

imagine making it better," Ward says of both projects. "They did a good job of planning it and it went very well for a project of this size."

Both systems use natural gas as the energy source. "RTOs and RCOs add a lot of cost to the operation in terms of gas, electricity and media replacement," states Ward. "But they enable this mill to produce what it was designed to produce while reducing overall air emissions tremendously."

There have been very few problems with either system. A modem hookup links operators to MEGTEC personnel who can assist with troubleshooting if a problem develops.

The facility is planning a community open house to invite citizens to tour the facility and learn about Norbord's efforts to be an environmentally responsible employer and neighbor.

## OPERATIONS

Treelength pine logs arrive primarily as gatewood. A PSI radial crane unloads trucks and decks the wood. Inventory ranges from 30,000 to 35,000 tons. Flat infeed conveyors deliver logs through one of two rotary drum debarkers and into two 24-knife Carmanah (formerly CAE) flakers. Flake geometry is 4% in. in length and .25 in. thick.

Flakes are stored in three PSI wet bins and conveyed into one of three rotary dryers—two MEC triple pass rotary dryers and a Buttner 4.4 x 24 m (14.5 x 79 ft.) single pass dryer. Norbord replaced two aging MEC 1260 rotaries shortly after assuming ownership. The new units are slightly larger 1360 dryers to allow for the increased production afforded by the RTO/RCO projects. Two fines suspension burners provide heat for the triple pass units and natural gas fires the larger single pass unit, which operates at a significantly lower inlet temperature.

Targeted moisture content is 5% for core material and 6% for face.

Precision rotary screens capture the fines for use in firing the burners. Flake material is stored in two PSI dry bins prior to blending in Coil blenders. Norbord uses liquid PF resin supplied by Georgia-Pacific and Hexion wax emulsion. A third Coil blender serves as a backup unit.

Mats, 8x24 ft., are produced on a



Norbord T&G Sturd-I-Floor is strapped at Signode station.

four-head Siemplekamp forming line and 12-opening caul-less press. Two Konus oil burners heat the thermal oil for the press. Norbord modified the heat energy system here to improve efficiency and safety. Engineering the redesign involved additional valving and piping modifications to automate the cooling system in the event of a power outage.

Boards advance to a Globe finishing line equipped with three Globe crosscut saws, Steinemann sander, Globe tongue & groove machine and Globe stackers. A Valspar nail line system was installed last year when Norbord added panels with painted nail lines to its product mix. Packages are edge sealed and wrapped with plastic strapping at a Signode strapping station. Hyster forklifts transfer them to the warehouse and load outgoing trucks.

## MIP PROGRAM

"Amazingly, even though everything has gone up in price—gas, electricity, wax and wood resins—we're still close to our targeted year-to-date costs," Ward proudly reports. The key has been to closely monitor all cost items using metric tracking systems and by enlisting all of the facility's 121 employees to assist in driving down costs.

The company's Margin Improvement Process (MIP) empowers every employee to generate cost saving initiatives.

Norbord's profit sharing program provides real financial incentives for their efforts. Savings are tracked for each MIP project as if it were a capital improvement, says Ward. At the end of the year, employees share 5% of the mill's profit.

Workers are encouraged to submit ideas on an ongoing basis. A MIP coach reviews them and makes a preliminary determination of what the potential savings could be. Management moves pretty quickly to implement the more obvious savings, while ideas that warrant further evaluation go to a MIP steering committee. Norbord's managers meet regularly with all employees in small group meetings held in the training room. They talk about the process and actual potential savings that are available.

For example, one employee suggested they install a small, see-through access door on the back of the forming heads, which are prone to plug up and jam the rakes. A clear, hinged door was installed allowing the operator to see the level inside the former. And the hinge lets the material push out the back, instead of breaking the rake. Ward notes they haven't had another broken rake since the door was installed.

"It's a process of always learning, always trying to challenge them to find actual savings," he says. "It's not just a matter of getting people good at doing the MIP process. We want something that saves money and drives out cost." **PW**

# MACT COMPLIANCE SOLUTIONS for Engineered Wood Products



### Press RCO

- + Higher Thermal Efficiency
- + Catalytic Operation
- = **Low Operating Costs**



