

Timber Drying & Conditioning



Our kilns help our customers create quality timber products.



Continuous Drying Kilns

A Windsor CDK provides improved quality and efficiency over other kiln drying technologies. With a steady heat demand, they can maximise timber output for a given heatplant size. The correct CDK design and selection will be engineered to suit the specific needs and product range of each individual site. Our CDK's can be designed for both parallel and counter product flow.

How a CDK Works

A Windsor CDK is comprised of three main sections (with several sub-sections depending on each unique requirement).

Energy Recovery / Pre-heating

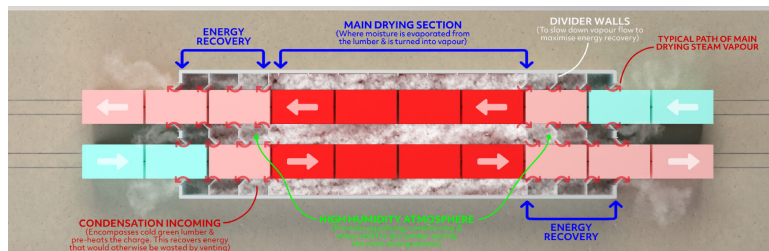
This section recovers heat/energy generated in the main drying section and transfers it to the wet cold timber entering the chamber for pre-heating.

Main Drying

The main drying section is where the boards are dried in a controlled environment to the target average final moisture content (MC).

Energy recovery / Conditioning and equalising

This section contains zones that increase the relative humidity (RH) of the environment in a controlled manner to optimise equalising and conditioning. The first zone of the conditioning section is an equalising environment and is an important design feature which targets the boards that are above mean MC and tightens the final MC variation. Subsequent conditioning zones are designed to condense vapour onto the exiting timber surfaces to condition and stress relieve the dry timber before it leaves the CDK.



The primary advantage of a CDK is that it recovers the 'waste' heat that would typically escape from the roof vents on a traditional batch kiln. By forcing this heat out both ends of the kiln in the correct ratio, cold wet timber is preheated, while exiting hot timber is conditioned and equalised. In a counter flow CDK, the incoming wet timber further enhances the conditioning environment for the hot exiting timber, which in turn adds additional preheating energy for the incoming wet timber. This results in extremely high quality timber.

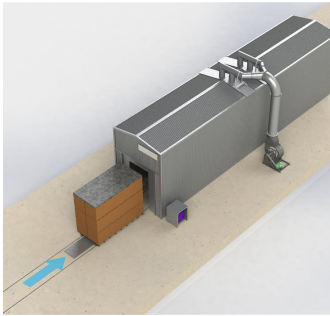
Features and Benefits

- Significant thermal and electrical energy efficiencies.
- Fully automated drying.
- "Hands free" moisture measurement system DryTrack® Echo.
- Batch kilns can be converted to CDK systems to increase production and reduce the required energy per m³ of timber processed
- CDK technology offers improved grade recovery due to the equalising and conditioning cycles.
- Robust stainless steel and aluminium construction.
- The CDK's flat demand means no peak loads are imposed on the site's heatplant and this gives a very high heatplant service factor

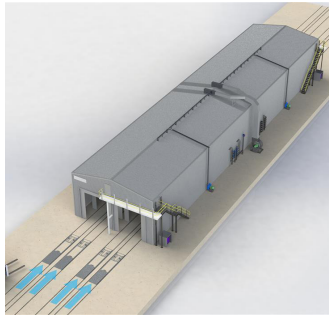
The CDK Range

The Windsor range includes many types of CDK configurations.

Parallel Flow

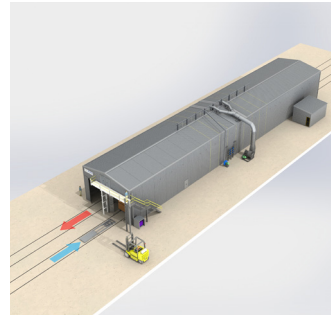


Single Track

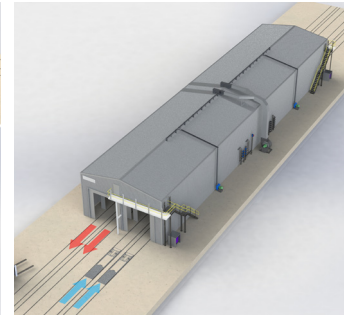


Multi Track

Counter Flow



Single Track in each direction



Multi Track in each direction

Windsor CDK-D

The CDK-D has a counter flow design as the timber stacks pass through the CDK in opposite directions.

