



## ESAPCO—A Company on the Move

*Fast growth has been business as usual for the Engineering Services and Products Company (ESAPCO) practically from the beginning. Founded in Connecticut in 1979, the company's purpose was to market and sell high-quality products to the agricultural community at competitive prices.*

While the corporate headquarters has remained in Connecticut, ESAPCO opened a distribution center in Iowa in 1990. It was a humble beginning, according to Dave Buchheit, vice president of operations and the first employee hired for the Iowa office. "We worked out of an old chicken house in Hopkinton, about 15 miles southwest of Dyersville," he says.

That modest start did not hinder the company's growth. By 1994 ESAPCO was listed as one of the top 500 privately held growth companies by *Inc Magazine*. Buchheit credits the company's success to a willingness to adjust to changing customer needs as well as the ability to adapt to new technologies and tougher competition. The company continually added new customers to its agriculture base by

expanding its product line to include horticulture and building supplies and courting an international market.

To accommodate its growth, ESAPCO constructed and moved into a new manufacturing and distribution facility in Dyersville in 1997. While purchasing products from outside sources and selling them under the brand names of FarmTek, TekSupply, Growers Supply, and Clear Span was the primary function of the business, the company started designing and manufacturing some products in-house.

The function of the company continued to grow and by 2010 design and manufacturing had overtaken distribution sales, comprising 60 percent of the business. Subsequently,

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**On the Cover:** ESAPCO (Engineering Services and Products Company) in Dyersville, Iowa, uses buildings it manufactures for its own facilities, such as this one that houses the truss fabrication department.

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

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ESAPCO's products include fabric buildings such as this one, which is part of its own manufacturing and distribution center in Dyersville.

ESAPCO turned to CIRAS for assistance. "Most of us didn't have any experience or understanding of basic manufacturing infrastructure," Buchheit explains. "We were at this point where marketing—I like to use the analogy of a big truck called FarmTek—was way ahead of us. We couldn't catch up to it, and that's when we decided we needed help building the road to get to it. We had talked to several CIRAS specialists over the years and realized they had the manufacturing expertise we needed."

Mike Willett, CIRAS project manager, met with ESAPCO representatives. Based on their discussions, ESAPCO and CIRAS initiated a Theory of Constraints Business Improvement Generation (BIG) project. The goal is to provide the company with a variety of tools, education, and facilitation so they can design and implement a process for generating ongoing business improvement and ultimately greater profitability.

"ESAPCO is a fast growing company and they were having issues with inventory flow and excessive handling of materials," says Willett. "As a result, on-time delivery performance suffered. The BIG project helped them develop productivity improvement plans that included TWI (Training within Industry, a program for rapidly training new employees), supply chain management, inventory management, quality control, standard design for engineered products, customer service, and scheduling."

From December 2010 to July 2011, Willett met weekly with ESAPCO's leadership team to guide them through the five-phase BIG process. The first phase focused on providing the team with the policies, measurements, and behaviors that are required to generate the desired business and productivity improvement. The goal was to establish a common understanding and agreement on the problem. Concepts such as throughput manufacturing and the Theory of Constraints were introduced.

Phase two aimed at identifying what to change. Two full days were spent reviewing, coaching, and counseling the leadership team as a current process map and reality tree were developed to document the undesirable effects ESAPCO was experiencing and what was causing those effects. "The goal," Willett explains, "was to determine the priority problem areas so we could then decide what needed to be done to correct them."

Phase three involved comprehensive education on different strategies and tactics required to achieve the project goal. The team developed a future state process map and reality tree. It also identified and documented how to address changes that would be necessary to achieve the goals illustrated in the process map and reality tree.

In phase four the team identified how to create the change. This phase focused on development of an implementation plan to get from the current state to the future state with the buy-in of critical staff. They mapped out exactly what needed to be done and in what order as well as what resources were needed to achieve the project goal. Additional CIRAS staff led workshops in specific areas. For example, Jeff Mohr led TWI sessions for guidance in rapidly training new employees, and Marc Schneider led a reshoring workshop aimed at helping ESAPCO understand the total cost of ownership for goods sourced from overseas versus locally sourced goods, as well as the supply chain risks associated with each method.

Phase five is implementation of the plan, which is still in process. At the start Willett served as the team champion, instructing and coaching the implementation team to insure the team was focused and moving forward. As the team became proficient in specific areas, he gradually turned leadership over to other members so the team could proceed on its own.

