



Employees Are Key to Hy-Capacity's Success

When James "SCRATCH" Olson founded Hy-Capacity, Inc., in 1978, he focused on his customers. A long-time mechanic who repaired agricultural equipment, he saw the business potential of remanufacturing tractor parts. He also knew firsthand that the success of any business requires customer satisfaction.

"Dad had a natural ability to take care of his customers," says Steve Olson, president of Hy-Capacity, headquartered in Humboldt, Iowa. "If there was a problem, he handled it and didn't point fingers. He believed in treating people right and treating them with respect."

Since assuming the role of president in the mid-90s, Steve Olson has overseen the continued growth of Hy-Capacity. Olson's daughter, Molly Varangkounh, serves as Hy-Capacity's vice president and his son, David Olson, is sales director.

The family-owned corporation specializes in the manufacture and remanufacture of tractor components, including agricultural clutches, water pumps, and torque amplifiers. It has more than 140 employees in Humboldt plus 45 sales representatives across the United States. Olson describes his role as moving the company forward with new products and opportunities.

Goal Is Continuous Growth

"I emphasize that we have not arrived," Olson says. "This is a continuous journey; we have to keep redefining who we are as a company and keep reaching and growing." The addition of five new product lines within the last year plus a \$2 million expansion project are indicators of Hy-Capacity's success.

The employees are key players in that success. "Our people are our greatest asset," says Cindy Danielson, general manager. "We empower them to have ownership. Everything is team driven whether it is something to do with the day-to-day operations or special projects such as the expansion."

Hy-Capacity also values family life and believes policies that support family strengthen the company, according to Danielson. Consequently the company does not run any night or weekend shifts. Some 45 of the employees have family ties at the company such as mother/son or sister/brother. "If you believe so much in our company that you want a family member to work here, that says something about us," Danielson explains.

A glance at the employee profile confirms that employees value Hy-Capacity as much as the company values them. The

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On the Cover: The 140 employees at Hy-Capacity in Humboldt, Iowa, manufacture and remanufacture tractor components, including agricultural clutches, water pumps, and torque amplifiers.

CIRAS Mission: *Every day we will enhance the performance of industry through applied research, education, and technical assistance.*

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average length of service is 12.5 years, and many have been with the company for 25–35 years.

Invest in Employees

Hy-Capacity's investment in its employees begins with a methodical interview and orientation process. The panel of interviewers includes a human resources person, an area supervisor, an internal manager, and, depending on the position, a member of upper management. There must be 100 percent agreement for someone to be hired.

Once hired, the new employee goes through an extensive orientation. No matter what the person's position, he or she spends two weeks in each department in order to gain a thorough understanding of the company. A buddy is also assigned to help each new employee learn about policies and activities. The employee will then participate in monthly training to learn more about Hy-Capacity's culture.

Hy-Capacity Turns to CIRAS First

Employees continue to participate in training and professional development activities throughout their careers. CIRAS is one of the primary sources for that training. Hy-Capacity first began working with CIRAS in 2002 when the company became interested in adopting lean manufacturing principles, according to Brenda Martin, CIRAS account manager.

"CIRAS is our first resource," says Danielson. "They are part of our culture and definitely part of our team. We would have eventually made it to where we are today on our own, but it would have been a much longer and more difficult path. We are very fortunate and thankful for all of the resources they have steered our way."

Training within Industry (TWI) is one of the programs Hy-Capacity values. Forty lead supervisors participated in the program led by Jeff Mohr, CIRAS project manager. Training within Industry consists of three core modules—job instruction, job methods, and job relations. Additional modules focus on job safety and problem solving. The goal is to teach supervisors the essential skills needed by people responsible for the work of others.

"We've received so much positive feedback from our supervisors," says Danielson. "They use it on the floor as a coaching tool. We recommend that all manufacturing companies try at least one TWI module in the area where they think they need it most. If they do, they will decide to use all of the modules."

Hy-Capacity also served as a pilot for the CIRAS Business Continuity Planning program. Mike O'Donnell, project manager, led development of the comprehensive plan designed for manufacturers. Business continuity planning is the process of ensuring that critical business functions are prepared to react to and recover from a disruption with a minimum amount of impact to the business.

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—Cindy Danielson,
Hy-Capacity General Manager



Hy-Capacity ships tractor parts across the United States, Mexico, and Canada.

“Hy-Capacity helped CIRAS develop this program,” says Martin. “It’s a win-win situation. They gave us feedback on how to make this program more effective, and we provided the guidance and expertise to help them develop a very comprehensive plan.”

Hy-Capacity has also utilized Iowa State senior capstone engineering students to support its continuous improvement in a variety of areas from plant layout to process improvements to product design. The interaction with the capstone students led Hy-Capacity to participate in the Iowa State College of Engineering career fair and the College of Agriculture and Life Sciences (CALs) career day—both for the first time. As a result, the company hired five interns and plans to attend the spring career fairs to interview engineering and CALs students for possible full-time positions.

Green Team Achieves Success

One of the ways Hy-Capacity empowers its employees is that everything is team driven. The company’s effort to go green is a prime example.

The Green Team, like all Hy-Capacity teams, included people from cross sections of all departments. “Lean manufacturing principles tell us that to successfully implement change you need to include everyone who is going to be affected by the change, upstream and downstream,” Olson says. “We had regular meetings and everyone brought in their ideas.”

The green initiative—to be good stewards of the environment—exceeded all expectations. Hy-Capacity became a zero-landfill company in 90 days. Prior to the initiative, Hy-Capacity sent a 40-cubic-foot container of refuse to the landfill each week at a cost of \$800–\$1,000. With the help of CIRAS and the Iowa Depart-

ment of Natural Resources, Olson says that just about everything that used to be thrown away is now given away or sold.

Hy-Capacity received several awards for its accomplishments, including the Governor’s Iowa Environmental Excellence Award, the Renew Rural Iowa Entrepreneur of the Month Award, and the Iowa Recycling Association’s Recycling Project/Facility of the Year.

