

## Carl Diebold Lumber Company Simplifies Kiln Drying with Wagner Electronics MC-4000 Monitors

By Diane M. Calabrese  
Contributing Author

TROUTDALE, Oregon — There's a lot to be said for air drying — time-tested, age-old, viable and all the rest. And for 65 years, air-dried wood met the needs of Carl Diebold Lumber Company (CDLC). But a few years back — in order to keep pace with production at a remanufacturing plant built in 1989, CDLC made a big change.

"We put dry kilns in [place] in 2005," said Craig Clark, the dry kiln manager at CDLC. Even before deciding on which kiln to adopt, CDLC had settled on the moisture monitor it wanted. It was the Wagner MC-4000 In-Kiln Moisture Measurement System from Wagner Electronics Products, Inc., Rogue River, Ore.

Dave Smith, plant manager, and Jim Patrick, president of CDLC, were responsible for the selection of the Wagner MC-4000 system. At the time, explained Craig, he himself had little experience with kilns. But he got up to speed fast.

Craig studied in the Kiln Drying Certificate program at the Centre for Advanced Wood Processing, University of British Columbia in Vancouver. "Dave Scholte did the classes," said Craig. "Dave Smith...went up too."

Kiln classes included instruction in scheduling, maintenance, hands-on computer interaction, trouble shooting and boilers. "It was extremely helpful," said Craig.

Craig also took the self-directed approach. "I started out with the manual," he explained. And he got a big boost from the responsiveness built into the Wagner Electronics MC-4000, responsiveness that mir-



*Even before deciding on what kiln it would adopt in 2005, Carl Diebold Lumber Company chose the Wagner MC-4000 in-kiln moisture measurement system from Wagner Electronics Products.*

rors that of its maker.

"It's been really easy" to use, said Craig of the MC-4000 from Wagner Electronics. Moreover, if he has questions, they are answered quickly. "Any time I've had any trouble," [Wagner] was immediately available, he explained.

The Wagner MC-4000 makes all the difference in assessing the content of moisture in a way that both yields an eye-catching product and is economical. "I've had several comments on the way the wood comes out of our dryers," said Craig. "They [customers] can tell we don't rush. I'm really proud of the way the wood comes out."

Getting the right outcome is a matter of matching the information provided by the Wagner Electronics MC-4000 to the results customers want. "I tweaked, made adjustments," said Craig. "I made a lot of phone calls to a lot of people," explained Craig. He asked customers about results.

"For the first four charges [or so], you need to watch a lot, check with the handheld moisture device," said Craig. The idea is to make certain the kiln is operating the way that will result in the best lumber. "I do not open until the [controller] says to open. I do have a history report that gives me tracking [for the charge]."

## American Wood Dryers' Drystar Control System Makes Match with Wagner Electronic MC-4000

American Wood Dryers, Inc., (AWD) Portland, Ore. not only supplied the kilns to Carl Diebold Lumber Company (CDLC), but it also provided its Drystar® Computer Control System. Making a match between the Wagner Electronics MC-4000 and the Drystar was simple, said Tom Salicos, a developer at AWD.

"We interface with anybody that will cooperate," said Tom. "The people who develop moisture content systems develop their own interface." Then, they provide AWD with the information. AWD takes it from there.

Tom ensures the moisture sensor and the kiln control get together in a thoroughly compatible way before an actual installation takes place. "I'll make it all work in my office," he said. "I go on site and it all goes" as it should.

At CDLC, for instance, the Drystar Computer Control System takes the moisture data streaming from the MC-4000 system and computes averages, predicting the best time to stop a charge so that the maximum amount of the load is dried to the optimum moisture content. Configuring the tie between the MC-4000 and Drystar proved easy. "The MC-4000 just works," said Tom.

The Drystar system debuted 14 years ago, said Gary Kollari, one of the owners of AWD. Over time, the system has been

upgraded, but one feature has remained constant. "The [software] architecture is very open, so we can interface with others," explained Gary.

The AWD approach allows a lumber company to choose the moisture content sensors it prefers and then have data from the sensors processed by the Drystar system. CDLC chose the Wagner Electronics MC-4000.

Drystar runs on a Windows platform. The newest version runs on Windows XP.

