

Keeping You Informed

In this second edition of Windsor's Service & Technical Bulletin, our aim is to provide you with invaluable technical tips to ensure your Windsor equipment is kept in the best possible condition.

Inside, you will find that our engineers have provided information on operating and maintaining your Windsor products, plus you'll find the latest equipment news.

These bulletins are produced by Windsor every few months, and if you'd like previous copies please don't hesitate to contact us. Similarly, if you have any other questions about service, maintenance or operational matters, please feel free to call on +64 4 232 8080.

Long-Term Shut-Down of Kilns



If your Windsor kiln is not going to be used for an extended period of time (in excess of six months), we recommend the following steps should be taken to ensure the kiln remains in good condition:

- Electrically isolate the kiln.
- Close the roof vents. This can be done by releasing the vent linkage cables on the roof.
- Remove vent control motors and store in a dry secure environment. Tape up the exposed electrical wires.
- Clean out all sawdust and waste build up on the floor, especially against the walls and around the column feet. This will prevent these areas remaining damp and corroding the wall panels where they meet the foundation.
- Paint all bright steel, i.e. motor and fan shafts, steel fan hubs (if fitted), pulleys and taper lock bushes with a metal preservative, e.g. Septone "Rust proof". Particular attention should be given to the areas where shafts go through the kiln walls.
- Pump fresh grease into motor and fan shaft bearings while rotating each assembly by hand. If your kiln has external motors and grease points for the fan shaft bearings you could grease each assembly while it is still running.
- For kilns with external motors, we recommend covering each motor to protect them from the weather. Use an up-turned plastic bin, an old steel drum cut in half or something similar, this will leave the bottoms of the motors open to atmosphere and reduce damage from condensation. Do not wrap the motors with plastic.
- Control valves fitted to the kiln pipe work should be removed and stored in a dry secure environment.
- Mild steel pipe-work should be drained and be kept dry if possible. If this is not possible the piping system should be isolated at all ends and filled up with water treated with a suitable preservative. (Talk to your boiler chemical treatment supplier about the most appropriate product).
- Hot oil piping systems should not need any treatment.
- Stainless steel internal kiln piping can be drained and left.
- Reconditioning tanks should be emptied and cleaned out.
- Turn off the water supply to the wet bulb and the reconditioning tank.

Replacement Fasteners for Windsor Kilns



We recommend regular monitoring of your kiln structure to check for missing, damaged or loose fasteners.

The fasteners in the fan and plenum area of the kiln are very important – most kiln operators complete regular checks in this area. Sometimes the fixings holding the cladding to the structure are overlooked as they are often not termed as 'structural' or 'important'.

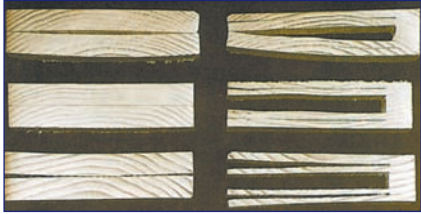
Missing rivets and loose cladding can allow rapid ingress of steam into the inside of the wall panels – and this leads to more serious problems. The insulation material can become damaged and then slump to the bottom of the panels once it has become water logged.

Windsor carry good stocks to cover any replacement kiln fasteners you may need. We have a range of aluminium and stainless steel rivets and a selection of stainless steel Tek screws – some are imported specially for us.

Some Tek screws are very useful for replacing loose or missing rivets in the panels of the older type kilns. Often the rivet holes are worn oversize by loose and vibrating rivets – i.e. a new rivet will not pull up tight in the hole.

We have a Tek screw that can be screwed straight into existing rivet holes and give you a permanent repair that looks great – rather than having to drill new rivet holes next to the existing ones. Use Windsor part #03530. for the Tek screw without the cup washer (for internal use) or part #03392 for the Tek screw with the cup washer and seal. (for external use)

Steam Re-conditioning Timber



During the drying process a lot of stress is built up in the timber. Steam reconditioning can relieve most of this stress, leaving a more stable end product that won't distort during construction or re-manufacturing.

At some stage most of you will have had a skill-saw jam while cross-cutting or ripping timber. Usually the saw gets the blame, when the most likely cause is unstable timber, the result of inadequate re-conditioning.

Re-conditioning of kiln dried softwoods has been common practice in New Zealand and Australia for many years. This is a process that we are still learning about.

What we know:

- The timber temperature needs to be lower than the steam temperature, so High Temperature schedules will need to have a cooling step before re-conditioning.
- Most of the stress relief from re-conditioning occurs during the 1st hour of the process.
- For best results the reco should get to its set-point in half an hour.
- 98°C steaming will yield a better result than 90°C steaming.
- Force cooling using water sprays after HT drying allows us to dramatically reduce the re-conditioning time.
- Continually testing stress (prong tests) in timber post steaming will allow you to find the ideal steaming time for each grade and kiln drying schedule, thus maximising kiln through-put and quality.

