

Inside...

- New energy efficiency guide for dairy processors
- NPPR offers challenge program for industry
- Chemical coaters to host expo and symposium
- Interns can help with waste and energy projects
- Materials Exchange gets a facelift

Team at Bongards' reduces costs by \$355,000

Bongards' Creameries, a cooperative owned by Minnesota dairy farmers, has two facilities in the state and one in Tennessee. The company produces natural cheese, processed cheese, and whey products for a variety of clients.

In 2003, Bongards' purchased the cheese and whey processing facility in Perham. Over the next two years, the plant was scaled up for increased production. At that time, Bongards' management realized the amount of water going to the wastewater treatment ponds on-site could potentially exceed the design and permit limits of the ponds.

At the time, MnTAP was working with a pollution prevention and water reduction team at the other Bongards' facility in Minnesota. Therefore, management requested that MnTAP help form a pollution prevention and water reduction team at the Perham facility.

Water Conservation Solutions

Once the team members analyzed the process in the towers, where whey is squeezed out of the cheese curds, they determined that a water recycling system could be designed to replace half of the well water with discharge water from

one of the ultra-filtration units in the plant. This resulted in a reduction of 34,500 gallons per day of well water that was pumped into the plant and then discharged to the ponds. A further reduction in water use occurred by replacing the well water makeup for the cooling tower with readily available condensate water from the whey evaporation process. This modification reduced well water use by an additional 34,500 gallons per day.

The team members also investigated the automated clean-in-place (CIP) programs of each individual circuit throughout the facility to see if they needed to be reprogrammed to more efficiently meet the cleaning needs of current production practices and products. By making some changes, the facility was able to better match the lengths and chemical concentrations of the outdated CIP cycles to current cleaning needs and able to extend the number of hours in production runs, further reducing the required number of daily CIP cycles. All of these changes resulted in a combined savings of \$39,200 in cleaning chemical costs.

see BONGARDS' page 2

MnTAP completes Phase I of energy project, starts Phase II

In working toward Minnesota's statewide energy goals, MnTAP delivered a full package of industrial energy efficiency resources to assist business and industry with implementation of energy efficient technologies and practices aimed at achieving energy and cost savings. Phase I of this project, funded by the U.S. Department of Energy (DOE) and in partnership with the Minnesota Department of Energy Resources, began in 2010 and included system specific training and assessments, intern and technical assistance, technology demonstrations, and implementation assistance. MnTAP has recently begun working on Phase II of the project, made possible through additional funding from the U.S. DOE through the State Energy Office.

Results from Phase I have been promising and indicate the businesses participating in the project have begun to

implement improvements and realize energy and cost savings. In Phase II, MnTAP will continue to focus on assisting Phase I companies with implementation while working with additional companies to engage them in the project activities: trainings, assessments, and technology demonstrations.

Trainings

During Phase I, MnTAP delivered three DOE training workshops on compressed air systems, steam systems, and fan systems. Each workshop was delivered by DOE qualified trainers and reached 114 individuals from nearly 40 companies statewide. The trainings were held in the Twin Cities, central Minnesota, and SE Minnesota.

see DOE PROJECT page 3

Route:

- health and safety
- maintenance
- owner/president
- process engineer
- purchasing

Team at dairy processing facility saves money

BONGARDS' from page 1

Product Loss Reductions

Ingredient and product losses are a great concern in dairy facilities. These losses increase production costs and contribute to wastewater treatment costs. The team addressed three areas where ingredient and product losses were occurring.

Receiving, the entry point for milk coming into the plant was addressed because it had been observed that a significant amount of ingredient loss was occurring at that location. The design of the tankers made it impossible for all of the residual milk to be emptied from the trucks prior to washing and any remaining milk was sent down the drain. The team members installed a cream saver system in the intake bays that allows drivers to use a small amount of water to burst rinse any remaining milk in the trucks to the discharge pump.

In the cook room, where the cheese-making process begins, milk flows from the pasteurizer to the first cheese vat through the piping system and pushes out any water leftover by the previous CIP cycle. Visual monitoring of this process often resulted in water entering the cheese vat or in milk being sent to the drain. A photo optic sensor was installed that more accurately prevents water from being sent to the cheese vat and milk from being sent to the drain.

Finally, the team also initiated a system in which operators are provided with an intercom system and two-way radios to allow for direct contact with each other. Doing so has increased communication and resulted in less employee errors.