“Mike was the leader coming in,” Buchheit says. “He taught us, directed us, shoved us toward the way it was supposed to work; but he did it in such a manner it was like we were doing it ourselves, and then we were doing it ourselves. That’s the really neat thing about this project.”

ESAPCO saw an immediate impact from changes made as a result of the BIG proj-

ect. The company reported a \$26 million increase in sales, \$6.5 million in retention of sales, and \$3.9 million in cost savings.

“As a result of this project, we prepared a roadmap for reaching our goal of shipping orders on time and ultimately increasing our profits,” Buchheit explains. “The process made us step back and look at what we were doing. We had been so busy trying to keep pace with marketing that we forgot we needed to manufacture the product efficiently and didn’t even see the simple things that we could do.”

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—Dave Buchheit

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The company is continuing to work with CIRAS. In the process of completing the BIG project, supply chain management was exposed as a major area of concern. “That’s not unusual in fast-growing companies,” says Mike O’Donnell, CIRAS Manufacturing Extension Partnership associate director. “They had, over time, developed ways to manage their suppliers to get parts on time, but they had never viewed their supply chain as a strategic opportunity.”

O’Donnell led the company through the process of breaking down the overall supply chain into manageable segments such as fasteners, sheet steel, and transportation so they could assess how to improve availability and reduce cost. “Through this process, they identified more than 90 potential projects they could do to improve their supply chain,” he says. “Of those, 20 were determined to be high impact and relatively easy to change, so that’s what they decided to do right away.”

The supply chain strategy put focus and priority on key areas that ESAPCO can control and improve in alignment with their growth goals.

Sean Galleger, CIRAS account manager, who oversees the work with ESAPCO, says he’s very impressed with the company’s vision for the future. “They know they want to keep growing and improving,” he says. “They are constantly learning and use CIRAS as a resource to help them check things out. They are aggressive but are being very strategic about their growth.”

One current marketing effort focuses on hydroponics and greenhouses, according to Buchheit. “This year we started offering seminars, teaching people how to grow plants hydroponically,” he says. “It is introducing new customers to our facilities and our products.”



**Top:** M.O.R.E (Management of Operations Resources & Employees) team meetings involving a cross-functional team from all departments were held regularly. **Bottom:** The fabric components of ESAPCO’s structures are laid out and manufactured in this upper level of the fabric department.



Rowena Crosbie

credited to your knowledge and technical skills,” explains Crosbie.

### Trends in corporate training

Crosbie sees three primary trends in corporate training. The first is intercultural competence training, which was first developed by Deborah Rinner Godwin, vice president at Tero. With today’s global marketplace, professionals face a multitude of high-level challenges and questions due to culture and diversity. To help clients meet and exceed these challenges, Tero offers specific workshops that dive deep into the subjects of international protocol, domestic diversity, and generational differences.

The second trend is the shift in sales training. According to Crosbie, customer relationships have changed dramatically in recent years. Where a sales professional once held all the transactional power, consumers now have easy access to information. The key to successful sales now requires a collaborative exchange between the customer and the sales associate.

A focus on the individual versus training for the masses is the third major trend. “We work with companies to deepen an awareness of an individual’s vital traits that are required to move ahead,” says Crosbie. When working with the Tero

team, executives, managers, and supervisors learn how to identify and improve skill set gaps and then create strategies to close them.

### Investment in human capital is the key

Crosbie shares that great organizations are formed when they invest in the development of their people. “This is just as true for a small company as it is for Fortune 500 companies,” says Crosbie. “The gravest mistake a young company can make is to delay professional development of their team members.”

Crosbie clearly explains that if a company has limited resources, a workshop focusing on interpersonal communication skills is the one fundamental training that cannot be missed. It is critical to the company’s ongoing success.

To date, Tero’s proprietary workshops have been delivered in 12 countries, and thousands of business professionals from more than 40 countries are graduates of Tero’s programs.



## Slimming Down Improves Processes

“Lean” is a collection of principles and tools designed to reduce waste in any process, resulting in improvements to time, cost, and quality. “Organizations that are effective in establishing a Lean-based culture and business system embrace and encourage involvement of the entire organization in continuous improvement,” says Ruth Wilcox, a CIRAS program manager. This connection of people and systems, focused on problem solving, often leads to a “competitive advantage and mutual long-term prosperity for all stakeholders,” according to Michael Hoseus, a leading expert on Lean.

