furnishing your kiln with our powerful heat recovery system – proven to be environmentally beneficial and cost effective. You may save and reuse up to 25% of thermal energy by incorporating our cross-flow heat exchangers.

This feature is eligible for state-sponsored “green” funding in many countries and “Roi” in a short period of time. As an option, we offer heat exchangers with nano-epoxy coating for longevity even in most adverse conditions.



All sources of heat applicable

Hildebrand dry kilns may be heated with hot water, steam, natural gas or electricity – whatever your preferences and local availabilities are.

As a standard feature, our fan motors are equipped with VFDs – one for each motor. If reducing energy consumption is your priority, we have a lot in stock – like our patented **Greenkilns®** system or the unique Alternating Climate Program. Our Sales Engineers stand by for advice starting with first-draft layout all the way to commissioning. We also specialize in turnkey solutions for you.



Track-loaded HTR kilns

This type of kiln comes with many advantages that the forklift loaded version (batch kiln) does not have. Reduced loading and unloading time with drive-through operation is an important factor. Short travelling distance of airflow and availability of booster coils is also very beneficial. Track loaded kilns are the softwood drying industry standard in North-/ South America and South Africa.

In contrast to its "older brother", the continuous kiln, the entire load is prepared on kiln carts outside and moved into the kiln as a whole.

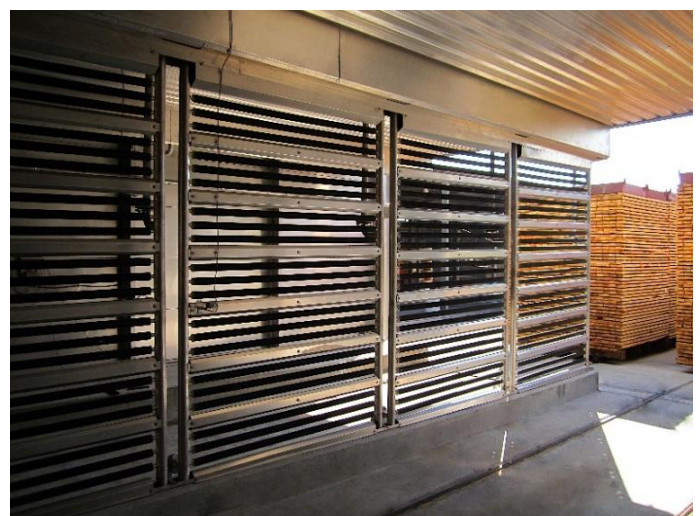
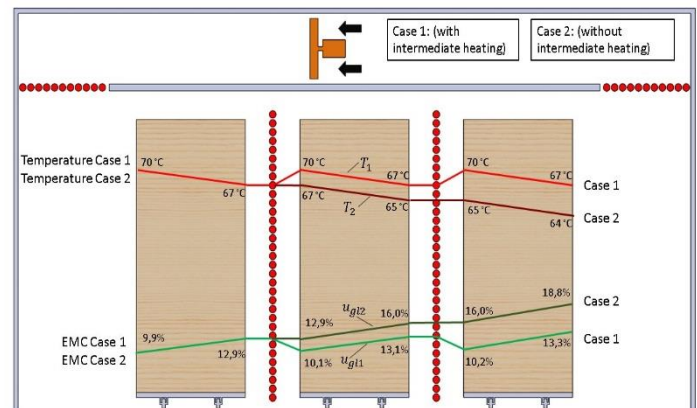


Booster Coils and Power Vents

In conventional kilns, the airflow gets heated by passing through heater batteries mounted above the apron section. With long air travel distances, it gets harder to achieve even lumber moisture distribution. Veteran kiln operators are familiar with this issue – outside packages will dry faster while inside packages lag behind. This may lead to longer drying time and an uneven spread of final moisture distribution-extended conditioning time may be required.

