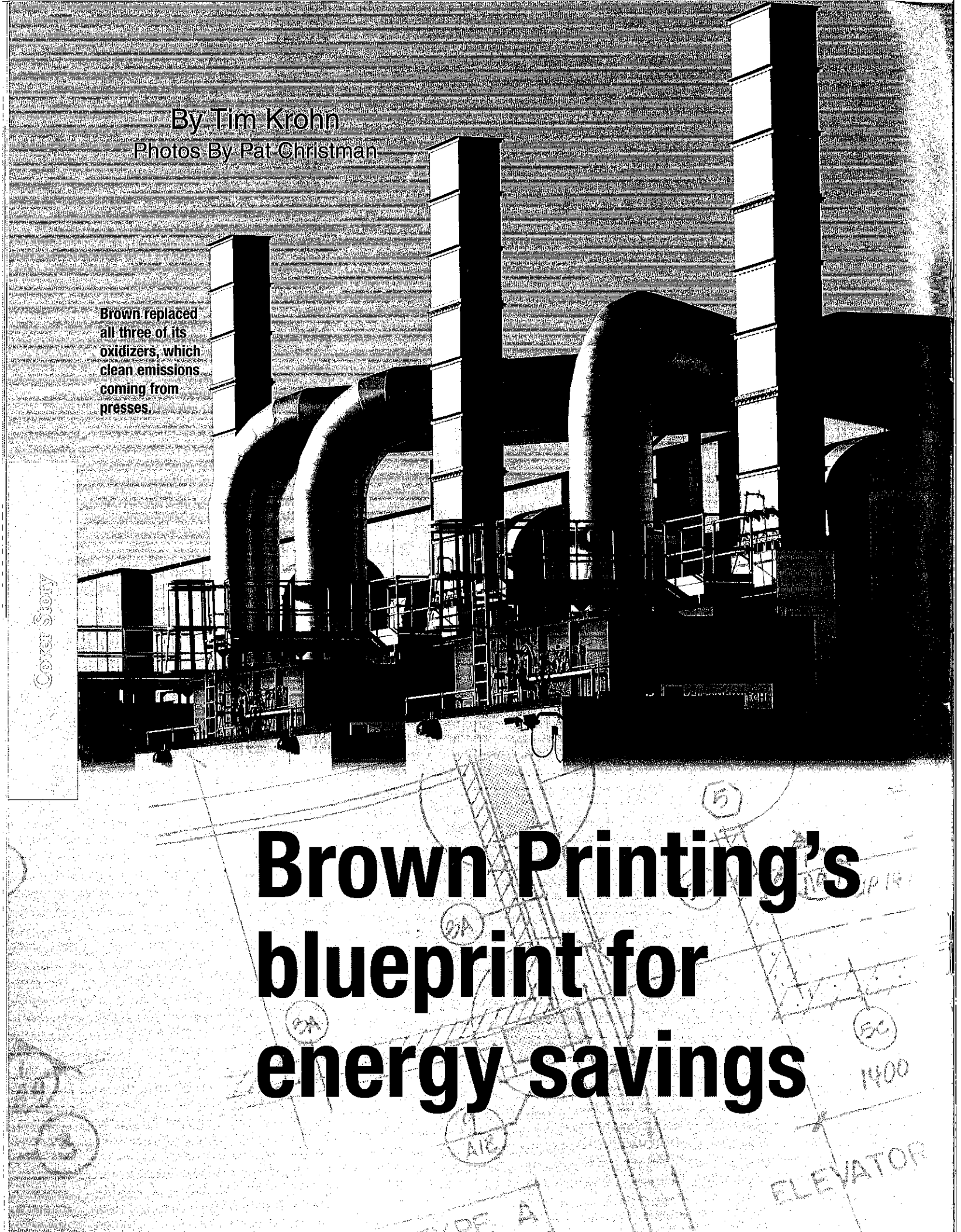


By Tim Krohn
Photos By Pat Christman

Brown replaced all three of its oxidizers, which clean emissions coming from presses.