The expansion project also reflects the green initiative. The 30,000-square-foot addition incorporates an energy-efficient geothermal heating and cooling system. “We want to be good citizens,” says Olson. “We did it because it saves on energy, it helps the environment, and it’s the right thing to do.”

Focus on the Future

While sales for Hy-Capacity have increased from \$6 million 15 years ago to \$25–\$28 million this year, Olson emphasizes that the company’s philosophy is continuous improvement. “You can never think you have the formula for success and sit on it,” he says. “We set measurable goals in each area because if you can measure it, you can improve it.”

The company continues to pursue new opportunities to aid in the continuous improvement process through CIRAS and other resources. One current focus area is the sales force. “CIRAS helped us in the production area, and now we want to do the same thing with our sales force by providing additional training and bringing in more resources,” Olson explains. “Increased sales will challenge the production area. It comes full circle so we will continually seek ways to meet and exceed the challenges in all of our areas.”

Team-Based Burke Corporation Focuses on Continuous Improvement

Ever wonder where the toppings from your pizza came from? Or how about the meat in a frozen enchilada? There's a good chance Burke Corporation of Nevada, Iowa, manufactured them.

The company has more than 35 years of experience in manufacturing and marketing fully cooked meats. Burke produces 1,600 different products that are used as ingredients in food items prepared by restaurants, food service establishments, and manufacturers of prepared foods such as frozen entrees and appetizers. Burke products are sold across the United States and also exported to Canada, Mexico, and several other countries.

Burke Strives for Continuous Improvement

Over the years, Burke has regularly updated its facilities, implemented new technologies, and introduced new product lines. The company has a long-standing commitment to its customers to provide a wholesome and safe product.

"We incorporate the continuous improvement philosophy in all aspects of our business," says David Weber, senior vice president. "Everything from purchasing to production to packaging. We constantly look for ways to improve what we are doing."

Burke has had a long-term relationship with CIRAS and Iowa State University Extension and Outreach, serving as a resource in helping the company achieve its goals. The interactions include participation in the Meat Science Extension short courses, training on sustainability-related topics, and research aimed at helping Burke enhance its performance.

The short courses provide basic meat science information. Experts from across the country are brought into the workshops to provide updates on food processing and food safety technologies. For people new to the meat processing industry, the short courses provide valuable information to help them understand and succeed in this industry, according to Weber. In addition, the company sends experienced employees to stay current with the many advances in the field.

Team Effort Reduces Water Usage

The company's water reduction initiative is a prime example of how Burke has moved forward in environmental sustainability. From 2009 to 2011, water usage was reduced by 39 million gallons and saved Burke more than \$750,000.



A Burke equipment operator inspects the bag seals of a five-pound bag from a line of Burke Pizza topping. Burke produces nearly 80,000 bags a day on their high-speed lines.

"It was a real team effort," Weber emphasizes. "Burke is a very team-based, employee-based organization. We get people from across all areas of the operation working together to determine the best ways to address a particular topic or goal."

In the case of water reduction, the team came up with ideas that improved the efficiency of water usage in the plant as well as engaged the employees in such a way that they changed their behavior and reduced water consumption.

To aid in this process, CIRAS provided Green 101 training that focuses on the basics of developing a sustainable business and Waste Stream Mapping training that targets ways to reduce or eliminate waste stream output.

In recognition of its sustainability achievements, Burke received the Governor's Iowa Environmental Excellence Award for Water Quality Improvements this past August and in 2010 was awarded the Hormel Sustainability Award.

CIRAS Provides Research Connection

Burke also turned to CIRAS to help it investigate ways to improve the seals on the plastic bags used to package meats. The food product is packaged in five-pound bags that are



sealed at the top and bottom. The bags are then packed in boxes and sent to the customers.

“We produce 80,000 of these bags every day,” explains Weber, “but we found that a handful of them would have an incomplete seal. Our goal is to have perfect bags every time.”

Weber put together a team to discuss how to approach this issue. The team included representatives from production, quality, and purchasing; John Roberts, CIRAS project manager; David Grewell, associate professor of agricultural and biosystems engineering; and the vendor, who provides the film used to make the bags.

Grewell’s research team first looked at the equipment to determine if something was adversely affecting the repeatability of the welding process. An issue with the welding heads led to an upgrade from the equipment manufacturer.

Next, Grewell’s group tested different materials in the lab to study what the optimum parameters (pressure, time, temperature) would be for sealing the bags. This is an ongoing project that will help Burke employees learn more about the materials they are using and understand what effect changing different parameters and materials has on welding performance.

While Grewell was studying the process in the lab, the vendor provided some new films. The Burke production line conducted trial runs using the new films, and one of them proved to be successful. “We just started rolling out the new bags,” says Weber, “so we don’t have a lot of data on it yet; but the customer is very happy.”

Research accomplishes much more than just resolving a particular issue, according to Roberts. “It is an opportunity for a company to learn more about their materials and how they are affected by various parameters. Down the road, they will be better prepared to address other issues that might arise.”

With Burke’s goal of continuous improvement, Weber sees an ongoing collaboration with CIRAS. “CIRAS provides a great technical resource to companies like ours,” Weber says. “They follow through and really supplement our efforts here at Burke. They are great partners in helping us achieve our goals.”



David Grewell, an associate professor in the Department of Agricultural and Biosystems Engineering, teaches courses focused on manufacturing with an emphasis on polymer processing including process optimization, troubleshooting, and

modeling. He also teaches graduate classes on heat flow, fluid dynamics, material modeling, and engineering fundamentals.

Grewell’s education and research interests combined with industry experience make him well suited to partner with CIRAS on research projects. After earning his BS in welding engineering with minors in biomedical engineering and polymer processing at The Ohio State University in 1989, Grewell worked for Branson Ultrasonics, a subsidiary of Emerson Electric, for 12 years.