Energy Conservation

The team discovered that at 170°F, the evaporator condensate from the first effect could be run through a back-up heat exchanger to preheat whey on its way to the primary heat exchanger. Following this change, the whey left the back-up heat exchanger at 157°F, thus eliminating the need for live steam at the primary heat exchanger. This project resulted in an annual energy savings of 83,000 therms and \$100,000.

An approach the team investigated was to concentrate raw materials by reducing the amount of water in the material. First, Bongards' installed a nanofiltration membrane to concentrate the procream prior to drying to lessen the load on the dryer and resulted in annual energy savings of 73,077 therms and \$95,000. Next, the team determined how to concentrate the raw milk soon after it entered the plant, thereby removing the whey from the cheese manufacturing process and reducing the energy load on the equipment by over 2 million kWh, saving over \$100,000 annually.

Team Results

By 2009, production had increased by 300,000 pounds of milk per day, while water and energy use has decreased substantially. The facility reduced their water use by 200,000 gallons per day and energy use by 2 million kWh and 167,000 therms annually. Overall, the company is saving approximately \$355,000 annually and, in 2009, qualified for a rebate from Otter Tail Power of nearly \$300,000 for the raw milk concentration project. ■

New energy efficiency guide available for dairy processing facilities

Thanks to the nation-wide ENERGY STAR program, the dairy processing industry has new resources available to help reduce energy use and costs. These resources have been developed through the ENERGY STAR Challenge for Industry program. This voluntary national call-to-action program is partnering with the International Dairy Foods Association to provide information on improving the energy efficiency of the industry by 10% or more. Among the assistance tools being developed for this challenge is a new energy efficiency guide, "Energy Efficiency Improvement and Cost Saving Opportunities for the Dairy Processing Industry".

This guide provides plant and energy managers with a summary of the current state of knowledge on energy use and energy efficiency in the dairy processing industry. Written by energy professionals at Lawrence Berkeley

National Laboratory, it is based on proven energy efficiency technologies and practices that have been assessed in the U.S. and abroad and reviewed by industry professionals.

Facility engineers can use the guide as a checklist for building an energy management program or to learn about energy efficiency opportunities that may be available. The guide is online at <www.energystar.gov/index.cfm?c=in_focus.bus_dairy_processing>.

MnTAP staff members are available to help dairy processing facilities identify and address efficiency challenges including energy use. Contact Paul Pagel (612.624.4638 or ppagel@umn.edu) or John Polanski (612.624.4619 or polan001@umn.edu) for assistance. ■

MnTAP offers DOE energy efficiency resources

DOE PROJECT from page 1

Currently, Phase II is in the planning stages for coordinating a DOE training that will be held in the first quarter of 2012. MnTAP is currently soliciting feedback and input from interested companies.

Assessments

In 2010 and 2011 as part of Phase I, MnTAP organized 24 energy efficiency assessments by contracting with DOE qualified specialists as well as the Center for Energy and the Environment (CEE) and the Iowa State University Industrial Assessment Center (ISU-IAC). The assessments covered a wide variety of industry sectors, but were system specific focusing on compressed air, steam, and fan systems as well as lighting and HVAC.

MnTAP anticipates offering up to nine assessments for Phase II. Companies will be selected for the assessments, which are offered at no cost to the company, shortly after January 1, 2012. MnTAP staff members are currently recruiting companies interested in assessments.

Demonstrations

Three technology demonstrations were held during Phase I to highlight energy saving technologies that facilities could implement. The technology demonstrations highlighted technologies related to compressed air systems, cogeneration, steam system improvements, and low temperature conversion coatings. The companies that hosted the technology demonstrations were Donaldson Company, Rock-Tenn Company, and Tennant Company.

For Phase II, MnTAP will coordinate a demonstration that will be held in Spring 2012. The topic and location has yet to be

determined. Please consider participating in Phase II if you are interested in showcasing an energy efficiency technology at your facility.

Phase II

MnTAP is continuing to work with Phase I companies to assist with implementation of opportunities identified during the assessments, training, and intern projects. In addition, building on the success of Phase I, MnTAP and the State Energy Office, with funding from the Department of Energy are offering a second phase of the industrial energy efficiency program. Through this one year project MnTAP will develop industrial energy efficiency resources to assist industrial facilities reduce energy use. As part of this project MnTAP will offer:

- Department of Energy Training
- System Specific Assessments
- Technology Demonstration

We are currently recruiting companies to participate in this project. If you would like more information on how to participate or would like to receive project results, please contact Sarah Haas at haasx132@umn.edu or 612.624.5119.