Principle features of the Drystar system includes:

- Each kiln has its own PC-104 single board computer.
- Temperature and humidity control is fully modulating using position feedback for each valve and vent actuator
- Either pre-programmed time-based or moisture-content-based drying schedules
- Easy troubleshooting with Drystar's embedded web-based help pages
- Dual modem capability enables off-site monitoring and control of your kilns from any location and alarm notification to any telephone number
- Integrated variable frequency fan speed control software enables programming of fan speed

For more information, call American Wood Dryers at 503/655-1955.

The economy realized with the Wagner MC-4000 derives from the reduced need for shut downs. "Having the Wagner [MC-4000] to use keeps me from having to shut down and cool the kilns to do a manual check several times during a charge," said Craig. "I only have to check once a charge toward the end – relying on the Wagner to tell me it's around 12 or 13%. This saves me a lot of money in natural gas expense, since it is very costly to bring the kilns back up to 180 degrees."

The consistency of results obtained with the Wagner Electronics MC-4000 wins high marks from Craig. "Each kiln has its own MC-4000" measurement system, said Craig. "One computer runs all three."

Open architecture on the MC-4000 allows it to be integrated with any computerized kiln controller. In addition to the MC-4000, CDLC purchased other devices from Wagner Electronics. They are the Wagner L612 data collection and analysis hand-held moisture meter and the Wagner L722 stack probe sensor. The devices ease checks on lumber drying as it proceeds in kilns and on sticks.

"Prior to [adding kilns], we did a lot of air drying," said Craig. "It would take a month or two months." (A hill with ideal prevailing wind facilitates air drying at CDLC.)

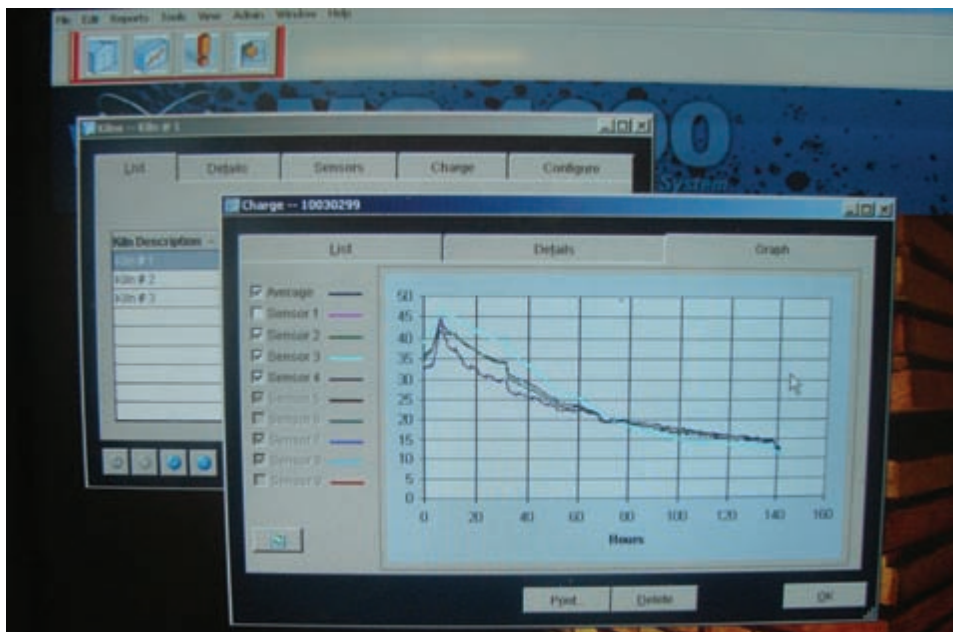
Craig shared some examples of which wood species are being dried and how. At CDLC, Western red cedar is the predominant softwood, Douglas fir the predominant medium wood and tigerwood the predominant hardwood. ("Tigerwood" encompasses several species, especially from Brazil, characterized by prominent light and dark bands.)

"Just about everything I dry, I try to dry down to 12%," said Craig. For Western red cedar, it takes 14 days to dry 2-inch lumber and seven days to dry 1-inch lumber, he explained. "It varies between winter and summer" as well.

The Western red cedar gets special attention at CDLC because the wood is "so prone to cell collapse" if dried too quickly, explained Craig. As such, the cedar is air dried for at least four weeks before it is put in a kiln.

Its super-sensitivity to changes in temperature makes Western red cedar the only species for which Craig sets his own schedule. "On all the others, I let the [Wagner] control my schedule," he explained.