It incorporates pre-heating, drying and conditioning phases all in one extended chamber. This design can utilise any form of heating. The timber is automatically advanced through the chamber by hydraulic pusher units, based on the moisture content of the timber in the central MD (main drying) section.

CDK control is via our PLC kiln management program Dryspec®, integrated with the DryTrack® Echo in-kiln moisture measuring system.

Windsor CDK-S

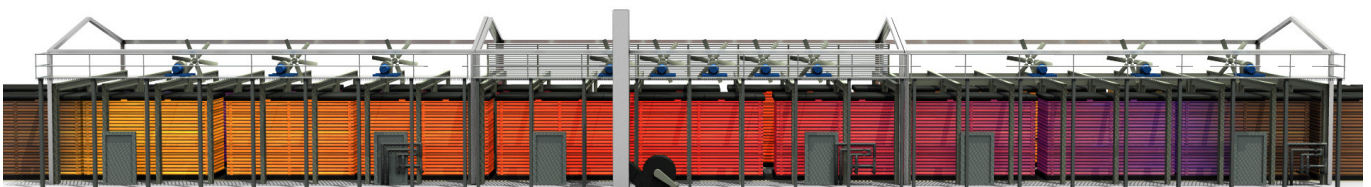
The CDK-S has a parallel flow design with all the timber passing through the CDK in one direction only.

It also incorporates pre-heating, drying and conditioning phases all in one extended chamber. This design can utilise any form of heating. The timber is automatically advanced through the chamber by hydraulic pusher units, based on the moisture content of the timber in the central MD (main drying) section.

CDK control is via our PLC kiln management program Dryspec®, integrated with the DryTrack® Echo in-kiln moisture measuring system.

Conversions and Extensions

Windsor can convert a batch kiln into a continuous kiln by adding preheating, energy recovery and conditioning sections to either end of an existing chamber (single or double). Along with bespoke baffles, humidity control and automation, this increases production and product quality without requiring an increase in heatplant output.



Batch Kilns



Windsor's range of batch kilns are designed specifically for drying soft timbers and offer almost unlimited design flexibility.

High Performance

A Windsor kiln will deliver maximum throughput for minimum operating costs.

Performance guarantees

We offer a range of performance guarantees to suit each specification.

In-kiln conditioning

We offer either in-kiln conditioning systems or stand-alone conditioning chambers. The latter option will increase throughput dramatically, particularly in high temperature drying operations.

Noise reduction

Noise emissions from kilns must be minimised on some sites. We offer a special 'Q' range of kilns with mechanical and automation upgrades to reduce acoustic emissions to meet stator requirements.

Heating Options

We cater for both indirect and direct fired kiln systems. We can use steam, thermal oil or high-pressure hot water as a heating medium

Controls

Our DrySpec BDK control system provides complete automation and control while providing operators with clear information and historical trends. We also offer our DryTrack moisture management system which removes the need for hot-checks, vastly increasing productivity.

Training, Service and Support

We look after our customers with after sales service, including remote support, spare parts and annual and breakdown servicing. Our experienced service department and established Wellington based engineering facilities enable us to provide a timely back-up service.



Control Systems



Dryspec®

The Windsor Dryspec® control system is our flagship control system built on a PLC platform. A Factory Talk View SCADA PC provides an intuitive, operator centred, high performance HMI to support product scheduling, fault finding, historical data trending and manual control as required.

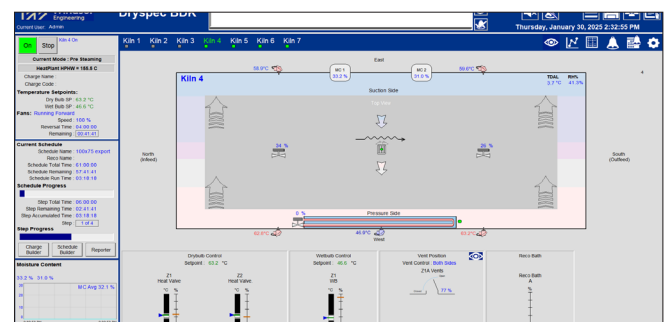
Operator controls are customised to meet the needs of the site. Alarm configurations, site layouts, geographic orientation and site-specific equipment are also integrated into the HMI and PLC systems. Additional equipment controls, custom reporting and SQL data exchange can be added if desired.