Grewell then returned to Ohio State, where he earned his MS in 2002 and PhD in 2005. His research interests include joining of plastics, microfabrication, laser processing of materials, bioplastics, biofuels, and water purification. He holds 14 patents. Grewell joined the Iowa State faculty in 2005.

When John Roberts, CIRAS project manager, contacted Grewell to assist with a project for Burke Corporation in Nevada, Iowa, he was happy to participate. “Academia involves a lot of theoretical research, while working with industry gives me the opportunity to do applied research, that is, find a way to improve a process,” he says. “I enjoy being able to help industry, which will also hopefully have an impact on the Iowa economy.”

Interactions with industry also expand Grewell’s library of case studies that he uses in his manufacturing classes. Without revealing any confidential information, he provides students the pertinent details of a situation a company is attempting to address.

Grewell divides the class into thirds to tackle the issue. The purpose is for students to gain an appreciation for the different perspectives that need to be considered in examining problems. When addressing a materials issue, for example, he assigns one-third of the class to be the material supplier, one-third the equipment manufacturer, and one-third the actual manufacturer. “The students enjoy this; plus it’s a good learning experience for them,” Grewell says.

➤ **For more information, please contact John Roberts at 515-294-0932 or jarobert@iastate.edu.**

West Liberty Foods Is a Leader in Food Safety Training

West Liberty Foods, L.L.C., takes food safety training very seriously, and the company shares what it knows with the entire meat processing industry.

"We believe food safety is not proprietary," says Kristine Knobloch, training and development supervisor for West Liberty Foods (WLF). "West Liberty Foods' commitment to food safety benefits all consumers and companies in the industry."

Founded in 1996 by the Iowa Turkey Growers Cooperative, the company began its comprehensive food safety training effort in 2002. West Liberty Foods had just opened a second plant in Mt. Pleasant, Iowa, and wanted to develop a mandatory food safety training course for the employees.

Barbara Anderson, Families Extension Nutrition and Health Program specialist with Iowa State University Extension and Outreach in Ottumwa, was contacted. "Food safety is one of our program priorities," she says. "Our focus is generally working with the consumer and families directly.



Well-known for its focus on food safety, West Liberty Foods holds a patent for its innovative clean room food processing systems that reduce the risk of pathogens contaminating food products.

Because this concerned meat processing, I contacted Dr. Joseph Cordray, Meat Science Extension specialist, on campus."

From those initial calls, an eight-hour food safety course emerged. Cordray and his staff meet quarterly with Anderson and Knobloch, who coordinate the training sessions, to discuss the content and go over updates to the material.

A team approach is used in teaching the course, including a trainer from WLF and one from Families Extension or Agriculture and Natural Resources. The trainers go through a certification process with Cordray and the Families Extension staff. "We present to Dr. Cordray, and he gives us the thumbs up or thumbs down in regard to our ability to present the material accurately," Knobloch says. "And he gives us feedback on how we can improve our presentation."

The safety course is offered at least once weekly and sometimes more, depending on the demand. All new employees, no matter what their position with the company, are required to take it.

The training, which is presented in both English and Spanish, is much more than a lecture presentation, according to Anderson. It includes a lot of discussion, demonstrations, and hands-on activities.

One topic, for example, addresses hand washing. Participants put Glo Germ™ lotion on their hands and then wash them five different ways—cold water, cold water with soap, warm water, warm water with soap, and sanitizer. Using a black light, they can then see the results on their hands.

Another topic addresses the importance of having labels on containers. The students must try to identify similar-looking substances. They quickly discover that mistakes are easily made if items are not appropriately labeled.

At the end of the two-day course, the team members must pass an exam to

demonstrate their knowledge of the food safety material and their ability in applying it while working at WLF. They are then awarded continuing education units from Iowa State.

"One of the secondary benefits of the training is that the information transfers to home food safety practices," says Knobloch. "The team members leave training and are inspired to go home and clean out their refrigerators, sanitize their countertops, and throw out their sponges."

For Anderson, working with the West Liberty employees is a wonderful experience. "It's very rewarding to know that you are doing something that helps people get and keep a job. It makes a difference in their lives."

Recognizing the importance of food safety to the industry as a whole, WLF worked with Iowa State and the Meat Science Program to sponsor a Food-Safety Summit on campus in 2008. The training materials, including manual and PowerPoints developed for WLF, were revised to be generic and distributed to the summit participants.

"From a business perspective, you don't see companies willing to share materials that have helped them be successful very often," says Knobloch. "However, we feel so strongly about the importance of food safety that we wanted to share ours." The materials are now available just for the cost of printing.

Food safety isn't the only way WLF demonstrates its commitment to making the world a better place. Sean Galleger, CIRAS account manager, says the company has also focused efforts on being more sustainable. CIRAS has served as a resource, providing Green 101 training and Waste Stream Mapping as the company has sought out ways to be sustainable.

"Our top goal is for all three of our plants to be zero landfill," says Michele Boney, environmental compliance officer. The

Meat Science Extension Educates Industry

Meat Science Extension in the College of Agriculture and Life Sciences at Iowa State University is known worldwide for the educational outreach it provides. The program is renowned for its commitment to keep people in the industry informed about basic meat science and advances in food processing and food safety technologies.

Four public short courses attracting between 200 and 240 participants are offered each year. Dr. Joseph Cordray (Extension Meat Specialist), Matt Wenger (Meat Science Program Coordinator), and Jonathan Campbell (Meat Science Extension Associate) coordinate the courses, which serve as a vehicle for sharing scientific work being done in the Meat Laboratory at Iowa State with people working in the meat processing industry. Other experts are brought in to provide information about the latest technologies available.

Emeritus Professor and Extension Meat Specialist Robert Rust initiated the first short course—Sausage and Processed Meats—in 1979.

The week-long Sausage and Processed Meats course focuses on meat science

and the production of processed meats. Topics range from lectures on basic meat science to demonstrations of processing techniques. It is a hands-on course that features participants working in teams to formulate and manufacture a processed meat product.