Why Kiln Baffling?



Windsor has carried out several kiln audits in the last year - aimed at maximizing through-put from existing kilns.

Things that are commonly looked at are the kiln schedules, filleting, stacking and baffling practices, end point determination and quality assessment.

By far and away the most common failing found during these audits are the overall baffling standards.

Baffling is undertaken in order to force as much of the air produced by the fans as possible through the stack. Failure to adequately baffle a kiln will result in a significantly slower drying time and an increase in moisture content variation.

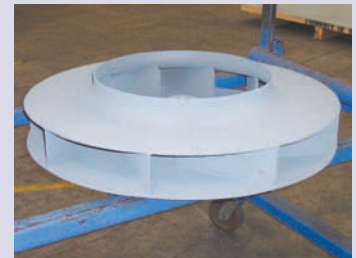
Horizontal (or top) baffles must be in contact with the kiln weight.

To provide an effective seal on the ends of the timber stack, the vertical (or end) baffles must close against the sides of the stack. The baffles should be used in a way that simulates a full length kiln charge - i.e. if short stacks are being dried, the stacks should be built in a way that allows the vertical baffles to close against the stack, preventing air leakage on the ends of the kiln.

If short stacks are regularly dried in your kilns, it is a good idea to fit extra vertical baffles or have a fabricated blanking block that can be placed on the kiln cart at the end of the charge; this will allow an effective seal when the vertical baffles are closed.

If you have any queries around this please contact keith.haigh@windsor.co.nz or david.parle@windsor.co.nz

Windsor Manufactures a Fan Impeller



Windsor recently saved a client the time and expense of importing a new fan impeller from Sweden.

Nelson Pine Industries had a fan impeller (or rotor) which was badly worn due to the contamination of air with wood fibre.

"NPI were worried it could even disintegrate, which could cause a catastrophic failure of the whole fan, and even prove dangerous to staff," said Windsor's Industrial Sales Engineer Gary Wilson. "Being a 24/7 operation, NPI certainly couldn't risk a failure which would mean any production downtime."

"A new rotor was going to be expensive and needed to come from the original manufacturer in Sweden. Instead, NPI asked us to manufacture a replacement as they knew we manufacture new fans and components from scratch."

We measured and photographed the existing rotor, quoted the job, and were given the go-ahead to build it.

Gary said Windsor was one of few companies with the capability to build the impeller. It needed to be built to a high quality manufacture due to the forces involved in the high speed rotation. Also it needed to be dynamically balanced (just as car wheels need balancing after fitting new tyres) in order to reduce noise and vibration. A poorly balanced impeller will reduce bearing life and cause other maintenance problems such as cracking of components.

New PTronik Controller

Windsor recently installed a brand new filter controller at Exide Technologies' battery recycling plant in Wellington. The system utilises new technology with a filter controller by PTronik. (www.ptronik.com)

This new technology consolidates many features into one package; it is believed Windsor is the first to install this level of technology in New Zealand.

Windsor industrial filters clean dirty air using a high grade filtering material inside the filter unit. The filtering material needs to be cleaned using compressed air. The new PTronik controller enables this cleaning to be done as necessary. Previously this was simply a timed mechanism. The controller automatically turns the pulse off when the filter has a low dust loading. It then turns on when the dust loading increases and can automatically increase the pulse rate to cope with high dust loadings.

The controller and technology allows savings of compressed air and can sense mechanical and electrical faults in the pulse mechanism. It also features alarm functions for compressed air supply, broken filter socks (filter bags) and it can detect over-filled hoppers.

This technology can be remotely monitored from the control room computer (saving constant manual checks) and there's even internet access for remote monitoring.

Windsor's Technical Services Engineer, Robert Hughes, says the controller consolidates many features and ideas into one – whereas previously these features would have had to have been commissioned separately.



Calibration of Kiln Temperature Monitoring Equipment for Phytosanitary Certification



Recently New Zealand introduced new bio-security regulations covering timber sold for export.

The regulations call for strict control and monitoring of all timber products treated or

dried for export markets. This includes packaging materials.

As part of the new regulations, kiln operators are now required to provide documentation proving that all the temperature monitoring equipment used for drying timber is accurate to within + or - 1°C.

The temperature monitoring equipment must now have an annual calibration check and documentation is required to prove that this has been done.

Monitoring equipment includes the temperature probes, field wiring and computer systems.

Following requests for help from kiln operators, Windsor developed a cost effective procedure to check and calibrate all the kiln temperature monitoring equipment. On completion of a calibration check, we supply a certificate of accuracy that can be submitted to your bio security inspector.

