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MANUFACTURING'S WAR ON WASTE

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BY IMPLEMENTING SUSTAINABLE MANUFACTURING PROCESSES, COMPANIES ACHIEVE GREATER EFFICIENCIES, ALL OF WHICH BENEFITS THE CONSUMER.

➤➤ In tough economic times, the need for increased productivity in manufacturing activities becomes much more urgent. In today's business climate, manufacturing companies need to be more efficient and productive in order to survive. And that means that management often has to make tough choices, such as shutting down operations for weeks at a time or scaling back workforce numbers.

Solutions to the challenges include the implementation of sustainable manufacturing practices and lean manufacturing practices to create efficiencies. And don't forget the importance of workforce training. Even though there has been a reduction in the number of manufacturing work-

ers, 80 percent of manufacturers face severe shortages of qualified people to perform today's manufacturing activities, according to a survey conducted by the National Association of Manufacturers.

For manufacturing companies in today's marketplace, survival comes down to recognizing opportunities to reduce waste, says Eric Mittelstadt, CEO, National Council for Advanced Manufacturing (NACFAM). People involved in all types of manufacturing activities, not just in the manufacture of renewable energy products, for example, need to understand the concepts of sustainable manufacturing.

Mittelstadt says sustainable manufacturing is similar to quality and lean

practices in that people on the factory floor need to understand the concepts to gain the maximum benefit of these initiatives. This serves two purposes, the ability to compete internationally and provide the American consumer the best possible product, at the lowest price and highest quality, while at the same time using the fewest resources.

By thinking from a process standpoint, about where there is waste in the process, there is an untapped gold mine in every company, says Jason Premo, co-owner and CEO, ADEX Machining Technologies, Greer, S.C. In 2007, his team purchased M.C. Tool and modernized it by applying lean manufacturing practices. The

team researched 34 companies in the Southeast before deciding on the operation in Greer, which is part of the Greenville metro area.

"You can do more with what you have; the company we purchased has a great workforce, and great customer relationships," Premo says. "We could do more; there was a lot of waste in the relationships.

says. "It teaches you a way to look at every single process and determine if what you are doing is value added or non-value added." The company has tripled its sales, with no capital investments, by leveraging the team and teaching lean tools. In fact, the company is searching for a new building because business and sales growth is physically beyond what

after conducting a thorough review of all front end process and making changes, the company was able to take a look at the shop floor's activities. Premo notes there is a lot of overlap during the review processes.

The goal was to ensure that the shop floor ran like a pit crew environment, where everyone had a specific role and was organized, as

PEOPLE INVOLVED IN ALL TYPES OF MANUFACTURING ACTIVITIES, NOT JUST IN THE MANUFACTURE OF RENEWABLE ENERGY PRODUCTS, FOR EXAMPLE, NEED TO UNDERSTAND THE CONCEPTS OF SUSTAINABLE MANUFACTURING.

Within a year's time, the company has increased from a 19-person machine shop running one shift to 60 employees, running 24/7. The company now focuses on niche work for the aerospace and defense industry, supplying high temperature and super alloy components and assemblies to these industries.