Each of the other short courses—Cured Meats, Dry and Semi-Dried Sausage, and Basic Sausage—is three days in length. The information presented is updated each year to incorporate the latest research and discuss new technologies and equipment.

The short courses draw a diversified audience, according to Wenger. “We get everybody from research and development personnel to production supervisors to equipment manufacturers and ingredient suppliers. One of the big values of the courses is the interaction participants have with each other and with the speakers. It’s really a great networking opportunity.”

The Meat Science Extension Program also offers HACCP (Hazard Analysis and Critical Control Point) training—a proactive system used by processors to ensure the safe production of products—for meat, poultry, and egg plant employees.

The course is designed to review the HACCP philosophy and principles and discuss how to implement HACCP in plants. Upon completion, participants receive a certificate indicating they are HACCP-trained and their name is added to a registry of HACCP-trained individuals that is maintained by the International Meat and Poultry HACCP Alliance.

In cooperation with Families Extension, Cordray and his staff worked extensively with West Liberty Foods in the development and presentation of food safety training at the West Liberty Food Facilities in Mt. Pleasant. That training is ongoing (see article at left).

Meat Science Extension partners with CIRAS to provide applied research, education, and technical assistance to the meat processing industry throughout the state of Iowa. According to Dr. Joseph Cordray, “the partnership with CIRAS provides an added level of assistance. CIRAS provides expertise in productivity, growth services, and other areas of manufacturing that a company may need. CIRAS also provides scholarship assistance from Manufacturing Extension Partnership funds, allowing Iowa companies to send employees to processed meat short courses held at Iowa State.”

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company’s newest plant, located in Tremonton, Utah, is zero landfill with the official designation pending third-party certification. Meanwhile, the West Liberty and Mt. Pleasant facilities are making great strides toward zero landfill.

Paper, cardboard, and wood are all recycled. As a result, nearly 44,506 trees, 18 million gallons of water, and enough electricity to power 1,309 homes for a year have been saved.

Boney is currently looking for ways to recycle plastics from the plant. That is a challenge because the plastics used in meat processing get very dirty, so they must be cleaned before manufacturers will accept them for recycling. Boney has been consulting with CIRAS on how to clean plastics. A California company that may have the capability to do the job was recently identified by Boney. As research continues on this project, WLF will share their information with CIRAS to possibly assist other companies.

Other recyclables from the WLF plants include secondary grade meat that is sold to dog food companies and wastewater sludge that goes to the Amana Digester to produce energy. Items that cannot be recycled are composted.

Boney says the company is very proud of what they have already accomplished in their sustainability efforts, but they are continuing to explore new and innovative ways to reduce their impact on the environment.

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Are Women the Answer to the Shortage of Skilled Workers in Manufacturing?

Guest Editorial by Gretchen Zierick, courtesy of Manufacturing & Technology News, November 18, 2011



Manufacturing is one of the few bright spots in the U.S. economy today, with economic activity in the manufacturing sector expanding in September for the 26th consecutive month, according to the Institute for Supply Management. Ironically, as the manufacturing sector continues to help lead this country's economic recovery, companies are reporting that they are having trouble finding qualified workers.

A recent study from the Manufacturing Institute reported that almost 80

percent of American manufacturers are reporting trouble filling open positions despite a national 9 percent unemployment rate in the United States. In addition, 25 percent of the current manufacturing work force is over age 55, with few young skilled workers available to replace them as these longtime employees near retirement. The lack of skilled workers is one of the largest impediments to growth for manufacturing companies.

One way to address this problem would be to attract more women to manufacturing careers and mentor them so that they encourage other women to look at this sector for a career. Unfortunately, this country is doing the opposite: steering away millions of young Americans from manufacturing based on their gender.

Only 30 percent of the 14 million Americans employed in manufacturing are women. However, this represents 4 million American workers, which is not insignificant. As Sara Manzano-Diaz, director of the U.S. Department of Labor's Women's Bureau, stated, "Think of it this way: More women work in the manufacturing industry across this country than the total population of 21 states." Still, given the acute shortage of skilled workers, the manufacturing sector should be a very attractive option for women looking for employment.

A recent survey by Bayer showed that some of the top reasons women are underrepresented in manufacturing include the

lack of quality science and math education programs and the presence of persistent stereotypes that say careers in science, technology, engineering, and math are not for women. This despite the fact that elementary school girls are earning higher grades in math and science than are boys.

The problem of attracting more women to manufacturing is tied to the sector's overall perception problem. Manufacturers are working to educate young workers that this is not the old manufacturing world of low pay and dirty work. Today's manufacturing, in fact, offers competitive wages and benefits, often significantly better than the service sector, and is high tech, with clean and modern facilities.

The Cleveland-based Precision Metalforming Association has decided to take a leadership role in encouraging the growth of women in manufacturing and combating gender bias. The Precision Metalforming Association hosted the first annual "Women in Manufacturing" symposium in Cleveland from October 25 to 26. The event was designed exclusively for women who have chosen a career in manufacturing, and it attracted more than 100 women leaders from around the country.

One topic that received much attention was workplace flexibility. There are certainly challenges in the manufacturing sector to both attract and retain women employees, including developing an approach to flexibility that will work in manufacturing. Without formal workplace flexibility policies adapted to fit the various manufacturing workplaces, women and men alike will continue to struggle with balancing work and family. In addition, the discussion showed that women in the manufacturing industry are hungry for advice, and formal and informal mentoring programs are essential in order to develop the next generation of women leaders in manufacturing.

The latest report from the U.S. Labor Department listed 240,000 open jobs in manufacturing in August 2011. This acute talent shortage, which threatens the manufacturing sector's recovery—a sector that accounts for about 12 percent of the U.S. gross domestic product—could be solved by encouraging young, talented workers, regardless of gender, to pursue careers in a thriving industry. That was the message at the "Women in Manufacturing" symposium, and that's the message we need to send to the next generation of women in order for manufacturing to grow in this country.