Phase I was made possible by a grant from the U.S. Department of Energy and the Minnesota Department of Commerce through the American Recovery and Reinvestment Act of 2009 (ARRA). ■

Consider an Intern for Implementation

Companies that participated in any of the activities from Phase I of this project may apply for a Summer 2012 intern through the MnTAP intern program.

A MnTAP intern may be able to provide the necessary staff time and research needed to move your energy efficiency project forward. If you are interested in discussing the potential for an intern, please contact Krysta Larson, MnTAP intern coordinator, at 612.624.4697.

Phase I Project Results

	Potential MMBtu	Implemented MMBtu	Percent Implemented	Potential Cost Savings	Actual Cost Savings
Compressed Air Assessments	17,027	2,066	12%	\$232,711	\$49,478
Steam Assessments	52,281	51,432	98%	\$581,176	\$415,782
Fan Assessments	295,180	0	0%	\$6,623,355	\$0
Technical Assistance & Intern	28,700	2,956			\$66,335
Lighting and HVAC Assessments	6,802	1,083	16%	\$124,175	\$13,100
Total	399,990	57,537	14%	\$7,561,417	\$544,695

NPPR offers challenge program for industry

More than ever before, companies are focused on achieving high levels of environmental performance through sustainable business practices. Incorporating sustainable practices into business operations can create significant value to the company such as process improvements, cost reductions, employee retention, new market opportunities, and a stronger competitive position in the global marketplace. Moving toward safer chemistries in the products they manufacture

and consume is a key part of sustainable business practices. It is also a way to stay ahead of the curve as the chemicals regulatory landscape changes.

The National Pollution Prevention Roundtable (NPPR) has launched a new initiative to motivate, challenge, assist, and reward companies to reduce the use of hazardous chemicals through source reduction measures and finding safer alternatives. The 2025 Safer Chemistry Challenge

Program (SCCP) is designed to be customized for every company that participates and rewards companies for reducing the use of at least five chemicals of concern to the environment and human health. The chemicals to be reduced are selected by each company based on their own internal priorities, industry sector needs, or federal and state identified concerns.

Companies that participate will be asked to reduce their use of hazardous and toxic chemicals by

- Selecting and using safe alternatives, such as benign or low toxicity materials or those that degrade into innocuous substances
- Moving toward cleaner processes, including adopting greener, more sustainable technologies
- Using green chemistry tools and designs that avoid the use and generation of toxic chemicals

As part of this program, companies are encouraged to partner with state and local technical assistance programs, such as MnTAP. The SCCP offers a unique opportunity for public and private sector collaboration with the end result of a cleaner environment, improved corporate image, new market opportunities, and enhanced competitive advantage.

Additional information and resources can be found at <www.p2.org/challenge>. ■

Consider an Intern for a Green Chemistry Project

Are you feeling the pressure of global demand for safer products? Many companies have begun developing goals and ideas for redesigning product chemistries, but are still wondering how to meet those goals.

A MnTAP intern may be able to provide a fresh viewpoint to help your company work towards using safer and greener product chemistries. All proprietary company information is kept confidential by MnTAP. Enforceable nondisclosure agreements are a key part of intern projects, so you can rest assured confidential information is secure.

If you are interested in discussing the potential for a product design or chemical alternative project, please call MnTAP Director Laura Babcock at 612.624.4678.

Minnesota Green Chemistry Forum to host second annual conference

Green Chemistry is the design, development and implementation of chemical products and processes that reduce or eliminate the use and generation of substances hazardous to human health and the environment. An important aspect of green chemistry is the design of chemical products to be fully effective, yet have little or no toxicity.

The sector holds promise for creating new economic opportunities, while protecting public health and the environment. About 4.2 million jobs in the U.S. are directly or indirectly linked to chemical production. A growing sector of the chemical industry is using greener chemistry to reduce risks while making quality, effective products. This sector is alive and growing in Minnesota. A conference on January 26, *Minnesota Green Chemistry 2012: Strategies for Growth*, will explore how we can reap the benefits of green chemistry by promoting a healthy business environment for green chemistry in Minnesota.