Iowa organizations have the edge when learning more about Lean and its many benefits, thanks to a nonprofit group called the Iowa Lean Consortium (ILC). “The Iowa Lean Consortium accelerates Lean learning through collaborative experiences with practitioners, from experienced organizations to those just beginning their Lean journey,” says Teresa Hay McMahon, ILC president. The two-year-old consortium already has two dozen organizational members in Iowa. Lean can benefit just about any type of organization, from manufacturing, service/transaction businesses, and education to health care and government.

The ILC can provide facilitated and interactive on-site roundtables for leadership and practitioners, opportunities to participate or lead events at member organizations, and cost-effective learning. It also provides annual learning exchanges and Lean assessments. CIRAS is a member of the ILC, sponsors its learning events, and participates on ILC committees.

**The ILC holds events for members on a regular basis. For more information, see the Iowa Lean Consortium Web site at [www.iowalean.org](http://www.iowalean.org) or contact Ruth Wilcox at 515-290-1134 or [rwilcox@iastate.edu](mailto:rwilcox@iastate.edu).**

# Recent Innovation Indicators for Iowa

by Liesl Eathington

Over the years, Iowa has employed various strategies to encourage research and development (R&D) activity and to bolster high-technology firm growth. A recently released compendium of science and engineering indicators provides a fresh opportunity to evaluate Iowa's progress in fostering an innovation economy. The National Science Foundation's biennial Science & Engineering Indicators report for 2012 contains data on R&D spending, science and engineering workforce and education, and high-tech business activity. Following are highlights illustrating just three of the fifty-eight available state-level indicators for Iowa.

## R&D as a Percentage of State Gross Domestic Product

Research and development spending as a percentage of gross domestic product (GDP) is a widely used measure of R&D effort. This indicator measures private and public financial inputs to R&D in relation to total economic activity in the state. In the United States, R&D spending accounted for 2.5 percent of GDP from 2004 to 2008. New Mexico ranked highest among all states at 7.8 percent; Wyoming ranked lowest at 0.4 percent. Iowa ranked 34th, with R&D spending averaging 1.4 percent of GDP.

Iowa's R&D performance has remained stable as a percentage of GDP in recent years, although the state's ranking on this indicator has slipped. Figure 1 illustrates the trend for Iowa and the nation since 1991. Iowa ranked 24th among states in 1991, with R&D spending at 1.3 percent of GDP. The national average in that year was 2.3 percent.

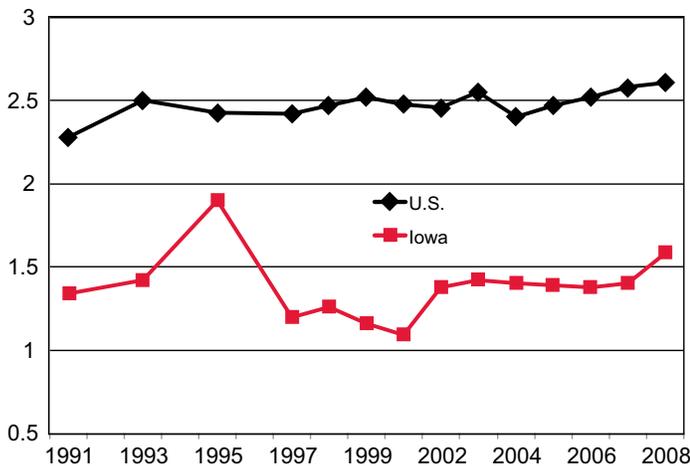


Figure 1. R&D performance as a percentage of GDP

## Science and Engineering Degrees Conferred per 1,000 College-Age Adults

A state's ratio of science and engineering (S&E) bachelor's degrees conferred relative to its college-age population indicates its capacity to develop and replenish its technology workforce. In the United States from 2005 to 2009, an average of 16.2 bachelor's degrees in S&E fields was conferred per 1,000 individuals 18–24 years of age. The highest ratio (64.6) was found in the District of Columbia; the lowest ratio (6.3) was found

in Alaska. Iowa ranked 10th among all states, with a ratio of 20.6 S&E degrees conferred per 1,000 college-age residents.

Iowa performs consistently well on this measure. Figure 2 compares Iowa's ratio with the national average and neighboring states in two different time periods: 1990–1994 and 2005–2009. Iowa's high scores relative to its neighbors suggest the state has a competitive advantage in attracting nonresident students to S&E programs in its educational institutions.