— Gretchen Zierick is President of Zierick Manufacturing in Mount Kisco, New York, and a former chairwoman of the Precision Metalforming Association. Her e-mail is gretchen@zierick.com.



Iowa State University's Engineering Career Fair Provides Avenue for Success

For Alyssa Mantz, a senior in mechanical engineering who graduated in December, the fall Engineering Career Fair was her big opportunity to make connections, schedule interviews, and begin the transformation from undergraduate student to practicing engineer.

Mantz knows firsthand the importance of preparation, including targeted company research, a polished resume, and that ever-critical elevator speech. She stresses the need for a game plan to connect with recruiters at these events. The platform of the career fair provides a short amount of time to make a positive impression, and, unlike a job interview, students are expected to initiate and possibly steer the conversation.

"I met many people and received a lot of positive feedback for future opportunities. The Engineering Career Fair and career management system are great resources for students," says Mantz. "Nearly all of my friends and peers have received employment or internship through these resources. I truly believe the career fair, especially in the fall, is the best way for companies to reach ISU engineering students."

Mantz was also one of the general cochairs for E-Week 2010. Roger Bentley, manager of student and

alumni professional development for Engineering Career Services, is the adviser for the E-Week student group. "Alyssa developed great project management skills by coordinating a team of 17 executives and executing that week-long event," explains Bentley. "These skills are definitely attractive to companies because they are looking for young talent that has demonstrated competencies in a variety of formats and with a depth of responsibility."

Her diligence and hard work certainly paid off. Mantz had two interviews the day after the career fair with those employers following up with on-location interviews. She also had several on-campus interviews with other companies in the weeks following the fair.

These all resulted in several job offers, and Mantz just recently accepted a position with Datacard Group in Minneapolis. "I was hired as a manufacturing engineer, and I'm really excited about the company and the position," says Mantz. "The business is

ever-evolving, and the position allows me to pursue many interests and work alongside many different departments within the organization."

The fall Engineering Career Fair hosted representatives from 241 companies (up 14 percent from 2010) in the Hilton Coliseum and the Scheman Building. The employers and recruiters met with more than 4,000 students. A total of 1,262 interviews were held during the three days following the career fair. This is an increase of 17 percent from last year.

Something that surprised Bentley was the fact that companies sent 30 percent more recruiters to the September event, a large number of whom were alumni. Bentley feels this growing percentage reflects positively on the college. "For companies to trust in our alumni's professionalism and have them represent their company in such an important process really shows the depth and quality of the individuals who graduate from Iowa State," says Bentley.

"Nearly all of my friends and peers have received employment or internship through these resources. I truly believe the career fair, especially in the fall, is the best way for companies to reach ISU engineering students."

—Alyssa Mantz

Sustainable Economies Program Begins with Carroll RTC

With Iowa's transition from a primarily rural population to an urban-based population, communities across Iowa are looking for ways to create sustainable economic growth. Funded by a three-year grant from the Economic Development Administration (EDA), CIRAS launched the Sustainable Economies Program last winter with the goal of helping five regional trade centers (RTCs) identify and target opportunities for sustainable growth at the regional economic level and also at the local business level.

An RTC is defined as a small to medium-sized city (5,000–49,999 in urbanized population) that serves as a regional center for manufacturing, transportation, retail trade, business services, and health and education services. The Carroll RTC is the pilot project for this program.

This is a unique approach for CIRAS, according to Mike O'Donnell, CIRAS EDA program director. "This program provides an in-depth economic assessment that gives the RTC stakeholders a detailed look at their economic structure—what is important, what are the strengths and weaknesses, what are the indicators of success or failure," he explains. "Most importantly, however, after the report presentation we continue to mentor the RTC to make changes that will impact their economic sustainability."

The first step in the process was to gather representatives of all of the RTC stakeholders—government, businesses, community organizations, economic development groups, and nonprofit agencies—to give them the basics of

sustainability. The discussion focused on the triple bottom line, which defines sustainability as meeting financial, social, and environmental needs.

It is a challenging task to make decisions that balance the three requirements, according to O'Donnell. Using energy as an example, wind is a renewable resource, which is good from an environmental standpoint, but there are a lot of upfront costs and it can be unpredictable; coal, on the other hand, is cheap and consistent, but it is nonrenewable and has other negative environmental impacts. "Any right answer means looking at the total picture and balancing the trade-offs," he says.

In the second step of the process, Iowa State economists Dave Swenson and Liesl Eathington provided an in-depth economic analysis. It included analysis on area industries, their potential for growth plus more than 100 indicators of financial, social, and environmental well-being compared and contrasted with other similar-sized regions.

"A lot of people will have a general sense of their strengths," Swenson says, "but the information we provided gives them broader perspective of their city and the entire region as well as assessing both their strengths and weaknesses."

One of the things the economists found was that although Carroll is a large retail distributor and has a strong manufacturing sector, the strongest component of the regional economy is the combination of health and social services delivery. Analysis also showed

that while the employment sector continues to grow, the population of Carroll itself has been declining, which is a point of concern.

In parallel with the economic analysis, CIRAS project managers used expertise in sustainability to assess and identify opportunities with individual businesses. In addition to the assessments, the CIRAS Manufacturing Extension Partnership program provided training in green manufacturing to businesses, which gave companies the tools to begin to address their needs on the environmental aspect of the triple bottom line.

The Carroll RTC is now in the third and final step of the Sustainable Economies Program. At this stage, the goal is to engage as many community members as possible to figure out ways to bring about changes that will lead to sustainable growth. CIRAS' role is to mentor, helping the stakeholders develop an actionable plan for the region as a whole.

Rick Hunsaker, executive director of the Region XII Council of Governments, is one of those working to bring more people into the discussions. "For this next phase we want to reach out to people from different sectors—perhaps a church council president, a retiree, or someone from out of state who now lives here—who haven't previously been involved in community leadership or community-oriented activities. The idea is to get fresh perspectives on how to help the community grow and advance," he says. The group is asking employers



and other organizations to identify people to join the discussions.