The conference will feature two keynote speakers. Dr. Paul Anastas, one of the “fathers” of green chemistry and currently the Assistant Administrator for the

Office of Research and Development at the U.S. EPA, will give the morning keynote. Dr. Patrick Gruber will headline the afternoon; he’s the CEO of Gevo, a renewable chemicals and advanced biofuels company.

Additionally, the day will include four panels with experts from various sectors that will delve into some of the unique challenges and opportunities this industry faces. They include:

- Product Improvement through Green Chemistry
- The Green Product Value Chain
- Minnesota Grown to Minnesota Made—the Promise of Bio-Industrial Processing
- Growing Green Chemistry in Minnesota

Register for the conference online at <www.greenchemistrymn.org>. The Forum is committed to fostering a common understanding among businesses, government, non-governmental organizations and academia to advance green chemistry practice and policy in Minnesota and nationally. ■

Chemical coaters to host expo and symposium



Learn about opportunities to improve the efficiency of your industrial finishing operations while maximizing investment returns by attending the Minnesota Paint and Powder Coating Expo '12, scheduled for March 15, 2012.

The Twin Cities Chapter of the Chemical Coaters Association International (CCAI) is hosting the 8th Minnesota Paint and Powder Coating Expo at Century College in White Bear Lake.

The Expo will include a vendor show, hands-on demonstrations and technical seminars. At the last Expo, over 400 participants attended technical seminars given by 30 industry experts and a vendor show featuring over 50 exhibitors.

The technical seminars at the 2012 Expo will feature information about pretreatment, process improvements, and speciality topics. To date, over 35 vendors have signed on to

attend and feature paint and powder application equipment, as well as pretreatment, cleaning, and curing systems.

Also make plans to attend the CCAI Annual Symposium, *Best Practices in Finishing*, on March 14, 2012. This day-long symposium led by Nick Liberto, president of Powder Coating Consultants, will feature:

- Process improvements for liquid and powder coating systems
- Troubleshooting solutions
- Methods to increase efficiencies
- Ways to understand and reduce finishing process costs.

Everyone involved with industrial finishing from facility presidents and paint line supervisors to painters and environmental officers will benefit from attending these events and obtaining essential information about improving the finishing process.

For more information, visit <www.ccatc.com/expo.htm> or call 320.230.6283. ■

Stormwater management news and updates from the MPCA

Industrial Stormwater Benchmark Monitoring

All permittees are required to begin benchmark monitoring one year after receiving industrial stormwater permit coverage. If a permittee was not able to collect a sample or there was not an offsite discharge during the monitoring interval, the permittee is still required to submit a Stormwater Monitoring Report form. Provide an explanation in the "If NO flow occurred during monitoring period, explain why" box and mail the form to the MPCA. The permittee is then required to collect a substitute sample during the next sampling interval. To learn more about monitoring requirements, visit Step 10: "Sample/monitor your stormwater" online at <www.pca.state.mn.us/tchya64>.

U of M Sampling Workshop

The University of Minnesota is holding another monitoring training workshop. This class is geared to permittees who are just starting to collect stormwater samples or who have just taken their first sample and want to improve their sampling techniques and results. The class will be held at the Dakota County SWCD/U of M Extension building, 4100 220th Street West, from 10:00 am-2:30 pm and the cost is: \$75; lunch is included. For more information or

to register, download the registration form online at <www.erosion.umn.edu/2011_12_13_registration_v2%5B1%5D.pdf>.

No Exposure Flyovers Continued

A new and efficient way for MPCA staff to conduct inspections of industrial facilities that need a stormwater permit is to include flyovers and aerial inspections. By noting facilities that are permitted for the No Exposure exclusion, but have open dumpsters, non-covered fueling stations or obvious sources of exposure of raw materials, staff are able to see non-compliance evidence in aerial photographs. To make sure your facility is in compliance, visit the Web site and review Step 2: Consider Certifying for No Exposure <www.pca.state.mn.us/pyria69>, which clearly states what is or is not considered No Exposure.

Program Contact Information

Web site: <www.pca.state.mn.us/industrialstormwater>

Email the Program: iswprogram.pca@state.mn.us

Stormwater hotline: 651.757.2119 or 800.657.3804 (non-metro only) ■

Interns can help with waste/energy projects

In a time when trimming costs has become an everyday concern for businesses, some companies in Minnesota have successfully lessened their expenses by increasing efficiencies and reducing energy use. What's more: these businesses were able to complete a number of projects without allocating current staff resources to them by hosting a MnTAP intern. The intern program helps businesses address an environmental or energy efficiency project and save money.

