

**HILDEBRAND
BRUNNER**

BRUNNER Kiln Controls

**Technology and innovation for
state-of-the-art lumber drying**



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.

At a glance – controls for every lumber species and any type of kiln

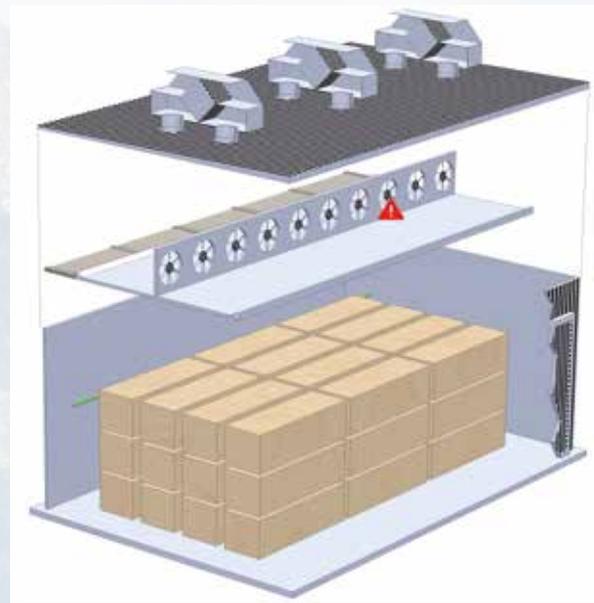
Highly customized operation	<ul style="list-style-type: none"> ■ Every kiln is shown on-screen in adapted 2D, 3D and 4D mode ■ Network access to kiln controls from any number of connected PCs as well as smartphones, tablet computers or smartwatches via App ■ Tailor-made solutions for you – MC control by use of precise weight measuring*, or by measuring shell and core MC, medium MC, maximum MC, moisture gradient, time-based programs or with automatic MC probe selection ■ Attribution of individual packages or entire loads to the respective customer ■ Design your own individual user interface for your kiln control system ■ Realistic drying time forecast using HWPT ■ User accounts for internal communication and shift changeover
Safety aspects	<ul style="list-style-type: none"> ■ Error messages displayed on all connected devices, email notification to registered personnel ■ Emergency routines prevent damage to machinery or lumber ■ External microcontrol units ■ Smart user interface software prevents input errors and faulty operation ■ Data integrity ensured by automatic backups ■ Online help provided by our skilled team of service technicians (Brunner-Online-Connect)
Data filing and analysis	<ul style="list-style-type: none"> ■ Past drying charges will be sorted and stored according to your guidelines ■ Customer may analyze and optimize drying schedules using data from actual past drying curves* ■ Error messages are filed according to degree of severity and date ■ End-to-end automatic documentation of heat treatment according to IPPC/ISPM 15 ■ Data ready for printout and export to external software
Brunner Hildebrand additional features	<ul style="list-style-type: none"> ■ GreenKilns® - patented system for lumber drying in kilns operating in thermal combination ■ Hildebrand-Weight-Precision-Technology (HWPT) – measuring of lumber MC on a new level of accuracy ■ Live images of lumber drying process – photographic documentation ■ Energy management for electrical and thermal consumption – more efficient through use of well-engineered software ■ Impulse-controlled Alternating Climate – “Stop the fans for better drying!” ■ Hildebrand-Turbo-Technology (HTT) – reduce current drain and improve lumber grade ■ Individual zone control using temperature-drop-across-the-load (only continuous kilns, track kilns and vacuum kilns)

* using HWPT system

Customized solutions with greatest ease of use!

Vector EW control system shows each of your kilns in appealing 2D, 3D and 4D mode, no matter if it's a batch kiln, track kiln, continuous kiln or vacuum kiln.

All relevant drying data is available at a glance. In case of malfunctions,  the source of error will be color-coded for fast troubleshooting. The software system recognizes the severity of the malfunction and if necessary, activates emergency routines to prevent potential damages to lumber or equipment as best as possible.



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 – an MC measuring system for entire kiln loads that you can 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!



Electronic Bolsters

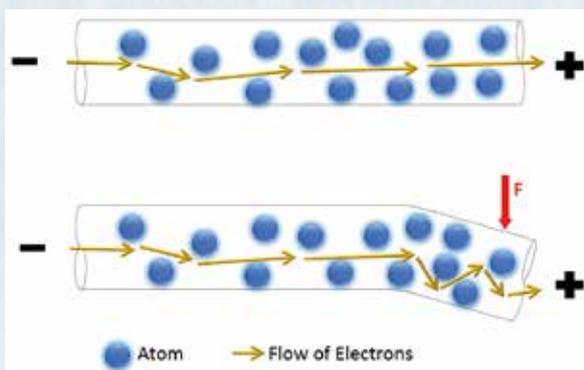
Hildebrand-Weight-Precision-Technology applies special software programs and electronic bolsters with dimensions similar to the regular lumber bolsters you use while loading the kilns. These electronic bolsters are equipped with high-precision load cells and strain gauges that provide accurate weight 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.