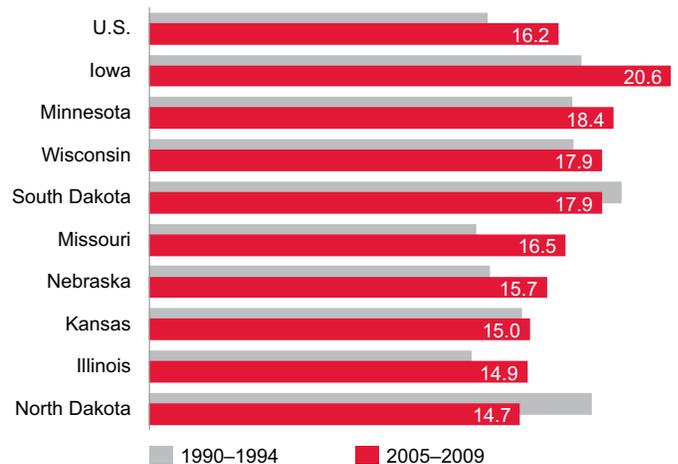


Figure 2. Ratio of S&E bachelor's degrees conferred per 1,000 residents ages 18–24

## Technical Workers as a Percentage of the Workforce

The fraction of workers engaged in engineering, mathematics, natural and physical science, and related occupations indicates the degree to which a state's industries demand and utilize high-tech skills. Nationally from 2006 to 2010, 1.34 percent of U.S. workers were employed in high-tech jobs. The District of Columbia ranked highest with 3.4 percent; South Dakota ranked last with 0.91 percent. Iowa averaged 1.11 percent of its workforce in technology occupations during 2006–2010, ranking 41st among all states.

These and other S&E indicators produced by the National Science Foundation provide a valuable resource for monitoring the state's innovation capacity and effort. Readers may explore the full collection of state-level indicators at the following link: <http://www.nsf.gov/statistics/seind12/c8/c8i.htm>.

# Decker Manufacturing—A 134-Year-Old Success Story Based in Innovation

*Not only is Decker Manufacturing a mainstay in Keokuk, it is a mainstay and leader in the agricultural products industry specializing in hog jewelry, hardware specialties, farrier supplies, curry combs, brushes, and industrial wire ties.*

## Rich History Is the Cornerstone

A. C. Decker established Decker Manufacturing in 1878 in Bushnell, Illinois, with early patents in barbed wire and related equipment setting the firm apart in the industry.

At the turn of the last century, the business was moved to a building on the riverfront in Keokuk. Then in 1911, the company moved to its present location, a three-story brick building located just one block off Main Street in downtown Keokuk.

When talking about the rich 134-year history of the company with Marty Fox, president of Decker Manufacturing, his sense of pride and nostalgia quickly shines through the conversation.

“We are a family-owned company with four generations of Deckers leading the company over the years,” says Fox, a Keokuk native who started as a regional salesman at Decker in 1978, the year the company celebrated its 100th anniversary.

While Decker Manufacturing initially started with barbed wire as its niche, product lines naturally expanded over time with a focus on hog rings, hog pliers, curry combs, and brushes. Though hog ring sales remain strong, Decker also makes rings that are used in fencing, fishing, and upholstery.

## Staying Globally Competitive as a U.S. Manufacturer

Fox tells of a critical time in the company's history in the early 1980s when many of

Decker's competitors went offshore with their manufacturing plants to save money. Decker chose to stay the course and maintain its strong reputation as a U.S. manufacturer.

Today, Decker is the only U.S. manufacturer of these products and proudly continues with a competitive edge over similar imported products. “Our customer base is very loyal,” explains Fox as he readily pitches the high quality of American-made products. “If you want quality that's known by the consumers, you want Decker.”

Decker currently employs 27 full-time people who work 10-hour days in a four-day work week. Additional temporary staff are currently working to help keep up with product demand. Fox expects that many of these temporary positions will become permanent in the near future. Fox is also proud to share that they have not experienced a layoff in more than ten years.

## Innovation Leads to a Healthy Bottom Line

While Decker is known for its high-quality products and attentive service to its customers, Fox knows that innovation is the key to continuing the success and growth of the company. With that thinking in mind, Fox contacted Mike O'Donnell at CIRAS for direction and guidance.

Fox first met O'Donnell last December to discuss opportunities to improve operations. Then Fox attended the Green 101 and Dumpster Dive workshops led by CIRAS. The workshops focus on learning how to apply sustainable, environmentally friendly practices in the workplace and how to reduce costs by identifying effective approaches to solid waste management.