"Douglas fir will come in at 25 to 30% [moisture] in summer and 60% in winter,"



**Craig said, "The Wagner MC-4000 keeps CDLC from having to shut down and cool the kiln to do a manual check several times during a charge. I only have to check once a charge toward the end, relying on the Wagner to tell me it's around 12 or 13%."**

said Craig. It takes five or six days to reach 12%. “Hemlock starts at 100% moisture in summer – 110% in winter [and] takes seven to eight days to reach 12%.”

The Wagner Electronics MC-4000 gives CDLC the flexibility it requires in its drying operation. With different species of wood of varying sizes of lumber entering the kilns (1¼, 5/4 and 7/4 predominate but all common dimensions are in the mix), there is already a challenge. Add the complexity of wood that must be dried to something other than 12% moisture content and the challenge jumps an order of magnitude.

“There’s some [wood] I dry down to seven or eight percent,” said Craig. But it’s not usually a full kiln load and that presents a challenge. A very big part of his job, explained Craig, is managing species, sizes and desired moisture content to optimize the use of the kilns. Kiln load management demands a great deal of planning, he explained.

CDLC was founded by Carl Diebold after he returned from serving in World War II. The company began as a wholesaler of lumber in 1945 and by 1946 it had added a stud mill. The company is now in its third generation of family ownership. CDLC is located in Troutdale, Ore., a city approximately 20 miles east of Portland in Multnomah County.

All work done at CDLC is custom. Two



*View of a full tram load of lumber from inside of double track American Wood Dryer kiln.*

Weinig moulders and in-house knife-grinding capabilities allow the production of almost any pattern. The 30 employees at CDLC produce construction studs, beaded ceiling and double-siding as part of a long roster of offerings.

Other key pieces of equipment at CDLC are two McDonald 54-inch band saws. Both saws have tilting feed works, allowing angled cuts for beveled siding.

Based on 2" material, the three kilns

have a total capacity of 240,000 board feet. All are made by American Wood Dryers, Inc., Portland, Ore. “Two are single track and one is a double track,” said Craig. The heat source for the kilns is a Hurst boiler, which obtains its power from natural gas obtained from the grid.

“We told American Wood Dryers who we wanted for the [moisture monitor]” and that was Wagner Electronics. It was the first time the two companies had ever worked



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**Three American Wood Dryers (two single track and one double track) have a combined drying capacity of 240,000 board feet of lumber.**

together, said Craig. Both companies afforded advantages in addition to quality products. “They’re pretty local and service means a lot,” said Craig.

With close to 12 years at CDLC, Craig recalled how he came to work there. “I walked in and applied for a job,” he said. He started out as a Hyster forklift driver, worked his way to supervisor and then moved to kiln drying. It’s all been a good experience, he said. Prior to working at

CDLC, Craig drove a truck.

A native of Oregon, Craig has roots in wood products. “I started out years ago logging and road building,” he said. Then, he moved to truck driving before becoming a member of the CDLC team. It was a good move, he said.

“I like the challenge,” explained Craig. “I like the variety – how to dry this, how to dry that.” Solving problems to get the best results for customers of Carl Diebold Lum-

ber Company is very satisfying to him. “We strive to put out a quality product,” said Craig.

The assistance from Wagner Electronics has been sustained and intimate, said Craig. “They’ll just call me and ask me how it’s going.” That ongoing connection and interest matters, he explained.

“Both American Wood Dryers and Wagner, I call them anytime and they’re extremely helpful,” said Craig.

Craig added that he would not be nearly as proficient at drying as he is without the West Coast Dry Kiln Association of which he is an active member. In particular, he singled out that Steve Carroll of Watercare Industries, treasurer of the association, has been extremely helpful and very informative. As anybody familiar with kiln drying will acknowledge, to a certain extent lumber drying is an art. Doing it well requires an understanding and a feeling, as well as technical knowledge. Having friends to rely upon can be valuable.

In his free time, Craig has a top priority. “I have a 12-year-old daughter,” said Craig. “[We] go places, do things.” Of course, with a 5:15 a.m. start to his day at work, time is precious, so Craig uses all of it well. “I am very active in my church,” he said. “I teach fourth and fifth graders on Wednesdays and attend regular Sunday services.”

For more information, call Wagner  at 800/634-9961.

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