Cover Story



Brown Printing's blueprint for energy savings

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ELEVATOR

Help available for businesses looking to reduce energy use

The automated vehicles do virtually everything themselves, including changing their batteries when they run down.



Cover Story

The nation's largest offset printing plant eats up a lot of energy.

Brown Printing's Waseca complex needs about \$4 million a year in electricity and a couple of million more in natural gas as it prints 40 million to 50 million magazines and catalogs each month.

That's why even small percentage gains in energy efficiency add up to big savings.

Dennis Braunshausen says the company has long been devoted to what has recently become trendy.

"It evolves around the culture of our community and employees. We're very rural and you just take responsibility for the environment," said the vice president and general manager.

"We were green long before it was fashionable. We just did it because it was the right thing to do."

But Brown — like companies large and small across the region — is honing its focus on energy efficiency and waste reduction with the help of ever-better technology and a wealth of professional advice.

Jack Johnson, Brown's environmental engineer, says the latest push for efficiency — in conjunction with Xcel, Center Point and an Ohio consultant — is bringing the company in line with its latest goals.

"We're saving about 10 percent on our energy bills," Johnson says. "The underlying theme we want to promote is that going green doesn't cost, it pays."



Dennis Braunshausen, vice president

Automated cars constantly move around the Brown Printing plant floor delivering pallets of magazines and catalogs to their proper place.

Cover Story

Energy savings equals power to 36 big box stores

Xcel Energy recently recognized 56 Minnesota businesses, including Brown Printing in Waseca, for their efforts to save energy.

Collectively, the businesses saved more than 80 million kilowatt-hours (kWh) of electricity in the last year — enough to power 36 big box retail stores.

They avoided producing more than 54,800 tons of carbon dioxide, which is equivalent to keeping more than 16,000 cars off the road for a year.

The top 10 award recipients for electric efficiency are:

- Metropolitan Council Environmental Services: 8.98 million kWh saved
- St. Olaf College: 6.91 million kWh saved
- Northmarq Real Estate Services: 5.98 million kWh saved
- University of Minnesota: 5.86 million kWh saved
- Andersen Corp.: 4.48 million kWh saved
- Boston Scientific: 4.46 million kWh saved
- Seagate Technology Inc.: 4.41 million kWh saved
- Brown Printing: 4.24 million kWh saved
- Hennepin County: 2.87 million kWh saved
- Independent School District 287, Minneapolis: 2.81 million kWh saved



Dean Veldboom, facilities manager

Dean Veldboom, facilities manager, says opportunities for savings continue.

"We're going for that next 5 to 10 percent savings, building on things as technology changes. It's like lighting — it gets better all the time and the next generation is coming soon," Veldboom said. "And things get cheaper. The occupancy (light) sensors now are relatively inexpensive to do."

Help available

The state's utilities, required to reduce overall emissions,

have a variety of programs and rebates available to businesses.

Marcus Hendrickson, an Xcel account rep based in Manka-

to, says identifying energy efficiencies is now highly precise. Xcel works exclusively with Graphnet Inc., an energy data-mining and analysis firm in Cincinnati.

"They're very methodical. It's not a typical study where you do it and the consultant leaves and it sits on the shelf," Hendrickson says. "They look at how the client views and manages energy, and they put benchmarks on that and set goals for how they want to manage energy in the future."

Chandan Rao, president of Graphnet, says projects like the one he did with Brown Printing require commitment.

"We help them establish a long-term sustainable energy conservation plan. It's not a one-time thing," Rao said. "We design something management can buy into and something that can be tracked properly and makes people accountable."

Braunshausen says employee buy-in is a must. "All of our employees need to be recognized for getting involved and educated. Whether it's just turning off lights or giving suggestions on better ways to do things, they're all involved."

Rao, a graduate of IIT Mumbai, India, and the University

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State program helps businesses

Jill Curran, program manager of the Minnesota Chamber of Commerce program Energy Smart, said that in spite of increased interest in energy savings, investments have not been quick.

