

ELECTRONIC CONTROLLERS, CONSIDERATIONS BEFORE INSTALLATION

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During the last 10 to 15 years we have seen many changes in technology within our industry. Sawmills have become computerized. We rely on computers to make decisions on how to saw the log, and trim and edge the boards to maximize fiber recovery. Our sorters are computer controlled, they segregate, sort, and tally sawmill production. In the planing mill, computers track volume in, volume out, trim loss, grade recovery, and sales average of each run at current market values. Inventory control is tracked by computer. We see more and more dry kiln operations replacing manual pneumatic controllers with computerized systems. There are several things to consider when making this upgrade before making the final decision on which controller to purchase.

There are many advantages to computer controls. When designing kiln schedules, you have the ability to ramp dry bulb and wet bulb temperatures. It is generally believed that this provides better quality kiln dried lumber. At the same time it reduces steam usage and helps to control steam surges. In times of bad or low steam you can slow down your ramp times, still maintain control of your drying schedules and help your boiler get back up to full pressure.

Central control, some operations have expanded their kiln capacity. In doing this they have ended up with kilns in different locations on the plant site. Electronic controls give you the convenience of monitoring and controlling all of your kilns from one central location. If your particular operation does not have kiln operators on duty 24 hours, by use of a modem and another PC, the kilns can be monitored and controlled from an off site location, such as the kiln operator's home. The advantages to this feature are numerous, and can literally save an operation thousands of dollars per year.

In designing drying schedules, electronic controls give you the advantage of utilizing many options in order to create the best and most economical schedules for a particular species and grade. You have the ability to monitor moisture content by temperature drop across the load, moisture content probes, capacitance strips, or using load cells to calculate weight loss and determine moisture content of each individual charge as it dries. Another indicator that can be utilized is the percentage of vent capacity and the amount of steam being consumed during specific times of the drying cycle. You have the ability to create time based or moisture content based drying schedules. Or a combination of both. If you happen to be drying a charge of very expensive export clears and the early part of the schedule is a very critical time of quality control, you can use what experience with the product has taught you and start the early part of the schedule based on time control which you know is safe. When you are safely past this phase of the schedule you can run the

remainder of the schedule based on moisture content. By utilizing all of the options available you should only obtain positive results from the use of this equipment.

The computer's ability to store histories of literally thousands of charges is a valuable tool. By comparing past charges you will pick up on trends that occur during seasonal changes, decked logs versus fresh logs, and you can actually trouble shoot your kilns by noticing small problems before they become big problems.

Using a color printer you can create graphs of any part of the schedule that you want to look at. At the same time, if you want to look at one particular area or function (temperature or moisture content, EMC or wet bulb temp in one or more zones, etc.) computer controls give you this ability. Other options include a steam management program. In times of low boiler pressure you can prioritize steam flow to kilns that are in a critical part of their schedule. This feature minimizes steam usage and minimizes boiler surges. The computer can also operate variable frequency fan drives, reducing electrical energy costs.

Now that we have looked at some of the advantages, and therefore reasons for installing electronic controls, the question still arises. "Will I really see enough improvement to justify the cost?" If you are running old concrete kilns that have baffles in need of repair or replacement, low velocity fixed-pitch line shaft fan systems, plain pipe smooth-wall steam coils, faulty traps, and an inadequate condensate return system, leaking doors with holes or bad seals, or leaking and or broken vents, the answer to that question is obviously no. Therefore, before considering the purchase and installation of a new control system we need to ask ourselves the question, "Are our kilns really ready for electronic controls?" If you have been allocated money to upgrade and retrofit you dry kiln, be sure your equipment is up to par before looking for new control systems. If not, you might find yourself with the same situation as a man who just installed a brand new jet engine in a Model "A".

In the hands of a skilled and knowledgeable dry kiln operator, and kilns that are performing properly, electronic controls can be a very prudent investment in the drying operation. In the hands of less skilled operators the return on investment will probably be substantially less. The most sophisticated and advanced computerized control system available is still no match for an experienced and knowledgeable operator. But, the new controllers are a great tool for these masters to perform their craft.

Now that we have discussed advantages and reasons that favor electronic controls, the most important decision is still unanswered. "Which controller to purchase?" There are many systems for sale, the price varies according to the various options available. Some of the controllers available are microprocessor based. These systems are dependent upon the manufacturer for software updates and support to keep the system running. The power card and circuit boards contain programmable chips that are available only from that particular manufacturer. If for any reason the manufacturer should decide to go out of business, or to no longer support the system, you could be the proud owner of a very expensive "White Elephant". This actually happened to an Idaho-based company several years ago. They had no choice but to go out and purchase a new system.

Other controllers on the market are PC/PLC based systems. Some of the advantages to these systems are:

Easy and quick programming changes to update capabilities

Uses off the shelf components that can be purchased from many vendors of control equipment

More suited to mill environment including power surges, vibration, and heat

Easily updated to future generation of PC/PLC

User friendly with windows and mouse

Once installed you will be able to support, maintain, and upgrade the system with your own technical support people.

Once you have decided that you are ready for a new control system, shop around. Take the time to visit several mill sites and talk with the people using the various equipment. Find out which vendors supply the greatest amount of support and service. When the system was purchased did the vendor supply adequate training and stay and trouble shoot the system until it was up and running trouble free, and the operators were comfortable in understanding how to control the controller? Was the hardware good quality materials, or was it something that caused problems and had to be replaced in a short time? Are parts readily available from the vendor, or do you have to carry an inventory of expensive part, and possibly a whole unit as a back-up? In case of problems or failure how long does it take to get a service technician to your site? Once he arrives does he understand the system well enough to fix any problems and get you back on line as soon as possible?

There are many good control systems on the market today. But they are only as good as the service you get from the vendor or manufacturer. It wouldn't make sense if your operation is on the West Coast to buy a control system from an East Coast manufacturer who only has 2 or 3 service technicians. You could be waiting days or weeks for help. This could easily cost you operation thousands of dollars.

So shop carefully and look at all of the options that are available. Once you have decided on a particular brand, try to visit 2 or 3 site that are using this brand. See if they all agree on the performance of the equipment and the quality of service that they are receiving.

Hopefully, what we have discussed here today will help you when the time comes to start thinking about upgrading your control system.