Implementation of the ideas gathered from these two workshops has netted



big returns for Decker Manufacturing. Fox states that 99 percent of all their waste is now recycled. A metal recycling service has installed a dumpster at the Decker site where all scrap metal is separated, sorted, and recycled. The genuine bristles in Decker's brushes are naturally biodegradable. Decker now regrinds scrap plastics for reuse as well.

The cost containment principles that Fox learned at the Green 101 and Dumpster Dive workshops were the catalyst that led to more in-depth work with CIRAS in January.

O'Donnell and CIRAS project manager Jim Poe began working with Fox on a sustainability assessment, focusing on Decker's triple bottom line—the financial, social, and environmental aspects of the company. This assessment provided the team at Decker with a broad understanding of opportunities across the business. Combined with the company priorities, Decker was able to see a clear path toward improvement. A series of near-term projects and long-term goals was identified to strengthen the company and maintain its competitive advantage in the global marketplace.

*(This is part one of a two-part series. Follow this Decker Manufacturing success story in the Fall 2012 issue of CIRAS News, where implementation outcomes and specific results of the CIRAS sustainability assessment report will be shared.)*

➤ For more information, please contact Mike O'Donnell at 515-294-1588 or [modonnll@iastate.edu](mailto:modonnll@iastate.edu).

## New Hope Provides Valuable Economic Contributions

*The Sustainable Economies Program managed by CIRAS at Iowa State University and funded by the Economic Development Administration University Center provides regional trade centers (RTCs) in rural Iowa with an in-depth economic assessment of the financial, social, and environmental well-being of the region.*

New Hope, located in the Carroll RTC, is a community-based residential facility for individuals with developmental disabilities or brain injury. The facility was recently acknowledged for its regional economic contributions in a study by the Sustainable Economies Program.

According to the study, New Hope provided a total annual economic impact in the Carroll area of \$41 million in 2011 and is responsible for 560 jobs in the immediate economic region.

The Iowa State study takes into account the ancillary economic effects from New Hope activities in the Carroll area including annual operations, personal spending of residents, estimated local medical spending of residents, and the annual value of construction and facility rehabilitation activities.

More than 400 people are employed by New Hope today on a full- or part-time basis, and approximately 350 committed volunteers dedicate their time and talents to supporting the 225 clients.

New Hope believes that every person thrives when provided with the basic needs of comfort, security, love, and a sense of belonging. A home-like atmosphere and friendly surroundings are integral components enhancing the quality of an individual's life.

This philosophy was the basis for the creation of the nonprofit organization in 1977 by a group of families and interested citizens in west central Iowa.

New Hope provides support, assistance, education, and encouragement that enhance the quality of life for adults with developmental disabilities. The programs pave the way for involvement and integration opportunities in order for clients to enjoy their own homes, their own jobs, and the satisfaction of taking part in their community.

New Hope offers residential services ranging from intermediate care to supported community living. Training and support is provided in independent living skills, personal care, communication skills, health and nutrition, and leisure skills. They also administer two vocational programs—New Hope Enterprises offers organization employment services to local businesses and organizations, and New Hope Employment Resources serves partner companies by coordinating job placements, vocational evaluations, and supported employment.

In addition, New Hope provides life skills training, community integration, community volunteer opportunities, and structured and supervised leisure activities.

Over the years as New Hope has grown, it has been recognized as one of the leading providers in this field. New Hope continues its tradition of innovation and creativity, developing new services that meet the changing needs of people with disabilities.

“Not only does New Hope make a tremendous impact in the region by enriching the lives of individuals with disabilities, the ISU study documents the economic investments we are making in the community as well,” states Rhonda Mart, executive director of New Hope.



## New CIRAS Advisory Council Members

**Rand M. Fisher** is the president of the Iowa Area Development Group (IADG). The IADG provides business and community development leadership and consulting services on behalf of Iowa's rural electric cooperatives and independent telephone companies. Services include building and site selection, financial incentives, regulatory guidance, technical assistance, and energy and telecommunications solutions. The IADG has been honored for



**Rand M. Fisher**

achievement, innovation, and leadership by the U.S. Small Business Administration, the U.S. Department of Agriculture (USDA), Iowa USDA Rural Development, the Mid America Economic Development Council, the National Rural Economic Development Association, and numerous other professional organizations. Fisher graduated magna cum laude from Luther College in Decorah, Iowa. He earned an MA in public administration from the University of Iowa.