There's a fix for this issue: intermediate heating aka "**booster coils**". These additional heating batteries located in the middle of the load speed up drying especially when drying thin softwood lumber. In addition, we recommend frequency-controlled vents, so-called "**power vents**" which will help reducing lumber moisture particularly in the early stages of the drying process.

The unique **Hildebrand Turbo Technology** is another interesting feature available in track-loaded kilns as well as individual climate control for homogenous final mc spread. With these technical features we enable the fastest lumber drying that state-of-the-art kilns have to offer.



What makes our continuous kiln special?

Fifty years ago, Hildebrand designed his first continuous kilns. The initial goal was drying as much lumber as possible with automated processing. These kilns were not yet focused on highest lumber grade like very even and reliable moisture distribution. A small carbon footprint or optimized energy efficiency were still unheard of back then. The initial kiln design featured lumber packs stacked transversely to transport direction with long distances of airflow and little or no drying zone control. When looking at the intricacy of modern-day drying schedules with all those measures for optimizing air flow and conserving energy the drawbacks of these older continuous kilns become self-evident.

Our modern and upgraded continuous kilns are able to do much more!

Peak performance by use of intermediate heating and Hildebrand Turbo Technology

Energy-efficiency by applying **Greenkilns®**- ducts combined with powerful cross-flow heat exchangers

Flexibility that comes with individual loading of tracks – suitable for different dimensions and initial mc

System availability - reliable 24/7

Eco-friendliness with individual drying zone design avoiding any excess features

Quality at its highest level by use of vertical pressure frames and Hildebrand Weight Precision Technology

Uniqueness by implementation of intelligent Vector computer control system

Presenting Hildebrand Continuous Kiln Alexander





The new generation of continuous kilns!

The continuous kiln generation HCK is suited best for high-volume sawmills. Loading is performed with a fully automated transport system. The Hildebrand Continuous Kiln is subdivided into various drying zones. Each of the Zones operates like a single batch kiln and acts in sync with the other drying zones in perfect unison.



The Greenkilns® Duct System

With this system individual drying zones are coupled in a thermal compound by utilizing shared fresh and exhaust air ducts. The Vector control system provides split-second decisions over the use of exhaust air from one drying zone in another zone with current demand for extra heat. For example, warm, humid exhaust air is transferred directly to zones that can use exactly this climate. This not only avoids the supposedly required spraying during heating, but also saves a considerable amount of thermal energy.

Hildebrand Turbo Technology (HTT)

The system is based on height adjustable aluminum baffles moving in between guide bars made of profiled aluminum. In accordance with the lumber drying schedule, the computer control system intermittently positions these baffles in different locations along the side of the lumber packages. This leads to partial airflow interruption in the baffled sections with airflow close to 0 fpm.

Meanwhile, the air speed in the non-baffled sections is accelerated considerably. Normally, this could only be achieved with the use of very large fans coming with excessive power consumption. Due to the vapour pressure differential inside the wood drying continues mildly in the baffled-off sections. The system provides distinct savings of electrical energy without compromising drying times!

Our vacuum kilns HIGH VAC® S and HIGH VAC® Master offer lots of benefits!

Hildebrand's HIGH VAC® model is the only rectangular vacuum kiln dryer in the entire world. It features a square design with apron sections adapting to the shape of lumber stacks – no restraints or drawbacks that come with the usual circular design. Machine design and production is performed in accordance with European Union guidelines and CE certificate.

Outstanding drying quality and short drying time due to our patented system and well-suited for difficult drying tasks. A condensation and cooling device is fully integrated into the facility, also available with internal stainless steel design.

The graph to the right depicts three blue and three red curves each representing 27mm, 52mm and 65mm oak lumber. Looking at 52mm oak with initial mc 60% and final mc 8%, the total drying time in a batch kiln would be 65 days while our HIGH VAC® vacuum kiln takes only about 15 days.