### Dryer RTO

- + Plug-resistant Media Bed
- + Modular Design
- = **99% Uptime**



### Turnkey Projects

- + Pilot Testing
- + RTO/RCO Rebuilds
- + \$1.8 Billion Parent Company
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- + 365,000 ft<sup>2</sup> Manufacturing Facility
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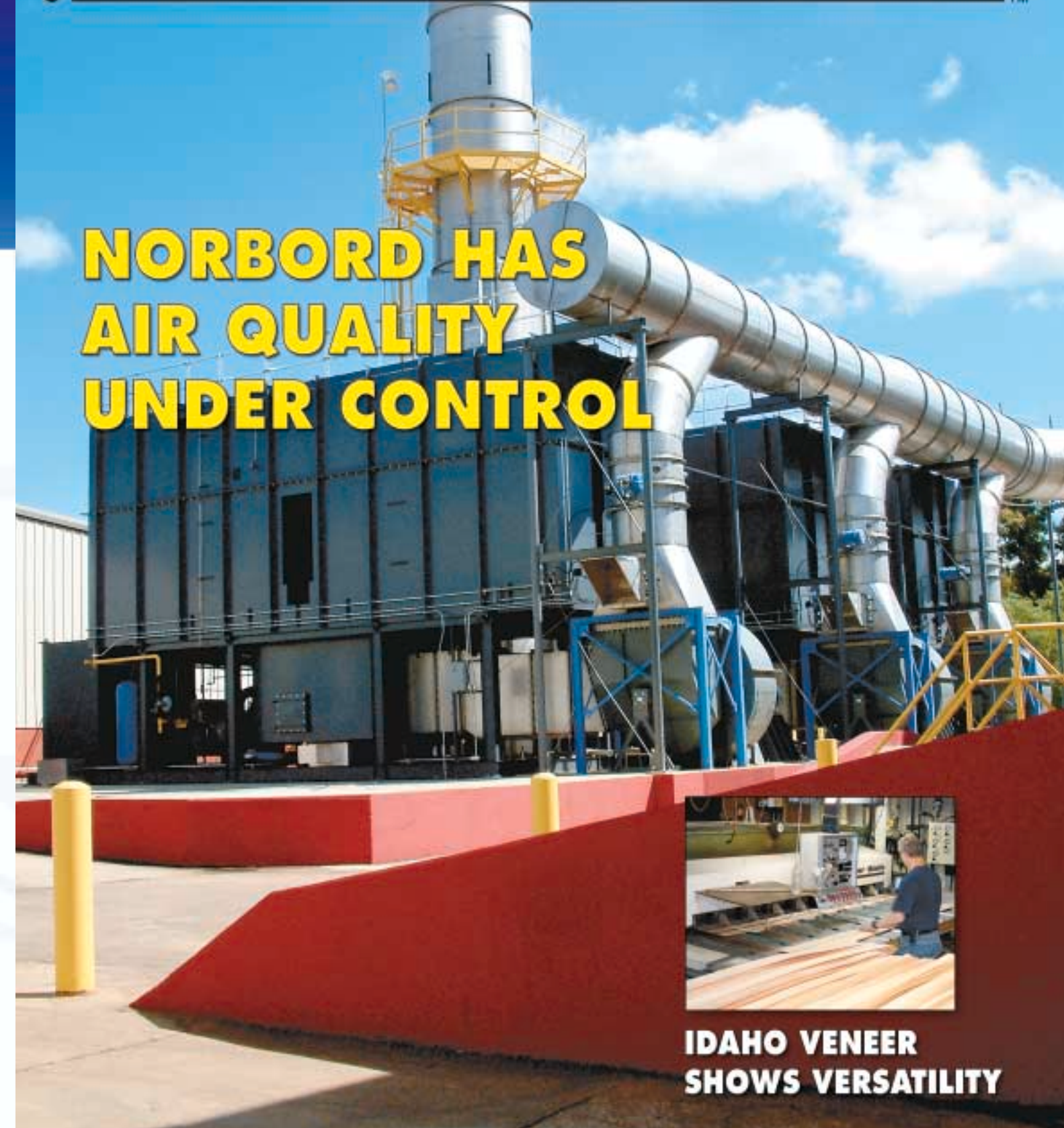
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## NORBORD HAS AIR QUALITY UNDER CONTROL



**IDAHO VENEER  
SHOWS VERSATILITY**



Regional Manager Jim Ward

limiting production volumes, so it was an opportunity to reduce our environmental impact by 90%," he says. The facility is now ramping up annual production to a targeted 380MMSF (% in. basis) by next year. That is a 17% increase over previous volumes.

The \$10 million investment included installation of a regenerative catalytic oxidizer (RCO) at the press, completed in October 2004, and a regenerative thermal oxidizer (RTO) on the rotary dryers in May 2005. MEGTEC Systems, DePere, Wis., was the turnkey supplier of both. These new installations represent MEGTEC's first commercial entry into the wood products industry, though it has more than 30 years of experience in emission controls with other process industries. Four other Norbord facilities, three OSB and one MDF, have already placed orders for similar MEGTEC systems.

#### PARTNERSHIP

Norbord and MEGTEC have been working together for two years to develop a pilot system addressing some of the problems experienced by previous emissions control suppliers. "Twelve years ago, when everybody put this equipment in, there really wasn't a good understanding of what the pitfalls may be with the processes, the salts and plugging, etc.," states Rod Schwartz, MEGTEC's Business Director, Process Oxidizer Markets. "We're a very conservative company, so before we jumped into this market, we did extensive pilot testing. It's been a very good partnership for both companies."