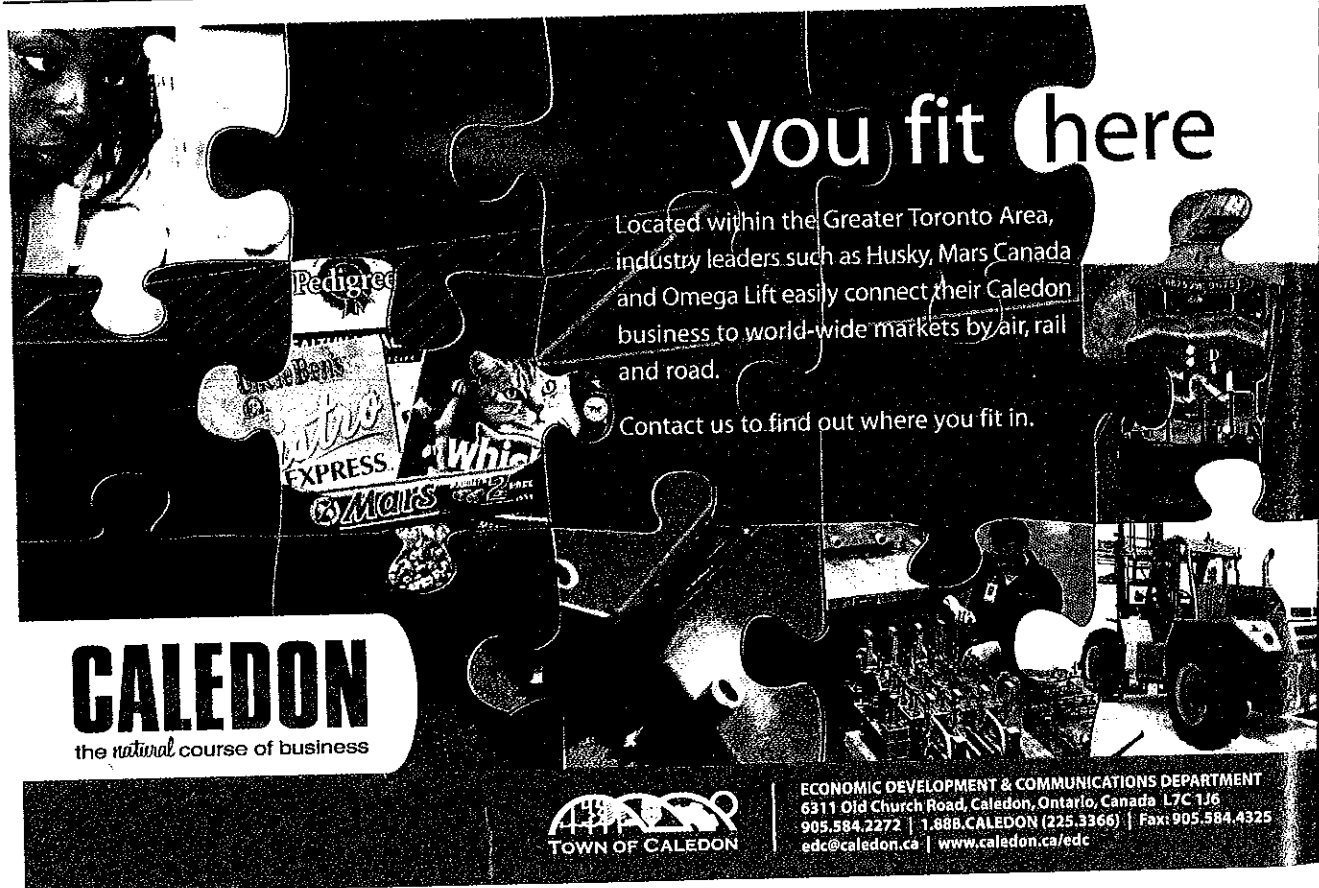
"Lean is a war on waste," Premo

can be done in the current facility.

And the return on implementing lean processes showed results when turning around quotes, to a day or days as opposed to the two, three or even four weeks it had been taking. The company began by reducing waste in the office, because the shop floor is the receiving end of many office problems. Within four months,

opposed to a driver getting out of the car, getting his own gas and finding four tires. That also meant that set up time was reduced from two to three hours to minutes, lowering the price to the customer while maintaining profits and helping customers be more competitive, Premo says.

Premo, who is a lean six sigma master black belt and can train his




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SUSTAINABLE SAVINGS

This year finds many of the nation's 350,000 manufacturers suffering similarly, with credit harder to obtain, says Eric Mittelstadt, CEO, National Council for Advanced Manufacturing (NACFAM). In addition, exports are not expected to grow nearly as fast as they have in previous years as the economic slowdown is reducing global demand for products.

There are bright spots. For instance, demand will not be reduced as much due to the economy for industries such as alternative energy and medical device manufacturing, Mittelstadt says.

"Companies will be spending time and effort trying to reduce costs and become more productive," Mittelstadt says. "Lean manufacturing techniques reduce cost and waste, and an initiative we have been active in is sustainable manufacturing." The efforts look into using less energy, water and raw materials to save money, meet regulations and become more effective.

NACFAM is taking a two-pronged approach to sustainability. First, it is helping its members to significantly reduce their resource usage and make the most savings the quickest way they can. As a result of the initiative, NACFAM has come to understand the policy and incentive changes that can be made at the federal level to overcome barriers that are not addressed by existing policy.

To learn more about sustainable manufacturing, visit www.nacfam.org.

leadership team, says that implementing lean manufacturing processes can be more of a challenge for smaller companies because they lack the resources. "That is why it is important to get internal training," Premo says. "There are great resources at the state level, such as Manufacturing Extension

Partnerships, which are funded by our tax dollars." MEPs are programs of the National Institute of Standards and Technology.