Efficient usage of time and manpower!

Have you ever thought about the amount of time it takes to place and remove MC sensors? Besides wasting a lot of time, lumber boards get damaged and, in some cases, even the planer blades may suffer by "forgotten" sensors. Another drawback: faulty placement of sensors frequently produces measuring errors that hamper the drying process seriously. All of that changes dramatically now! With our electronic HWTP bolsters you will save time and reduce the cost of loading and unloading your kilns. They are easy to use because they're wireless, removable and sturdy - and they provide a game-changing accuracy of MC measuring!



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 of the progression of total lumber weight loss.

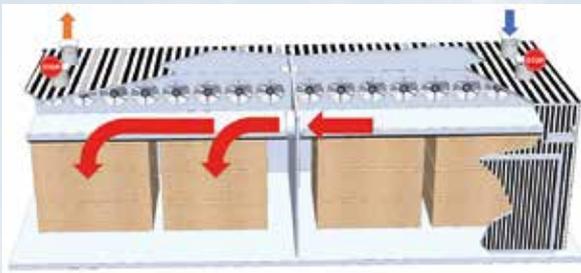
HWPT electronic bolsters are patent pending in 2019 domestically and abroad.

Energy Management

More than 40 years ago, Hildebrand was the first to incorporate computer control into lumber drying – an important step towards modern energy management. In 2011, we successfully introduced our Hildebrand Initiative featuring GreenKilns® to the market. Today, we are dedicatedly continuing our approach to an eco-friendly and efficient way of lumber drying!



Hildebrand GreenKilns®



In our patented GreenKilns, several kiln dryers (maximum of 5) are joined together in a drying group. The GreenKilns control system makes them operate in thermal junction – rather than guiding excess heat from an individual kiln to the outside, this valuable thermal energy is guided to another one of the connected kilns for further use in the drying process.

Starting on day 1 of GreenKilns use, your wallet will be relieved while at the same time raising ecological awareness. Energy savings and CO₂ reductions anywhere between 15 and 25% will be achieved!

Hildebrand Energy Management:

- ✓ GreenKilns® – patented operation of kiln dryers in thermal combination
- ✓ 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 with better lumber grade

Quality Management

We understand that damaged lumber not only threatens our customer's profitability but also does not do justice to valuable material that has taken decades to grow.

So how do you raise lumber grade and reduce rejects? Evidently, this requires plenty of know-how and well-engineered software. Quality management means drawing the right conclusions from past drying cycles, based on premium-quality measurement technology, because "gauging and monitoring requires measuring and sensing" (Brunner brochure 1989).

Alternating Climate

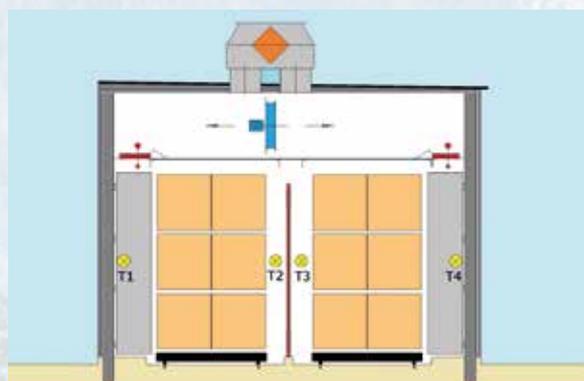
Scientific research on lumber drying has proven that alternating exposure of lumber to harsh and mild drying conditions (or stress and relief phases) for a certain time span will not only enhance lumber grade, but also reduce drying time and power consumption.

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!"

Individual Zone Control

For use in Track Kilns, HILDEBRAND Continuous Kilns Alexander and HIGH VAC kilns, we have designed an individual zone control system which uses the temperature-drop-across-the-load (Tdal). Since wet lumber will absorb more heat than dry lumber, wet lumber will produce a larger Delta T. This Delta T is used in real-time control of kiln conditions from the start to the finish of drying. The system includes individual air temperature sensors, heating valves and fan speed control for each zone.



As a result, a homogenous final moisture content and shorter drying times will be achieved. For even better control, we recommend additional separation walls between the zones.

Quality improvement with photo cameras

Would you like to bring more transparency into your kiln drying operation? Using 1 to 3 wireless cameras per kiln with tripods and flash lights, we can do that for you. The system not only allows operators to observe the behavior of lumber during the drying process, but also provides photographic documentation. Please ask for our detailed quote!



Batch kilns



Continuous kilns HCK Alexander



Vacuum kilns HIGH VAC



Track kilns

Lumber drying:

- All types of conventional kilns
- Vacuum kilns HIGH VAC in all sizes
- Continuous Kiln HCK Alexander
- Pallet kilns
- Heat treatment (IPPC)

- Energy and Quality Management
- Customized Kiln Controls
- Customized software solutions (GreenKilns, Alternating Climate...)
- Electronic Bolsters (HWPT)
- Steamers

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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