United McGill assisted in WESP enhancements.

MEGTEC's engineers worked closely with the team at Norbord Environmental Services and Technical Centre in Montreal, who were actively involved in the testing and analysis, as were the plant managers at each pilot location.

The vendor built a pilot unit and ran it for one year at Norbord's Bemidji, Minn. OSB plant using a hardwood furnish, then moved it to the MDF plant in Deposit, NY. A second pilot system was built and tested using southern yellow pine fiber at the OSB plant in Jefferson, Tex. They studied media types and configurations, plugging problems, alkali attack and corrosion. The result was a system with a plug resistant bed configuration and a high resistance to alkali attack, Schwartz reports.

"What we learned was that there is no single solution for every mill. Each location has its own unique characteristics," he states. "So we look at each individual process and apply what we've learned from the pilot testings to that specific application." Optimum packing configuration, for example, is primarily dependent upon the wood species and pre-filtration systems in place. Southern yellow pine can be a particularly challenging species because of the high volume of condensibles or pitch.

"This is a little different design than most in the industry," states Ward. "Most

have several poppet valves that turn off and on, but this has one large valve that does the switching. It's a smoother, more even air flow." MEGTEC developed the patented CleanSwitch RTO in 1998, which has proven successful in other industries. The design eliminates pressure spikes as airflow transitions between the heat recovery chambers and a double air seal prevents cleaned air from mixing with dirty process exhaust. There is only one valve and two beds in each unit so there is only one moving part. That significantly reduces maintenance and cleanup, according to the participants.

Ward also likes the modular design. Units are manufactured in a controlled environment at MEGTEC's 250,000 sq. ft. factory, ensuring greater quality controls during production and assembly. They are pre-wired and pre-plumbed, which significantly reduces downtime during installation.

#### PRESS RCO

MEGTEC supplied the permanent total enclosure (PTE) for the 12-opening press, installed two WPS cyclones and two modular RCO units as well all the access ladders, catwalks, ductwork and stack. Installation contractor was Ronson Constructors, LLC, Lufkin, Tex.

Press emissions are collected through



Southern pine logs move through drum debarker.



Quality control supervisor Karen Christopher; Jesus Vasquez in the dryer control room

the roof vents and ductwork manifold system of the PTE and run to the cyclones to filter out large particulates. Dirty air goes to the RCO where the temperature is elevated to 700°+ F to ensure the destruction of pollutants emitted by the press. To maximize energy savings from the catalytic design, this system incorporated additional media and achieved a thermal efficiency over 95%.

Ward says the mill is running with the PTE closed as if it was already required, even though MACT does not

kick in until 2007. "We wanted to do it right from the start so we wouldn't have to be retraining later," he says. "Besides it is the right thing to do."

#### DRYER RTO

According to Norbord, when it acquired the plant, chemical cost for water treatment at the existing United McGill wet electrostatic precipitator (WESP) was approaching a half million dollars annually. Ward's first order of business

was to get those costs under control.

In preparation for the RTO project, Ward's team worked with United McGill to add a fourth field on the WESP. This additional filtration would further minimize particulates entering the RTO. "Our thinking was that we wanted to make sure we reduce the potential for contaminating the bed media sooner, which is costly to replace," says Ward.

They added a McGill mist eliminator box between the WESP and RTO to reduce water carryover into the RTO and lessen the corrosive impact. Norbord also specified three modular RTOs built with non-corrosive stainless steel chambers. "They were adamant that they didn't want to have to replace these units in five or 10 years," states Schwartz.

MEGTEC's ductwork picks up at the mist eliminator to transfer dryer exhaust gas into an RTO unit. It operates the same way as the RCO except that a thermal system requires more energy and higher temperatures, typically 1,500° F or greater. Ward says the potential for particulates from the dryers was not conducive to using a RCO system here.

RTO installation contractor was Herr Industrial in Lancaster, Pa. "I can't

## NORBORD TEXAS COMPLETES EARLY ACTIVATION OF MACT REGULATIONS

Norbord's Nacogdoches OSB mill boosts production and achieves MACT compliance two years early.

BY JENNIFER MCCARY

NACOGDOCHES, Tex.

People feared the worst the day the plume disappeared from the stacks at Norbord's oriented strandboard (OSB) plant, which is located near the heart of the city's business district. In their



Top, MEGTEC supplied RCO units off the 12-opening press; above, forming line

mind, no plume meant no production and no jobs. They did not know it was a sign of Norbord's pro-active leadership in complying with upcoming EPA maximum available control technology (MACT) requirements two years early.

The plant is one of three OSB facilities purchased from International Paper

in 2002. Jim Ward, now Regional Manager, Texas Operations, initially served as plant manager here when he re-joined the company in 2002. "After the acquisition, we quickly identified opportunities in this mill to go ahead and do an early activation of the MACT control requirements. Environmental constraints were