The calibration checks are completed by Windsor's service division. A good range of spare parts are carried in our service vehicles, so any repairs (if required) can be completed with one visit to your site.

For more information about kiln calibration please contact brent.morris@windsor.co.nz



Dynamic Balancing

Windsor built fan assemblies are all dynamically balanced to ISO standards. We use ISO 1940 spec G2.5 & G6.3.

We balance fans in two planes using our portable Commtest computerised balancing equipment. Due to its compact



portable design, it is ideal for field work – we often carry it with us as hand luggage when we travel to site.

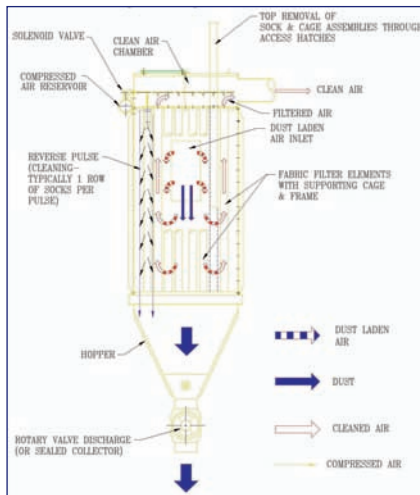
The Commtest unit is not only used for balancing our own equipment – often we get requests to balance fans and other rotating assemblies from all types of manufacturers in New Zealand industry.

Recently Windsor responded to a request for help with balancing a large stainless steel fan at Taylor Preston's Meat processing plant in Ngauranga. The fan rotor had become worn and was badly out of balance.

Taylor Preston's maintenance engineer Dave Newton commented: "The vibration is so bad & I'm worried that the fan may lose a blade or the bearings will fail – this could cost several days in lost production."

We received the call late in the day, but were able to have our service people on site at 6am the following morning. We rebalanced the fan and after 2 1/2 hours the plant was up and running smoothly again.

Pulsejet Filters: How The Windsor Toploader Works



Windsor filters are generally fitted between the source of the dust and the extraction fan.

Dust laden air is drawn into the filter unit via a central inlet chamber. Heavy particles descend to the collection hopper while lighter particles are

deposited on the outside of the filter socks as air is drawn through the filter media. The dust collection forms a 'cake' on the outer surface of the filter media.

Periodic pulsing of air into the filter socks dislodges the outer dust cake and maintains fabric condition. Any dust or product material removed by the air pulsing will fall into the collection hopper.

Windsor pulse jet filters are fully automatic. The pulsing characteristics are adjustable for interval and duration of air pulse.

Operation and Servicing

Windsor filters are designed to provide long operating life with minimal servicing. The filter socks should be cleaned at regular intervals. Fans, screws, pulse equipment and rotary valves should be serviced annually.

The life expectancy of filter socks varies. Normally the first set will operate

satisfactorily for at least 12 months before laundering is required.

Laundering and / or sock replacement is necessary when an increase in pressure drop is detected on the manometer gauge fitted to the outside of the filter unit, or if dust emissions from the filter are noticed.

Filter Sock Laundering

Correct laundering will restore the filter socks close to their original filtration capability.

If done correctly, socks can be laundered a number of times - they will give a shorter, but still satisfactory operating period. To avoid damage, laundering must be carried out by specialist companies.

Please contact Windsor Engineering for recommendations on laundry procedure.

For more information on how best to maintain your toploader, contact Mike Hampton on +64 21 492 729 or email mike.hampton@windsor.co.nz

Kiln Drying Schedules

Windsor have been conducting kiln drying trials on selected appearance grades, drying these at higher than conventional temperatures. The results have been mixed. We feel that in certain cases significant through-put gains can be made.

The most successful trial involved drying 100x40mm clear Radiata. This timber was to be pre-dried to 18% MC for H3 CCA treating. The clears were destined to

become premium decking.

Previously the sawmill had dried this material using a 90 / 60 schedule and taking about 33 hours.

The trial schedule selected was 120°C dry-bulb and 97°C wet-bulb. The reconditioning bath was allowed to run as required to maintain WB temperature, and the vents were manually closed for the entire duration of the charge.

The timber was tested after 20 hours and

found to be slightly dryer than the targeted 18%, the timber was then reconditioned for 4 hours at 98°C.

Stress tests were conducted and had favourable results; however there was a small amount of internal checking found (not a problem for decking). This schedule will result in less overall distortion, due to the higher wet bulb temperature so it may be very suitable for merchant grade decking as well.

Is there someone else at your company that should get a copy of the Windsor Service Bulletin? Please email sales@windsor.co.nz or phone to ensure they get the next issue.

If you would like to receive information like this bulletin from Windsor via email, please contact us at sales@windsor.co.nz. You need not write any message, just put 'Please send me the Service Bulletin' in the subject line.

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