Each summer, six to eight highly qualified interns lead projects at businesses in Minnesota that range from identifying opportunities to reduce hazardous waste to investigating process energy efficiency opportunities. Participating companies appreciate the opportunity to work with a student and have one person on staff who is dedicated to projects that sometimes take a back seat to production projects.

In 2011, the interns not only focused on researching their solutions, but many were also able to start implementing solutions. In fact, four of the seven summer interns worked with their companies to implement projects that will cumulatively save over \$175,000 annually. In total, the interns' recommendations can save their companies over \$1.5 million and result in significant environmental reductions each year: 280,000 lbs solid waste, 258,000 lbs wastewater loading, 12.9 million gallons of water, 11 million kWh, and 373,000 therms.

Businesses interested in reducing waste and improving energy efficiency are encouraged to apply for an intern in 2012. Each



A MnTAP intern in 2011 worked at the wastewater treatment facility in Rogers and identified energy saving opportunities.

year, the interns are chosen based upon their outstanding educational background as well as their leadership abilities

Apply Today!

Project proposals are being accepted by MnTAP and are due by February 1, 2012. Proposed projects are evaluated for reduction potential, specific goals achievable in three months, repetition of previous projects, application of results to other Minnesota businesses, and company interest and commitment. Projects should focus on identifying specific options for reducing wastes and increasing energy efficiency. For more information about the program or the application process, visit MnTAP's Web site or contact Krysta Larson at MnTAP at 612.624.4697 or 800.247.0015. ■

New projects at MnTAP focus on organics and emission reductions

MnTAP has recently begun two new grant-funded projects. Both are funded by the U.S. EPA Region 5 and focused on identifying opportunities for businesses to reduce waste and save money. A short description of each project along with contact information is included in this article.

Reducing Styrene Emissions from FRP Shops

MnTAP, as a contractor with the Composite Material Technology Center (COMTEC) on a grant awarded to the MPCA, will work with fiber reinforced plastics and composites facilities to help them reduce styrene emissions through technology demonstrations, plant pilots, and adoption of styrene-free resins and metering systems. The overall goal of the project is to reduce statewide styrene emissions in FRP firms by at least 5%. For more information

about this project or how to participate, contact Jeff Becker at beck0254@umn.edu or 612.624.4633.

Creating a Model for Event Center Food Waste Reduction

MnTAP staff members are providing assistance to event centers in Dakota County with the goal of reducing overall food waste generated and improving reuse/disposal of any remaining food waste. This project will demonstrate how a food waste management program can help reduce the amount of food waste generated and provide value-added reuse opportunities for the food waste that remains. The results of this study will be shared with other food generating entities in Minnesota. For information on the project, contact Sarah Haas at haasx132@umn.edu or 612.624.5119. ■

Materials Exchange



The Minnesota Materials Exchange program lists one company's unwanted material and makes it available for use by another company. For more information, call MnTAP at 612.624.1300 or 800.247.0015.

A New Look

The Minnesota Materials Exchange has a new site! At the core, the new site maintains the key exchange service which is a virtual warehouse that facilitates the exchange of usable goods among the Minnesota business community. The new site has been designed to be more user friendly and reduce the time required to post or search for listings. In this issue of the *Source* newsletter we'd like to highlight some of the new features of the exchange. While the site is brand new, the location remains the same: <www.mnexchange.org>.

Everything Starts When you Create Your Account!

Start your reuse journey by logging on to the Materials Exchange. If you are a returning user, choose 'Login' under the left navigation 'Members' area. If you are a new user, you can create an account from the homepage.

We now offer two types of free accounts: a personal account or an organization account. Currently, most members will use the personal account. However, the organization account is a new feature that will be highlighted in the Materials Exchange column of the next *Source* newsletter due out in April 2012.

Start Exchanging Items

Once you have logged in, you will be able to see and post listings. Use the left navigation menus to move through the exchange. Also, please use the user guide <www.mnexchange.org/content/documents/user_guide.pdf>.

Set up your Alerts

To be notified by email when there are new listings on the exchange, you can subscribe to receive alerts when a new item is listed in a particular category you are interested in or for all categories. To sign up for alerts:

- Log In
- Click on 'My Account' and then the 'Alerts' tab.

- Select 'add a new alert' in the upper right corner
- Select categories you'd like receive alerts for

For more detailed instructions view the alert tutorial at <www.iwastenotsystems.com/tutorials/alerts_ind_exch.pdf>.