"The upgrades are slow. It's the economy," Curran says.

"A lot of businesses are very interested, but in the same breath they're saying 'Where can I get money?'"

Curran said rebate money from utilities and federal stimulus money is coming down the pipeline via the Department of Energy and the state Office of Energy Security.

"It's a complex process (getting the money). There are grants and low-interest loans out, there but it takes a lot to get it."

Chandan Rao, president of Graphnet, an Ohio-based energy efficiency consulting firm, says many of the industries he deals with will spend money on energy savings — just not right now.

"Most are holding off until the first quarter. They don't seem to have a cash problem, they're just waiting because the slowdown has forced them to cut labor costs. They don't want to send the wrong message to employees that they're cutting people while investing in other things," Rao said.

"Overall, I think the interest in energy conservation is increasing because of the stimulus spending," he said.

The Energy Smart program (www.mnenergysmart.com) is marking its first anniversary and has contacted 4,000 Minnesota businesses, Curran said.

The program is funded by customer fees paid to utilities and through the Conservation Improvement Program. Curran's staff starts by walking through a workplace looking for the low hanging fruit of wasted energy. No business is too small or too large for a review.

"We're letting businesses know what they can do now that doesn't cost them a lot," she says.

Putting in LED exit lights cost \$4 a year to operate compared to \$25 year for standard bulbs. Light sensors keep rooms dark when no one is in them.

And programmable thermostats are a quick fix. "You'd be surprised how many businesses don't have them. They have to turn the heat or air conditioning down on weekends or nights but forget to."

"Even with the economy, there's still things you

Financial help for businesses

Environmental Assistance Loan Program

- The state program is accepting applications through June 30, 2011.
- Request for Proposal and forms: <http://www.pca.state.mn.us/grants/ealoans.html>

Two types of loans:

Participatory loans allow for awards with a maximum of \$100,000 at zero percent interest.

Direct loans allow for awards up to \$50,000 at four percent interest or one-half the prime rate, whichever is greater.

- Preference given to small and medium-sized businesses and institutions and to projects related to pollution prevention, source reduction, recycling, and source-separated composting and practices in Minnesota.

Environmental Improvement Loan Program

- The MPCA program provides low-interest loans to small businesses to finance environmental projects such as capital equipment upgrades that meet or exceed environmental regulations, and costs associated with the investigation and cleanup of contaminated sites.

■ pca.state.mn.us/programs/sbomb_loan.html#contact

General terms:

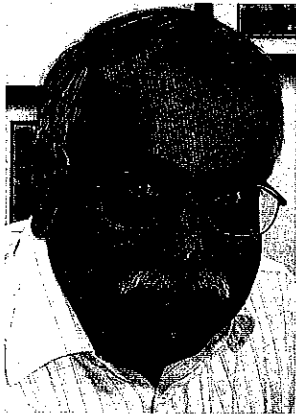
A loan amount not less than \$1,000 or more than \$50,000
Interest rate of four percent or one-half the prime rate, whichever is greater

A repayment term of not more than seven years

- Collateral

Source: MPCA

J. Malmanger



Chandan Rao,
president of Graphet



Jack Johnson,
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of Illinois at Urbana, has a long history working in the energy industry, including at a large utility.

Most industries, he said, are comfortable with a two- to four-year payback on energy-reducing equipment or upgrades.

"But there are other reasons (to invest). It can improve efficiency, reliability and other things. They don't just do it for return on investment; it's a strategic business investment."

Rao said making sure that investment makes sense requires solid data.

"It's a very methodical review. I think we excel at the amount of energy data that's collected and how to make sense of it. I think that's why Xcel chose us."

Brown's savings

One of Brown's big retrofits — which reduce natural gas use and air pollution — was replacement of their old inefficient oxidizers with regenerative thermal oxidizers. The oxidizers clean the emissions coming from all the presses before being emitted into the air.