**Mark Reisinger**

**Mark Reisinger** is the global grain trade lead at DuPont Pioneer. His focus is trade and international regulatory policy within the biotech affairs and regulatory group. He interacts with multinational grain companies as well as associations focusing on trade and international regulatory issues. Previously Reisinger was the CEO of the Agribusiness Association of Iowa, was appointed as the USDA rural development state director, and was a congressional staffer for Senator Chuck Grassley and Congressman Greg Ganske. Reisinger holds a bachelor of arts degree from Iowa State University and a Juris Doctor from the Drake University Law School.

➤ **For more information on the Sustainable Economies Program, please contact Mike O'Donnell at 515-294-1588 or [modonnll@iastate.edu](mailto:modonnll@iastate.edu).**

# B4 Brands Takes Environmental Approach

*John Rhomberg and three partners saw a unique business opportunity back in 2002. Hand hygiene products were gaining wide recognition as a tool for infection control in health care. The Centers for Disease Control and Prevention had just begun recommending that health care workers routinely use high-quality alcohol-based gels instead of soap and water on their hands when moving from patient to patient.*

Chemical companies were developing such products using fossil-based ingredients, but nobody was producing environmentally sensitive—i.e., green—products.

Iowa, with its vast agriculture industry, offered the perfect place to develop infection-prevention products using ag-based ingredients such as ethanol. From that concept, B4 Brands was created. The first product—Avant Hand Sanitizer—was launched in 2003.

Rhomberg and his partners made a timely decision. The demand for hand sanitizers and cleaners has increased rapidly over the last 10 years as awareness about germs and how to effectively prevent them from spreading has grown. To meet this demand, B4 Brands has been successfully marketed to health care centers, schools, corporations, and consumers. The company now has 14 different formulas, including sanitizers, cleaners, and lotions, in 70 different sizes.

While the product line has expanded, the company's philosophy has remained constant. It is marketed as the environmental choice in hand hygiene. "We started with a focus on the environment, and that remains the hallmark of our company today," says Rhomberg, B4 Brands CEO. "Our

competitors are chemical companies that have tried to become greener. Everything we have done from the very beginning has been based on green, and we continue to build on that."

A recent development has been the company's decision to not include fragrances in any leave-on formulations, such as hand sanitizers and lotions where the product is not rinsed from the hands. "Although the Avant Original fragrance was rather popular, the right

thing to do considering potential allergy and sensitivity risks is to simply not include fragrances," Rhomberg explains.

One way for companies to gain visibility for their products and their

environmentally friendly ingredients is to earn the U.S. Department of Agriculture (USDA) Certified Biobased Product label. CIRAS, which manages the labeling program for the USDA, worked with B4 as the formulation was developed and helped with paperwork in preparation for the certification process. "B4 was one of the first companies to work with us to have products tested for biobased content," says Steven Devlin of CIRAS.

Biobased products are defined as containing significant amounts of carbon from renewable biomass such as

soybeans, corn, and other agricultural resources rather than fossil-based carbon. The label means the product has been certified as having biobased content at the minimum level set for the specific type of product. B4 Brands earned the BioPreferred label for several of its products earlier this year. Rhomberg credits the CIRAS team with guiding them through the certification process in a very expeditious manner.

CIRAS has also helped B4 Brands break into the government market. Federal, state, and local contracts can be an important part of a company's business plan, and CIRAS works closely with clients to help them through the process. Winning a contract requires targeted marketing, according to David Bogaczyk, CIRAS program director.

"We provide one-on-one assistance with creating a capability statement. The number one complaint we get from government agencies is that the company didn't respond to what they were being asked," he says. "A company must customize what they can do and what they offer to the particular agency. We review requirements of what has to be provided to make sure they have a robust response that will increase the chance of capturing a particular contract."

Staying up to date on the many changes in federal rules and regulations is a



constant challenge as well. Bogaczyk and Julie Fagle, CIRAS government contracting specialist, work with these rules and regulations on a daily basis, and their goal is to help companies stay ahead of the curve so that appropriate changes are in place before submitting a proposal. "Applying for government contracts is a journey, not a destination," Bogaczyk adds.

In one-on-one sessions with B4 Brands, Bogaczyk and Fagle shared strategies and tactics to use in pursuing government business. "They helped us understand how the government purchasing process works and how to determine who the purchaser is in a particular agency," Rhomberg says. "It's very important to know where to direct your marketing materials."