Businesses: List your Events

If you are a city, county, association, or business hosting a reuse, recycling, or waste reduction event, you can now advertise your event on the Materials Exchange Web site. To list an event:

- Visit <www.mnexchange.org/exchange>
- Click on 'My Listing' on the left navigation bar under 'Members'
- Select 'Create a Listing'
- You will be prompted to log in if you are not already logged in to the system
- Choose 'Create an Event Listing' from the 'Step 1' list of options
- Fill out the form with the details of your event

You will then be able to preview and submit your listing. All event listings require approval by MnTAP. This process can take up to two days. The event will automatically be removed from the calendar after the event occurs.

Businesses: List your Services

The Directories is a contact list of recyclers and reuse charities in the Minnesota area. The purpose of this feature is to provide resources to Materials Exchange users on options for disposing of items if they don't fit the Exchange guidelines or are not exchanged through the Web site. This directory is populated by self-registry of Minnesota businesses and is in the early development stages. To add your business to this directory:

- Visit <www.mnexchange.org/exchange>
- Click on 'My Company' on left navigation under 'Members'
- If you are not logged in, you will be prompted to log in and/or create an account (if you don't have one)
- Once you on your company screen, choose 'Subscriptions'
- Fill out the request to be added to the directory, once approved you will see your organization listed.

Ask your Questions?

E-mail mnexchange@umn.edu or call Sarah Haas at 612.624.1300. ■

Minnesota Technical Assistance Program

McNamara Alumni Center • University of Minnesota
200 Oak Street SE • Suite 350 • Minneapolis, MN • 55455-2008

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MINNESOTA TECHNICAL ASSISTANCE PROGRAM

UNIVERSITY OF MINNESOTA

The Minnesota Technical Assistance Program (MnTAP) helps businesses and industries develop and implement industry-tailored solutions that maximize resource efficiency, prevent pollution and reduce costs and energy use to improve public health and the environment. As an outreach program at the University of Minnesota, MnTAP provides free technical assistance tailored to individual businesses. By reducing waste and increasing efficiency, companies save on disposal and raw-material costs and make working conditions healthier and safer for employees.

MnTAP is funded primarily by the Minnesota Pollution Control Agency's Prevention and Assistance Division and is located at the University of Minnesota in the School of Public Health, Division of Environmental Health Sciences. The University's mission, carried out on multiple campuses and throughout the state, is threefold: research and discovery, teaching and learning, and outreach and public service.

The University of Minnesota shall provide equal access to and opportunity in its programs, facilities, and employment without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression.



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Calendar

January 26, 2012. **Minnesota Green Chemistry Conference 2012: Strategies for Growth.**

This conference will explore how we can reap the benefits of green chemistry by promoting a healthy business environment for green chemistry here in Minnesota. Keynote speakers include Dr. Paul Anastas, Assistant Administrator for the Office of Research and Development Science Advisor to the EPA, and Pat Gruber, Chief Executive Officer of Gevo. *Event sponsored by IATP, University of Minnesota Center for Sustainable Polymers, University of Minnesota Center for Science, Technology and Public Policy and the Minnesota Green Chemistry Forum.* Register online: <www.greenchemistrymn.org>

February 21, 2012. **2012 State of Manufacturing.** 4:00 – 6:30 p.m. Minneapolis Convention Center. Enterprise Minnesota will release its fourth annual State of Manufacturing™ survey results on February 21, 2012. The State of Manufacturing™ is the largest and most comprehensive survey of Minnesota's manufacturers that reveals their perceptions and opinions on the economy and other major issues impacting business. Register online: <www.enterpriseminnesota.org/resources/state-of-manufacturing.html>.

April 12, 2012. **Manufacturer of the Year Awards.** 7:00 – 10:00 a.m. Wooddale Church, Eden Prairie. Now in its 16th year, the Manufacturers Alliance Annual Manufacturer of the Year awards ceremony brings local manufacturers together to celebrate and to recognize companies that share information and experiences to strengthen the Minnesota manufacturing community. Awards will be presented in three categories: companies with less than 100 employees; companies with 100 – 400 employees; and companies with 400-plus employees. More information: <www.mfrall.com/manufacturer-of-the-year>.

For more information, visit MnTAP's online calendar at <mntap.umn.edu/resources/cal.htm>.

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