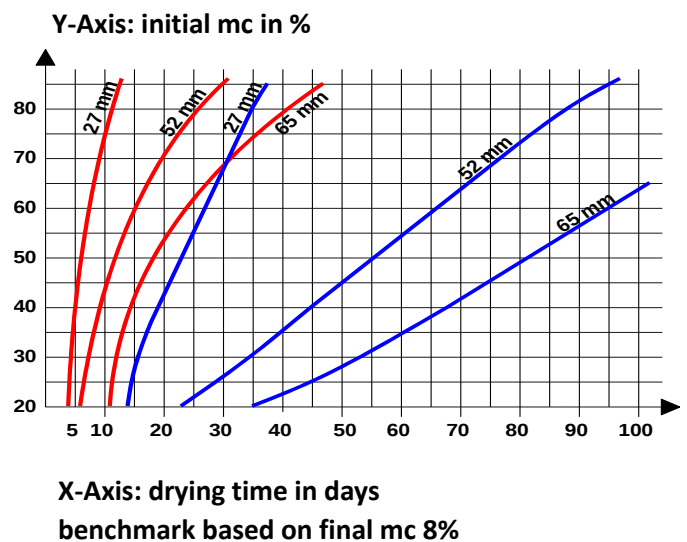
Drying in a vacuum kiln generally provides three main advantages:

1. The boiling temperature of water decreases in vacuum condition, enabling vaporization drying at a temperature level that is uncritical to lumber.
2. Under pressure and temperature accelerates the movement of water molecules inside the wood with a tendency to compensate any pressure differential. This speeds up drying considerably.
3. Vacuum helps avoiding discoloration of sensitive lumber species.



■ HIGH VAC® -vacuum kiln

■ Standard batch kiln



HIGH VAC® Master

Our HIGH VAC® Master solves problems that nobody else dared to tackle up until now. It's steam pulsation process switches repeatedly from saturated to overheated atmospheres. This process allows consistent phases of intermediate conditioning, rest periods and lumber stress reduction. Measuring and controlling internal lumber pressure ensures proper steam pressure differential and closely monitored vapor transport from the lumber core to the surface. This is greatly facilitated by the lack of regular air pressure as opposed to standard batch kiln drying.



Wonderful steam:

Our HIGH VAC® Master performs the heat-up process safely by using direct steam. Sensitive species will dry without the risk of cracks, checks or cell collaps, even at 70-95°C by applying steam blasts which stretch the woodfibers. Intermittent changes of steam atmosphere bring about gentle steam evaporation.

Your benefits:

- Fast and safe drying process
- Good dimensional stability, little shrinkage
- Uniform final moisture content
- Increased lumber grade
- Magic Point – control according to actual lumber core temperature
- Spraying with intense blasts of steam



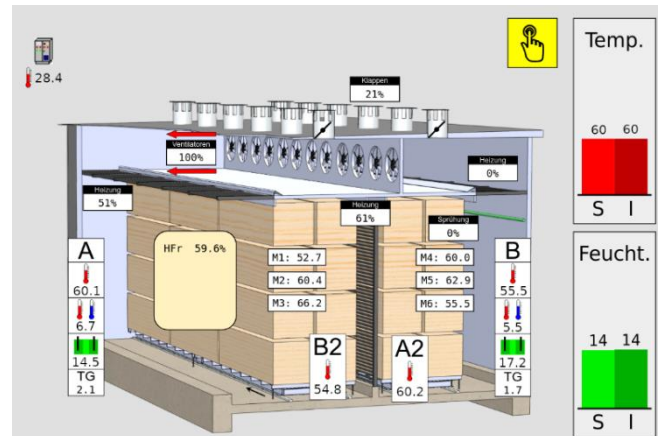
Customized solutions with greatest ease of use!

By associating 70 years of experience in lumber drying with today's computer technology, Brunner-Hildebrand has designed a brand-new generation of kiln controls. While rounding up our entire knowhow, the VECTOR kiln control features an unprecedented degree of flexibility. The work flow of today's sawmills in an ever-changing environment requires a high level of adaptability – that's why dynamic and customized kiln controls are a must-have.