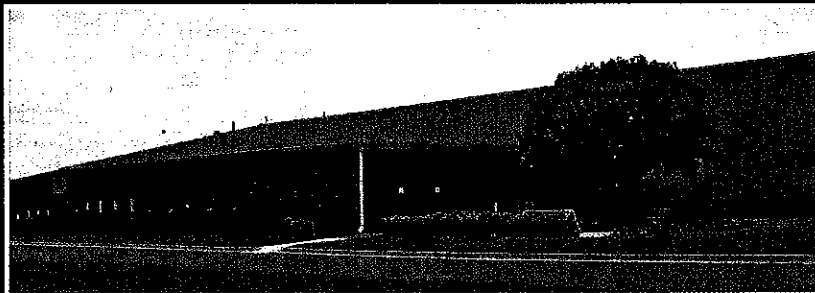
TAP INTO TRAINING FUNDS

TechHelp is an MEP serving the three state universities in Idaho, says Dave O'Connell, manufacturing

specialist based at Idaho State University in Pocatello. The organization works with manufacturers to implement lean manufacturing practices so they are operating efficiently, and more cost effectively, in order to compete in a global market.

"We are changing mindsets and changing habits," O'Connell says.

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BASED ON NUMBER OF
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2006 TO FIRST QUARTER 2007

STARTUPS

1. CALIFORNIA
2. TEXAS
3. FLORIDA
4. NEW YORK
5. MICHIGAN
6. ILLINOIS
7. WASHINGTON
8. GEORGIA
9. NORTH CAROLINA
10. OHIO

NEW BRANCHES

1. CALIFORNIA
2. TEXAS
3. FLORIDA
4. NEW YORK
5. OHIO
6. ILLINOIS
7. MICHIGAN
8. GEORGIA
9. PENNSYLVANIA
10. NORTH CAROLINA

EMPLOYMENT

1. CALIFORNIA
2. TEXAS
3. OHIO
4. NEW YORK
5. MICHIGAN
6. ILLINOIS
7. PENNSYLVANIA
8. NORTH CAROLINA
9. FLORIDA
10. INDIANA

DATA INCLUDES THE FOLLOWING SICs:

43-000	FOOD PRODUCTS
43-100	TOBACCO PRODUCTS
43-200	TEXTILE MILL PRODUCTS
43-300	APPAREL
43-400	LUMBER AND WOOD PRODUCTS
43-500	FURNITURE AND FIXTURES
43-600	PAPER PRODUCTS
43-700	PRINTING AND PUBLISHING
43-800	CHEMICALS AND ALLIED PRODUCTS
43-900	PETROLEUM REFINING AND RELATED
44-000	RUBBER AND PLASTIC PRODUCTS
44-100	LEATHER AND LEATHER PRODUCTS
44-200	STONE, CLAY, GLASS, AND CONCRETE PRODUCTS
44-300	PRIMARY METAL INDUSTRIES
44-400	FABRICATED METAL PRODUCTS
44-500	INDUSTRIAL AND COMMERCIAL MACHINERY AND COMPUTER EQUIPMENT
44-600	ELECTRONICS (EXCEPT COMPUTER EQUIPMENT)
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44-800	INSTRUMENTS
44-900	MISCELLANEOUS MANUFACTURING

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The MEP creates a value stream map, which is an overall view of the process and operation, which highlights where the problems or opportunities for improvement exists.

From there, Kaizans, or rapid change events, are created. At that point, the MEP conducts a project within the company so companies can apply the tools.

The key is to get rid of the waste. And sustainability practices come naturally with the value stream mapping process; however, sustainability has been a specific focus. "We are evolving into that," O'Connell says. "In fact, TechHelp is partnering with the Idaho Department of Environmental Quality and the EPA to do our first lean and green project and we are in the process of getting started with a company in Pocatello on a project."

TechHelp also assist companies in other ways. O'Connell says he is working with a company that wants to implement lean manufacturing practices; however, they have first time shop foreman, people who have not been in a leadership role before. TechHelp can refer the organization to the university's workforce training office, which can customize training to fit its specific needs. Additionally, the Idaho Department of Labor can provide funding assistance. "In that role we are the intermediary between the manufacturer and the state, and we help the manufacturer identify what training they need and help them with a proposal and application to the state," O'Connell says.

There are a variety of training programs in place to support manufacturers, says Gynii Gilliam, executive director, Bannock Development Corp., serving the Pocatello region. The Idaho State University's (ISU) College of Technology has received a federal grant to support an energy systems technology and education center in order to train renewable energy technicians. Pocatello is home to Hoku Materials, which is under construction with its polysilicon plant, products of which will be used in the solar energy industry. The company has moved into its engineering building. Another com-

pany, Nordic Windpower, was to begin production of wind turbines this month. Petersen Inc., a metal fabrication company, is manufacturing wind towers from the area.

In Minnesota, the University of Minnesota-Duluth Natural Resources Research Institute connected Iron Range Resources, a state agency supporting the 13,000 square miles of mining activity in northeast Minnesota, to a technology of Kobe Steel in Japan. The company produces iron nuggets, where 95 percent to 96 percent of the iron will be fed directly into the steelmaking process into electric arc furnaces, says Sandy Layman, commissioner, Iron Range Resources.