As CIRAS transitions the ownership of this process to the community, an advantage of the indicators is that each functional group—businesses, government agencies, nonprofits, etc.—can choose an appropriate selection of indicators for their organization. CIRAS staff is doing individual mentoring with the groups to help them understand how specific indicators apply to their organization and how they can use the information to achieve their long-term goals.

For CIRAS, the overall goal of the program is to develop a replicable process that can be used across Iowa and in other states. “We want to show that we can go into an area, perform economic and business analysis, and provide mentoring that helps communities take actions that will lead to their sustainable growth,” O’Donnell says.

According to Jim Gossett, executive director of the Carroll Area Development Corporation, the project has gotten off to a good start. “Thanks to Mike O’Donnell’s leadership, we’ve had very good participation from many different organizations. The economic and demographic information has given us some new insights. We are very pleased with the process so far and look forward to turning our ideas into actionable results.”

The next Sustainable Economies Program will take place in Lee County.

➤ **For more information, please contact Mike O’Donnell at 515-294-1588 or modonnll@iastate.edu.**

Manufacturing in Iowa

From the Desk of Ron Cox, Associate Dean for Extension, College of Engineering; Director, CIRAS

Our recent report on the state of manufacturing in Iowa is highlighted below, which summarizes data from a number of federal agencies. The loss of manufacturing jobs over the past decade is notable. This is a story we’ve all heard before but one that bears repeating. Continued development of sound policies, based on thorough analyses and hard data, can help create a future that differs from what the trends might suggest.

Key findings in this year’s report include the following:

- Among all the major economic sectors in Iowa, manufacturing ranks first in dollar amount of gross domestic product (GDP), fifth in total jobs, and third in average wages and salaries per job.
- Iowa’s manufacturing firms contributed \$25.4 billion to the state’s economy in 2010, accounting for 18 percent of total GDP, or “value added.” Iowa ranks sixth among all states in the percentage of GDP derived from the manufacturing sector.
- Iowa’s top three manufacturing industries as measured by their GDP contribution were Food and Beverages, Machinery, and Chemicals. By number of jobs, Food and Beverages, Machinery, and Fabricated Metals ranked as Iowa’s top three manufacturing industries in 2010.
- Iowa’s 207,500 manufacturing jobs accounted for 10.6 percent of the state’s total employment in 2010. Following a national trend, the percentage of Iowa’s employment in manufacturing has declined in recent decades. Between 1990 and 2010, the sector’s share of total jobs fell from 13.1 to 7.0 percent nationally and from 13.7 to 10.6 percent in Iowa.
- Iowa lost more than 48,000 manufacturing jobs from 2000 to 2010. Despite these losses, manufacturing remains an important source of earnings for Iowa’s workers, particularly in nonmetropolitan areas. Manufacturing accounts for more than 15 percent of nonfarm employment in Iowa’s nonmetropolitan counties compared to 8.6 percent in its metropolitan areas.
- Iowa’s manufacturing workers earned an average of \$49,770 in wages and salaries during 2010. On average, Iowa’s manufacturing firms pay about 85 percent of the average U.S. manufacturing wage.
- Iowa exported nearly \$10 billion in manufactured goods to other countries in 2010. Canada, Mexico, and Japan were the leading export destinations for Iowa’s manufactured goods.

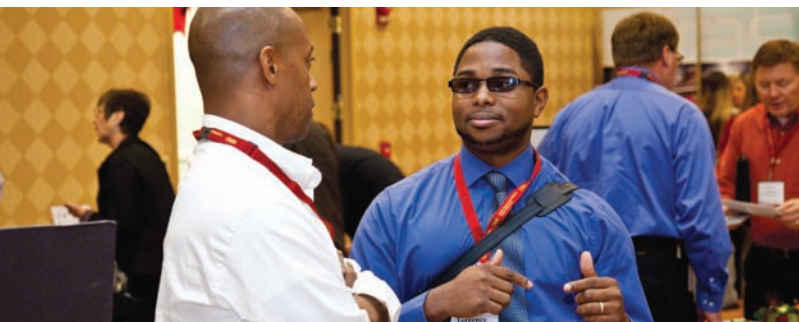
To view the entire report, go to www.ciras.iastate.edu/Manufacturing_In_Iowa_2011.pdf.

CIRAS Fiscal Year 2011 Results

In FY11, 1,235 businesses from 95 counties in the state received assistance on projects or attended educational workshops from CIRAS staff or partners. Companies responding to surveys reported \$43 million in new investments, \$19 million in costs saved or avoided, and \$331 million in sales gained or retained (\$393 million total). Company executives stated that 6,037 jobs were added or retained as a result of the assistance they received from CIRAS and its partners.

Cumulatively, over the past five years, company-reported impact totaled more than one billion dollars with 18,255 jobs added or retained.

Advice Offered for Winning Government Contracts



The 4th Annual CIRAS Veterans' Procurement Conference brought 160 business owners to the Gateway Hotel and Conference Center in Ames on November 30. The conference was designed to provide business owners with information and techniques to help them find and win government contracts.

Michael C. Hall, 55th Wing Small Business Specialist at Offutt Air Force Base in Omaha, led off the conference by telling the audience that there are many government contracting and subcontracting opportunities available to them. As part of his work at Offutt, Hall informed the audience that he reviews all contract-related documents for projects over \$10,000, including justification for the project and approval of the contracts. He shared firsthand knowledge on what business owners can do to help win contracts.

Business owners must be proactive in their efforts, according to Hall. He especially encouraged veteran-owned businesses to ask for opportunities from contracting people. "Talk to them on a regular basis," he said. "Let them know you are out there and what your capabilities are. Ask for a contract to be designated as 'set aside,' so the competition is limited."

Hall also asked the audience to help prevent fraud in the awarding of Service Disabled Veteran-Owned Small Business (SDVOSB) contracts. "If you lose out on a contract and know that the business that got it is not SDVOSB qualified," he said, "protest to the contracting office and the Small Business Administration (SBA). If you don't protest it, we will never know the company did not meet the qualifications."