B4 has won several Blanket Purchasing Agreements, which are agreements negotiated with the General Services Administration saying it will make B4 products available to agencies. With sales to 20 different agencies at local, state, and federal levels, Rhomberg says government sales have accounted for 15–25% of B4's sales in each of the last three years.

With the BioPreferred label and the announcement of some new products, Rhomberg is excited about where the business is heading. "After years of research, development, and testing, we launched six new formulations and a new dispensing platform in May," he says. "These products, branded as our 'Eco-Premium' line, bring a new level of quality, safety, and green chemistry to schools, health care and industrial facilities, and government agencies."

➤ **For more information, please contact Sean Galleger at 515-290-0181 or galleger@iastate.edu.**

## Iowa State Expands Online Professional Development

People desiring professional development now have a new, trusted source: Engineering-LAS Online Learning at Iowa State University. "We are developing a suite of courses for people who want to increase their knowledge in a certain area or satisfy their need for continuing education," says Tom Brumm, professor-in-charge. The group collaborates with CIRAS to provide the courses to Iowa businesses. It already has four courses online, with more on the way.

The organization has a proven track record in online learning. It has provided a catalog of college-level courses, including several graduate programs and certificates, and is now branching into professional development courses. Brumm says that while much of the information supplied in these courses is available in some form on the Internet, students taking the courses from Iowa State can be sure that the information is valid. "We also use our knowledge and expertise to package the information appropriately for the students' needs," Brumm says. He adds that his group can additionally create customized courses.

One popular course has been Fundamental Skills and Knowledge of Cost Engineering, provided in conjunction with the AACE (Association for the Advancement of Cost Engineering) International, which serves the cost-engineering profession. The course helps prepare students to take a certification exam. Brumm says the group is preparing new professional development courses on energy-related subjects, thanks in part to a grant from the Iowa Office of Energy Independence. By fall, it expects to offer six or seven such courses.

**For more information, see [www.elo.iastate.edu/professional-development/](http://www.elo.iastate.edu/professional-development/), call 515-294-7470, or e-mail [elo@iastate.edu](mailto:elo@iastate.edu).**

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## Global Standard Set for Safety Data Sheets

The Occupational Safety and Health Administration (OSHA) has signed into law the Global Harmonization Standard (GHS), which updates the Hazard Communication Standard (HCS). This ruling takes the current Material Safety Data Sheets and aligns them with the GHS that is used by the United Nations for all countries.

Implementation of the GHS will improve the quality and consistency of hazard information in the workplace, making it easier for workers to understand information regarding the appropriate handling of hazardous chemicals. With the standardized data sheets, the same information will be in the same location on the sheet no matter which company generates it or from what country it originates. In addition, the symbols used for all countries and all chemicals will be the same.

Major changes to the HCS are the following: (1) the hazard classification provides specific criteria for classification of health and physical hazards as well as classification of mixtures; (2) chemical manufacturers and importers will be required to provide a label that includes a harmonized signal word, pictogram, and hazard statement for each hazard class and category, and precautionary statements must be provided; and (3) safety data sheets will now have a specified 16-section format.

Employers are required to train workers by December 1, 2013, on the new label elements and safety data sheets format to facilitate recognition and understanding. The Iowa-Illinois Safety Council ([www.iisc.org](http://www.iisc.org)), a CIRAS partner, will offer classes to help manufacturers make these changes.

Visit [www.OSHA.gov](http://www.OSHA.gov) for additional information about GHS and effective completion dates for compliance.

**For more information, please contact Jim Poe at 515-294-1507 or [jrpoe@iastate.edu](mailto:jrpoe@iastate.edu).**

# Engineering Career Fair Is September 25

*The 2012 Iowa State University Fall Engineering Career Fair will be Tuesday, September 25, at Hilton Coliseum. The fair traditionally draws some 270 hiring employers (about 50% are Iowa based or have strong Iowa connections) and 3,800 students. Attendees include freshmen through graduate students seeking internships, co-ops, or full-time positions.*

Through interactions with CIRAS, two of the Iowa companies—Hy-Capacity in Humboldt and Quatro Composites™ in Orange City—attended their first career fair last fall and returned for the spring fair. Those experiences convinced them to make the career fair a standard part of their recruiting efforts.

Growth in the company and knowing Iowa State offers well-qualified candidates both in terms of education and agricultural background led Hy-Capacity to the fair, according to Jamie Danielson, human resource recruiter, and Lon Varangkounh, inside sales manager. The company, which specializes in the manufacture and remanufacture of tractor components, hired six interns and two full-time employees as a result of this recruitment effort.