The old oxidizers used natural gas to burn volatiles. The new oxidizers ignite the volatiles themselves — in effect using them as fuel to burn themselves up.

Center Point provided Brown rebates of \$170,000 for replacing all three of its oxidizers. And the project saves Brown more than 500,000 therms per year — more than \$200,000 in gas savings. The gas savings is equal to that needed for 500 homes.

"The thermal oxidizers are new high technology," Johnson said. "We're among some of the first industries in the nation to use these."

The 52-year-old Brown Printing, with 733 employees, also puts virtually nothing

into the landfill. They recycle 97.5 percent of the scrap papers they produce with the rest being burned as fuel in the Wilmarth power plant in Mankato.

The sprawling facility brims with high-tech robotic technology. Automated vehicles stream around the plant, picking up pallets of magazines from the presses when summoned by computer, then delivering them to a fully automated warehouse where they are placed in one of 13,248 storage spaces.

"They do everything themselves," Johnson says of the vehicles. "When their batteries run low, they go to a room where new batteries are put in automatically. If they get sick, they just pull off the line and park and alert maintenance to come look at them."

Brown Printing is owned by a German company and has smaller sister facilities in Pennsylvania and Illinois.

Brown Printing recently became an Energy Star partner, a voluntary program through the federal Environmental Protection Agency.

"Energy Star is an extension of what we've done," Johnson

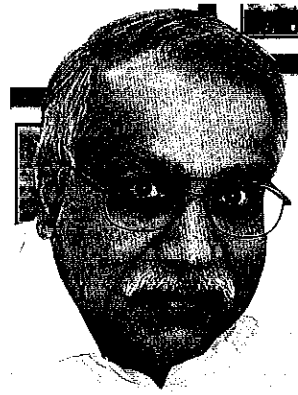
Cover Story

Energy needs to soar

Demand for energy resources will rise dramatically over the next 25 years:

- Global demand for all energy sources is forecast to grow by 57 percent over the next 25 years.
- U.S. demand for all types of energy is expected to increase by 31 percent within 25 years.
- By 2030, 56 percent of the world's energy use will be in Asia.
- Electricity demand in the U.S. will grow by at least 40 percent by 2032.
- New power generation equal to nearly 300 (1,000MW) power plants will be needed to meet electricity demand by 2030.
- Currently, 50 percent of U.S. electrical generation relies on coal, a fossil fuel; while 85 percent of U.S. greenhouse gas emissions result from energy-consuming activities supported by fossil fuels.
- Minnesota's commercial and residential buildings consume 68 percent of the natural gas and 47 percent of the electricity used in the state.
- The payback for a new green office building, designed to be about 30 percent more efficient than required by Minnesota's energy code, ranges from 1-3 years.

A 200,000 square foot building realizes annual savings of \$50,000-100,000.



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When an older press (left) is not in use, all power to it and lighting near it are shut down.

said. "It's trying to bring to a national level the kinds of programs we have in Minnesota."

Rao said Minnesota stacks up well in its efforts. "It's in the top five in the country in helping businesses that want to make energy savings investments. They are much more effective in what they do than other states."

Little things add up

Rao says that even if companies don't work with an energy consultant, there are things any business can do.

"The top three things to look at are lighting, compressed air loss and processed heating and cooling," Rao says.

Compressed air systems, used to power a wide variety of equipment in industries, are usually losing air at various points in the building. The average loss is about 20 percent.

Processed heating and cooling costs relate to the energy used to heat certain machines or processes, such as the heat needed to melt a plastic or get a paint to adhere, and then the costs to cool down the same machines.

"In a lot of cases the processes are heated more than they

need to be and then they have to be cooled more," Rao said.

For small businesses that are not running 24/7, Rao said managers and owners should look at things that can be shut down when not in use, including lights, machinery and computers.

"Sometimes, it's good to bring all your employees in on Sunday morning and show them all the things that are running that don't need to be." *MV*