All PLC components are Allen Bradley Control logix and all other control devices used are freely available.

Batch Drying Kiln (BDK) Controls

BDK is Windsor's modern and visually streamlined control system suitable for small and large sites utilising batch kilns. Colours are used to indicate temperatures and a quick reference layout makes operation simple and easy.

BDK comes complete with Windsor's standard sensor tracking and trends, troubleshooting and alarm systems along with report and graph output. Dryspec® BDK manages all aspects of fan and temperature control throughout the kiln zone. It can support up to thirty batch kilns and seamlessly integrates with our DryTrack moisture reading software.

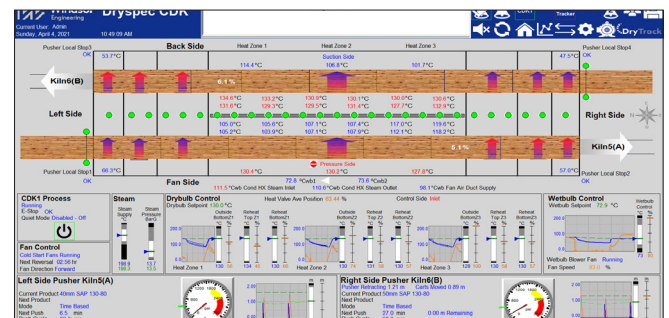


Continuous Drying Kiln (CDK) Controls

DryspecCDK is used to manage multiple CDK's, providing maximum information and feedback to allow operators full control and understanding over their drying operation. Dryspec® CDK manages:

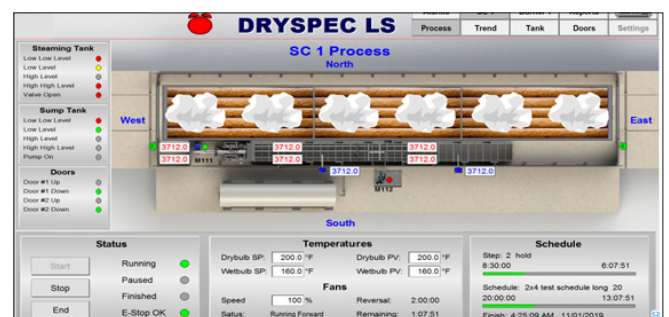
- zone temperature and control
- pusher rates, pressures and positions
- skewed pack detection
- full fan control
- sensor trends, troubleshooting
- alarms and report outputs.

DryspecCDK can seamlessly integrate with our DryTrack and PacketTracker software.



Log Conditioning (LS) Controls

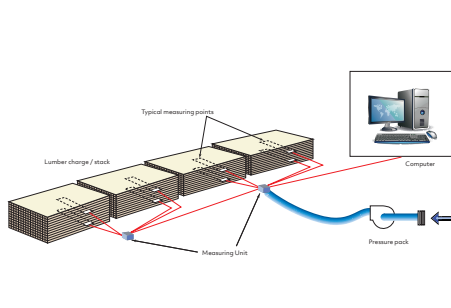
DryspecL is a version of our Dryspec software used for our Log Conditioning Chambers. Utilising contrast colours for quick identification of operation, it comes complete with our standard trending software allowing full alarm and troubleshooting, and production reports. DryspecL can run both progressive and batch schedules.



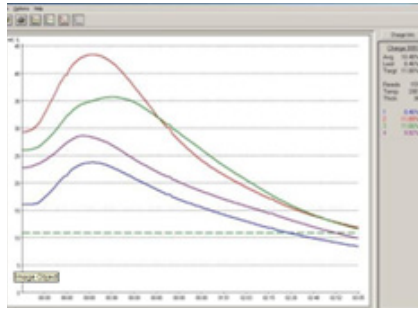
Moisture Measuring Systems



DryTrack In-Kiln Systems



DryTrack - Batch Kiln



DryTrack - Echo

DryTrack is an accurate, wide range moisture content measuring and monitoring system for timber drying systems. The use of DryTrack can help produce high quality dried timber, reduce degrade and energy costs and increase drying production.