Energy savings by use of our Alternating Climate Control

Scientific research on lumber drying has proven that alternating exposure of lumber to harsh and mild drying conditions (or stress and relief phases) for a certain time span will not only enhance lumber grade, but also reduce drying time and power consumption. During the relief phases, the fans will even be switched off temporarily while lumber drying continues due to the steam pressure differential between core and shell of lumber.

By using Hildebrand Alternating Climate software, you may optimize your drying schedules and save up to 20% of overall fan power consumption. "Stop the fans for better drying!"



Switch cabinet with integrated touchscreen interface

Hildebrand Energy Management:

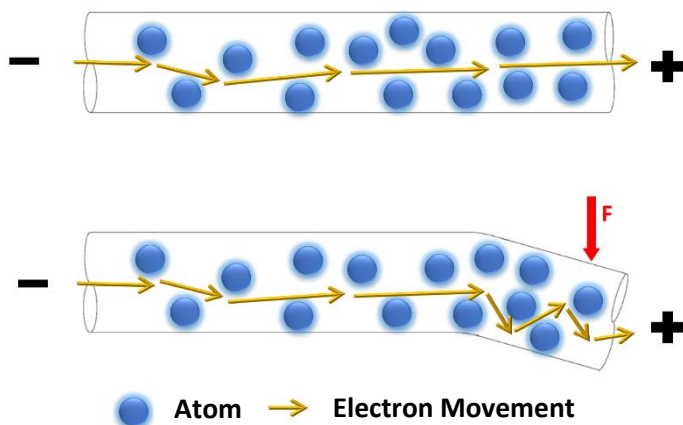
- ✓ GreenKilns® – patented operation of kiln dryers in thermal compound
- ✓ Impulse-controlled Alternating Climate
- ✓ Heat management – optimized distribution of thermal energy to all connected kilns, including priority assignment
- ✓ Power management – computer-controlled fan speed management with due regard to cost-benefit analysis
- ✓ Hildebrand Turbo Technology (HTT) – reduced power consumption resulting better lumber grade



PET 2000 – the world's first computer control system for lumber drying

Have you ever run into this problem?
Electrical resistance MC probes just won't show exact readings.

Don't rely on electrical resistance MC metering alone. Up to now, the alternatives weren't good either. Taking sample probes at regular intervals or using in-kiln probe scaling is often cumbersome and may not produce generally valid results. Hildebrand-Weight-Precision-Technology (HWPT) puts an end to these issues! You can literally sit and watch as lumber loses moisture. Finally – a MC measuring system for entire kiln loads that you can totally rely on! Our smart drying software will help you further optimize your drying schedules. Don't try a shot in the dark anymore – use Hildebrand-Weight-Precision-Technology!



Hildebrand-Weight-Precision-Technology applies special software programs and electronic bolsters with dimensions similar to the regular lumber bolsters you use while loading the kilns. These electronic bolsters are equipped with high-precision load cells and strain gauges that provide accurate weight logging of the entire lumber load resting on top of them. Height and length of the HWPT bolsters are accommodated to the customer's standard in order to achieve optimal work flow integration.



High precision with state-of-the-art sensor technology

For our HWPT electronic bolsters, we apply load cells that are sensitive to even the slightest deformation (weight). The resulting change of electrical resistance provides highly accurate readings and a detailed view progress of the total lumber weight loss.



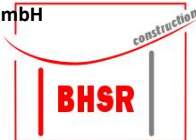
Lumber drying:

- All types of conventional kilns
- Vacuum kilns HIGH VAC in all sizes
- Continuous Kiln HCK Alexander
- Pallet kilns
- Heat treatment (IPPC)
- Steamers
- Energy and Quality Management
- Customized Kiln Controls
- Customized software solutions (GreenKilns, Alterating Climate...)
- Electronic Bolsters (HWPT)

Other corporate divisions:

- Lightweight construction warehouses
- Steel construction buildings
- Shelters and canopies
- Continuous kilns for various construction materials
- Drying solutions for the textile and food industries

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