The government contracting offices use the SBA Dynamic Small Business database to find companies that qualify to compete for various contracts. Hall said it is essential that companies fill out the capability statement and key words. Without this information, the contracting agencies will not know if you have the capability to do a particular job. To register, visit www.ccr.gov and click on the Dynamic Small Business Search button.

Government agencies will often seek qualified companies through a "sources sought" request. Hall offered this advice for business owners responding to these requests:

- Answer all of the questions completely; your responses must explain point by point how your capabilities allow you to fulfill the government's need.
- If you will be hiring specific people for a contract, include their resumes and how their skills enhance your capabilities for doing the project.
- Only add graphics or pictures if they are relevant to your capabilities.
- Stay within the maximum and minimum number of pages.
- Under past performance history, be explicit in explaining how a previous project is similar to what you are applying to do.
- Ask questions. If you don't understand what is being asked for, talk to the contracting people to find out.

Hall urged participants to take advantage of the resources available to them. He noted assistance in Iowa is available through CIRAS, the manager of the Iowa Procurement Technical Assistance Program, a national program administered by the Defense Logistics Agency for the Department of Defense.

CIRAS staff help businesses determine if they are suitable for government contracting, provide workshop training and outreach events, assist businesses with capturing government sales, and provide post-award contract assistance.

Dana Bowman, retired Sergeant First Class with the U.S. Army's elite parachute team, Golden Knights, presented the keynote address at the Veterans' Procurement Conference. Bowman, who lost both legs in a 1994 mid-air collision, inspired the audience with his message, "It's Not the Disability, It's the Ability™, Never Quit."



➤ For more information, please contact Julie Fagle at 319-310-8612 or jafagle@iastate.edu.

'Solve the Measurement Nightmare' Workshop Planned for February 16

Company presidents, chief executive officers, CFOs, and other financial decision makers are invited to the "Solve the Measurement Nightmare" workshop on February 16 from 8:30 a.m. to 4:30 p.m. at the Scheman Building on the Iowa State University campus.

Today's competitive environment requires that companies distinguish themselves in the marketplace using factors other than price. While operations in companies implement newer "pull-based" methodologies such as Theory of Constraints, Lean, and Six Sigma, finance and accounting often continue "push-based" tactics in financial and incentive measurements.

Debra Smith, cofounder and partner of Constraints Management Group, a services and technology company specializing in pull-based manufacturing, materials, and project management systems for mid-range and large manufacturers, will lead the workshop. A dynamic public speaker, Smith has extensive experience in public accounting, financial management in manufacturing companies, teaching at the university level, and consulting.

In the workshop, Smith will show you how to identify the push-based tactics, including the accounting, financial, and incentive measurements that are roadblocks to improved flow. Smith will share techniques and decision-making tools she and her partners have developed that have helped companies achieve unprecedented levels of growth both in return on investment and sales.

As it is beneficial to have multiple attendees from your company, the workshop cost is \$150 for the first attendee, \$75 for the second, and no charge for any additional attendees.

For additional information regarding the workshop, please contact Mike Willett at 319-234-6811 or mwillett@iastate.edu.

■ Iowa State University Engineering Spring Career Fair 2012

February 7, 2012
12:00 noon–6:00 p.m.
Ames, Iowa

■ Lee County Sustainability Summit

February 8, 2012
8:00 a.m.–5:00 p.m.
Keokuk, Iowa

■ Market Message Workshop

March 6, 2012
8:00 a.m.–5:00 p.m.
Spencer, Iowa

■ Iowa Lean Consortium Strategic Lean with HNI Corporation

March 7, 2012
9:00 a.m.–4:00 p.m.
Muscatine, Iowa

■ Meat Science Extension Dry and Semi-Dry Sausage

April 10–12, 2012
Ames, Iowa

■ ABI Taking Care of Business Conference

Keynote Speaker: Jim Collins,
author of *Good to Great*
June 13–15, 2012
Des Moines, Iowa

Iowa State University Foundation Gift/Pledge Form

CIRAS has been helping Iowa companies for nearly 50 years. A fund has been established to further assist CIRAS in supporting initiatives to enhance the Iowa economy. Please consider donating to the Center for Industrial Research and Service General Fund.

Name _____

Address _____

City/State/Zip _____

Gift Designation

I/We wish my/our gift to be designated to:

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Other _____

Corporate Matching Gifts

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Employer name(s) _____

Gift Amount \$ _____

Pledge online at www.ciras.iastate.edu/giving.asp

Check enclosed (make payable to ISU Foundation)

Please bill my credit card (select one)

MasterCard VISA Discover

Card number _____

Expiration date _____

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Thank you for your support.

Why Should Manufacturers Attend Trade Shows?

By Jim Poe

I recently attended FABTECH, which is a trade show for the metal manufacturing industry. I had attended this about ten years ago, so I felt it was about time to go again. Most people figure that metal manufacturing technology rarely changes (a press brake is a press brake), but they are tremendously wrong. The industry is changing fast, with many twists on the old technologies that allow one to improve multiple facets of current technologies, which can then equate to significant improvements in one's manufacturing organization.

Besides myself participating from the CIRAS staff, members of the Iowa State University College of Engineering Society of Manufacturing Engineers (SME) club attended. They found that attending the FABTECH manufacturing show was a great opportunity and experience for the SME student chapter. The trip was extremely informative, providing valuable insights into the modern metal forming and fabrication industry. With technologies and processes evolving at an ever-increasing pace, it is essential for students to stay informed and knowledgeable of current industry trends.

The Iowa State team was also able to see the latest welding, metal fabrication, and robotics technologies. One of the most interesting aspects of the show was the tremendous amount of robotic technology being incorporated with computer numerical control (CNC) machinery. Having the opportunity to witness this level of robotic integration within a manufacturing cell was very beneficial. This offered the team of future manufacturing engineers insights into what they will encounter in their careers when they enter the manufacturing industry.