Features and Benefits

- At the end of the drying process DryTrack's accuracy is typically within 1%.
- It prevents timber degrade associated with over drying.
- It reduces the number of "wets" caused by under-drying.
- The system is robust and simple to operate and comes with a 3-year meter card warranty.
- The timber is not damaged by DryTrack's measuring plates - no holes or indentations.
- DryTrack permits successful drying process to be repeated charge after charge
- The system can be calibrated to measure various timber species.
- Robust design
- Easy to operate

Pressure Pack

Windsor's DryTrack system is equipped with a filtered air pressurization package, this keeps the electronics dry and free from steam and atmospheric humidity ingress resulting in prolonged meter card life. A robust blower unit is supplied complete with inlet filter. The Pressure Pack system can be retrofitted to other MC systems.

System Features

The system displays readings from each zone or an average for the whole kiln. It can be linked to a kiln management system for added flexibility and greater control or run as a standalone package. The readings are taken from a large sample of lumber, typically 100 to 120 boards per measuring point.

DryTrack Echo version

DryTrack Echo is Windsor's industry leading automated in-kiln moisture content measurement system and is just one of the many innovations that makes Windsor industry leaders for the supply of modern high-performance continuous kilns. DryTrack Echo consists of four moisture content measuring locations at the end of the main drying section (of each track). It automatically takes non-intrusive moisture content measurements of packets as they leave the main drying section and allows the push rate to be automatically adjusted to correct for seasonal variations of the timber. As well as automatic control, DryTrack Echo provides operators with comprehensive moisture content data to promote informed decision making around the loading and management of the kiln.

Log Conditioning



Type LCC



Windsor LCC systems use low pressure saturated steam to efficiently heat/condition logs prior to peeling or slicing.

Significant reduction in the degrade associated with the peeling of most logs can be achieved if the log core temperature is raised, typically to about 50°C. Comparisons with peeling at ambient temperatures and at elevated temperatures have repeatedly shown that conditioned soft timber logs will reduce veneer degrade by up to 18%.

Windsor log chambers can be designed to work with any heat source available on site. This could be steam, hot water or hot oil. If there is no heat plant on site then the chamber can also include a self-contained gas or diesel heating system.

Benefits Over Log Baths

- Reduced capital and running costs
- Provides a semi continuous supply of logs to peeler or slicer
- No water staining of the logs
- Less waste water / Reduced environmental impact
- Improved thermal efficiency
- Conditioned logs are free from grit and contaminants which damage peeler knives / blades
- Reduced H&S requirements for operation.



Windsor log conditioning chambers offer a simple effective system for softening logs.

How Does It Work?

Conditions in the chamber are controlled with low pressure saturated steam to ensure all logs are heated uniformly and kept wet. Approximately 6-9 'log carts' will fit inside each Log Conditioning Chamber. These log carts can be heated in one of two ways:

Batch

The chamber is filled with logs, the doors are closed and this batch of logs is conditioned until the required temperatures are reached. Then the doors are opened and all logs are removed.

Progressive

Operation starts similar to the batch process, but when the doors are opened, only 1-2 log carts are removed from the outfeed end. 1-2 fresh carts are pushed in from the infeed end and the doors are closed.

The conditioning process will then continue. This allows the chamber to better match site throughputs, ensuring logs are at the correct temperature when they are processed.



Let us solve your problem

At Windsor we are all about understanding your process. This allows us to find the perfect solution to your problems. We've worked in a wide range of industries and can offer you support with these products and services:

Process

- Attenuation
- Kiln Drying
- Log Conditioning
- Material Handling
- Energy Plants
- Heat Exchangers

Air & Material Movement

- Blowers & Gas Boosters
- Dampers & Flow Control
- Industrial Fans
- Process Fans
- Side Channel Blowers
- Rotary Valves

Environmental Control

- Dust Collectors
- Cyclones
- Bag & Cartridge Filters
- Cooling Towers
- De-Humidifiers
- Evaporative Cooling Systems
- Fluid Strainers
- Odour Control
- Scrubbers
- Gas Flares

Design & Consulting Services

- Specifically in relation to our expertise in air movement, filtration, humidity control, dust collection

Maintenance & Servicing

- All products

Measurement & Instrumentation

- Flow & Pressure instruments
- Hand held pressure measurement
- IR Temperature Instruments

Please contact our Wellington sales office for these products:

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