LOOK FOR FINANCIAL SOLUTIONS

Through state agency supports, and financial incentives, Kobe was attracted to Minnesota to build its pilot plant, Layman says. Kobe and Steel Dynamics are the sole owners of Mesabi Nugget, a \$265 million investment. Layman says her agency assisted in the land purchase, and in the build out of the plant. "We can provide loans, and in some cases, we can make equity investments in early-stage development of mineral-based businesses," Layman says.

Also in the Mesabi Iron Range region, Essar Steel is underway with a one-of-a-kind, fully integrated mining to steel operation, where its steel plant will be situated next to the mouth of a mine where ore is being mined. Essar, which purchased the assets of Minnesota Steel, is a global company based in India; Essar Steel is a subsidiary of the larger company. The project in Minnesota is part of Essar's North American strategy. The company has also purchased Algoma Steel in Canada where it will make flat rolled steel; the Minnesota plant will manufacture steel slabs, and the operations will be integral to each other.

Minnesota's Legislators recognized the affect the Essar operation would have on the state and passed in excess of \$60 million in public infrastructure funds to support the project. The county government will

also build a new rail line, as well as add new roadways and new gas pipelines, Layman notes.

Moving north to Canada, the R&D tax credit structure is one of the most competitive among the G7, says Norm Lingard with the Caledon (Ont.) Economic Development and Communications Department. The town is a northern suburb of Toronto.

Lingard says Caledon recently completed a competitive analysis to determine its economic development strengths and weaknesses. Its sectors of strength include industrial machinery, fabricated structural metal products, plastics and food and beverage products. "We also recognize we have work to do on the infrastructure side," Lingard says. "We have experienced a development boom the last couple of years, with vacancies ranging from smaller industrial multi condo type units to a facility available for lease that is 650,000 square feet."

Additionally, Caledon's council has approved Mayfield West, which is

360 acres of land, serviced directly by an interstate. "We are looking at employment land studies that could probably see 1,000 acres come on line in the next couple of years," Lingard says.

Caledon's manufacturing base meets on a regular basis with its peers in nearby Brampton. Lingard says the chamber will also establish an Economic Development Committee of Council, which will be

an opportunity to share ideas and map out strategies, which will include supporting the manufacturing sector.

When such strategies include more economical uses of resources in order to eliminate waste in the process, companies will thrive. "Companies have got to become more efficient and more productive in order to exist," notes NACFAM's Mittelstadt. ☒

CONTINUE
FOR COMPLETE DETAILS ON THE ORGANIZATIONS FEATURED IN THIS ARTICLE, VISIT:

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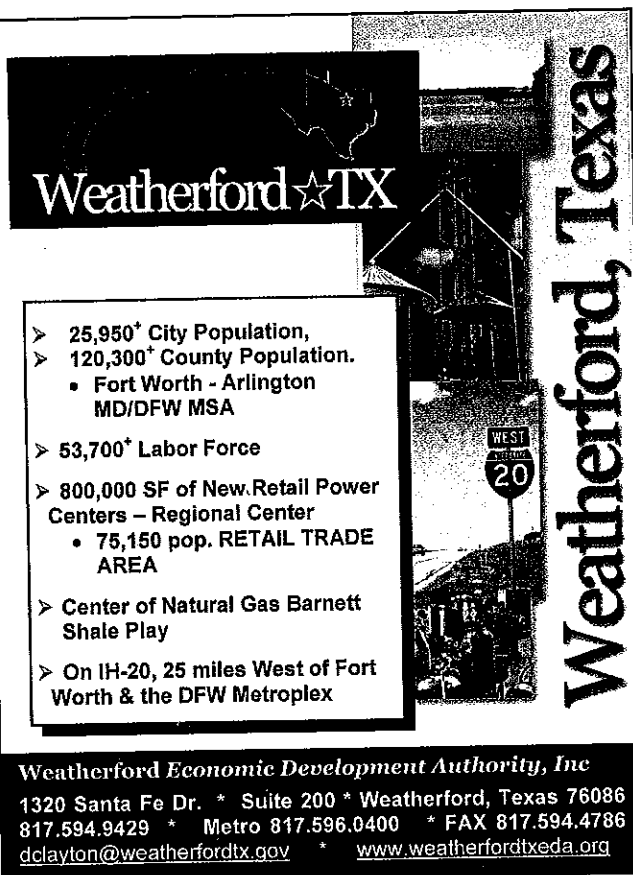
Iron Range Resources
www.ironrangeresources.org

Bannock (Pocatello, Idaho) Development Corp.
www.bannockdevelopment.org

National Council for Advanced Manufacturing
www.nacfam.org

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