After attending FABTECH, the SME club toured a cutting-edge Sauer-Danfoss machining facility. This establishment uses robotics and many of the latest

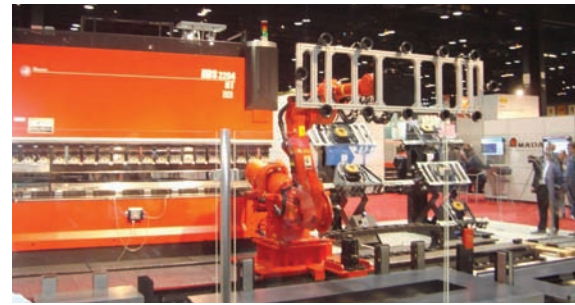
technology developments. The tour really allowed club members to understand how the new technologies they viewed at FABTECH are used in the manufacturing environment.

So why should key people in your organization attend these events? This question is asked every time a trade show comes up—why should one attend? Considering the cost of travel, hotels, meals, etc., will the company gain anything from it? In other words, what value is it to the potential attendees and their company?

At the majority of trade shows, there are many activities going on. First is the actual trade show, which has multiple equipment/displays that one can typically see in operation. The sales representatives are there, and they can discuss the benefits of their equipment or process. The important thing is that one can do a basic comparison of the various suppliers without spending multiple days visiting each vendor or having a sales person call. By the end of one's visit to the show, they can then invite those who are interested to their facility for more in-depth discussions.

In addition to the equipment being demonstrated, there are suppliers for almost any element relating to the type of business one is in. There is nesting software for the CNC world as well as material requirement planning/enterprise resource planning software companies—both large and small—tool and die suppliers, machine guarding, etc. It is basically a one-stop shop for any elements a company may need to improve their overall business from the small job shop to the large automated company.

In addition to the show, there are many related seminars for companies. These seminars may range from overviews of new technologies to discussions on



Top: SME students and mentors at the trade show **Bottom:** Press brake with robotic arm for bending operations

resourcing and innovation, as well as what they bring to your organization, what roadblocks U.S. manufacturers are facing in the global market, and many other topics relevant to one's industry.

Another key area to gain industry knowledge is the networking. There are so many manufacturers attending that it is inevitable that discussions take place with others within individual industries. I personally find this one of the more informative avenues, as this is where I find out how well the metal manufacturers are really doing—and today they are doing quite well.

These types of shows are available throughout the year for nearly every type of industry. There are shows for the wood industry, one that focuses on painting, another focused on welding, and many others. I would encourage people to get involved in order to keep abreast of their industry and the trends within it, which in turn will assist anyone in growing their own business.

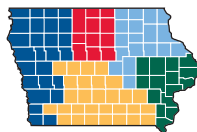
➤ For more information, please contact Jim Poe at 515-294-1507 or jrpoe@iastate.edu.

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Account territories: Account managers conduct initial needs assessments and match resources to client needs. Contact information for your local account manager is listed below.



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Barton, Leah	515-291-0733	bartonl@iastate.edu	Waterloo												●
Bogaczyk, David	515-422-6313	bogaczyk@iastate.edu	Ankeny						●						●
Bonnes, Gordon	712-308-2229	gbonnes@iastate.edu	Council Bluffs						●						
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Willett, Michael	319-234-6811	mwillett@iastate.edu	Waterloo									●			

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Research Activities Tax Credit 2011 Study Released

Iowa is one of 36 states to offer some form of research tax credit. What kinds of firms receive these tax credits? How much credit is received? What do companies consider when they decide where to conduct research? How often does research result in a new product or patent?

These are some of the questions answered by the Iowa Department of Revenue's (IDR) evaluation of the Iowa Research Activities Tax Credit (RAC) program, which was first introduced in 1985. The Iowa Legislature requested this study, which updates and expands a 2008 evaluation and presents information about research activities gathered directly from companies performing research in Iowa. This survey was mailed to 517 companies that had made at least one RAC claim.

CIRAS, with its strong outreach to Iowa industries, provided assistance with a second survey that the IDR sent to 679 companies that CIRAS identified as potentially conducting research in Iowa. "Our goal," says Ron Cox, CIRAS director, "was to gain an understanding of small companies that conduct research but do or do not apply for the tax credits. This will assist us in our role of educating companies and helping them access resources."

One thing the study does not answer is what this policy means to Iowa's economy. "It wasn't a random sample," explains Liesl Eathington, assistant scientist with Iowa State's Department of Economics. "Consequently, we can't make any conclusions about how much additional research activity might have been stimulated in Iowa by the tax credit and how much would have been conducted regardless. What the study does provide,

however, is more detailed information about the types of firms that rely on the credit. This information should help legislators and others to evaluate how well the RAC program aligns with the state's broader economic development goals."

Some highlights from the study include the following:

- In tax year 2009, 182 corporations claimed over \$45.3 million in RAC and received over \$42.2 million in refunds. Over 682 individual taxpayers claimed an additional \$3.3 million with \$0.8 million paid in refunds.
- Since 2006, 78 percent of RAC claims have been earned by firms with more than 500 employees in Iowa, and 90 percent have been earned by firms in manufacturing industries.
- The four factors deemed most important for driving a decision to locate or expand research in Iowa were the quality of the workforce, the state business tax climate, the quality of life for employees, and the low cost of labor and other research inputs.
- Of the companies that conducted research in the last tax year, 65 percent reported creating at least one new product or service line in the last four years, and 37 percent reported receiving one or more patents as a result of research conducted in Iowa.
- Of the 220 respondents with no RAC claims since 2006, 15 percent stated they had conducted research in Iowa in the most recent tax year. Of the 34 companies conducting research but not claiming the credit, 8 cited a high administrative burden, 9 reported they were not aware of the credit, and 12 indicated they were unsure if their research qualified.

➤ The complete Research Activities Tax Credit Study 2011 can be found at www.ciras.iastate.edu/RAC2011.pdf.