Quatro Composites is a growing northwest Iowa business that offers a full line of services (design, analysis, prototyping, and production) of advanced composite products for the aerospace, military/defense, and medical markets. Mary Ahlers, human resource manager; Doug Roberts, industrial and college relations manager; and Dan Jongewaard, program engineer and Iowa State aerospace engineering alum, attended the fairs. “We were very impressed with the students and the knowledge and experiences they’ve gained from working on special projects,” says Ahlers. “We collected over 100 resumes and were still talking to students an hour after the fair.”

Both companies emphasized that the career fair gives them great exposure. “It helps us build brand awareness so students know who we are and what we do,” Ahlers says. “Many students first learned about us at the fall career fair,” adds Cindy Danielson, Hy-Capacity general manager, “and they returned in the spring and brought friends with them. It’s a great way to spread the word about your company.”

Hagie Manufacturing, a manufacturer of agricultural machinery in Clarion, Iowa, has participated in the career fair for a number

of years. “It gives us the opportunity to spend quality time talking to many engineering students who have a passion for agriculture,” says Mark McClellan, design engineering manager.

The company uses uniquely themed booths to help draw in students. “We don’t come in business suits,” McClellan explains. “Last fall we wore Hawaiian shirts and in the spring, football jerseys. We want students to know that we’re very serious about our business, but we’re also very serious about having a great working environment and that means having the freedom to be yourself at work.”

All three companies emphasize the importance of having three or more representatives on hand to talk to the large number of students who visit each booth.

Companies also had the opportunity to learn more about College of Engineering programs through activities facilitated by CIRAS before and after the career fair. These included tours of various engineering labs across campus and visits with faculty and Ron Cox, CIRAS director and College of Engineering associate dean for extension and outreach.

To register for the career fair, visit Iowa State’s online Career Services Management System (CMS) at <https://ecms.eng.iastate.edu/employers/>. The CMS is a valuable resource to both students and employers, according to Roger Bentley, Engineering Career Services manager of student and alumni professional development. Employers can use the system anytime to post positions, set up interview schedules, and schedule workshop and information sessions.

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“It helps us build brand awareness so students know who we are and what we do.”  
—Mary Ahlers

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Hy-Capacity staff (from left): Molly Varangkounh, Jaclyn Olson, David Olson, Cindy Danielson, and Jamie Danielson at last year’s career fair.

➤ For more information, please contact Brian Larson, Engineering Career Services director at 515-294-0252 or [blarson@iastate.edu](mailto:blarson@iastate.edu).

## Hire Veterans and Earn Tax Credits for Your Business

The Work Opportunity Tax Credit (WOTC) is a federal tax credit available to private-sector businesses and certain nonprofit organizations for hiring particular individuals, including veterans, who have consistently faced significant barriers to employment. The WOTC program enables the targeted employees to gradually move from economic dependency into self-sufficiency as they earn a steady income while participating employers are able to reduce their federal income tax liability.

The Veterans Opportunity to Work (VOW) to Hire Heroes Act of 2011 extended and expanded the tax credit for veterans. Through WOTC, employers can receive up to \$2,400 and \$9,600 in tax credits by hiring veterans receiving Supplemental Nutrition Assistance Program (food stamps) benefits, veterans with a service-connected disability hired within one year of discharge or release from active duty, veterans with a service-connected disability who are unemployed for at least six months, veterans who have been unemployed for at least four weeks, or veterans who have been unemployed for six months or more.

The WOTC only applies to new employees, and the qualified veteran must start work on or after November 22, 2011, and before January 1, 2013. Before claiming WOTC on a federal tax return, employers must first apply for and receive certification from a State Workforce Agency that the new hire is a veteran who meets the required qualifications.

To apply for the certification, employers must:

1. Complete IRS Form 8850, Pre-Screening Notice and Certification Request for the Work Opportunity Credit, by the date of the job offer.
2. Complete one of the following U.S. Department of Labor forms: ETA Form 9061, Individual Characteristics Form; or ETA Form 9062, Conditional Certification Form (if provided to the job seeker by a participating agency, such as Vocational Rehabilitation, an Employment Network, or a State Workforce Agency).
3. Submit the forms to the State Workforce Agency within the following timeframes for hires made on or after May 22, 2012, employers must submit no later than 28 days after the new hire begins work.

To access these forms and find more information on the WOTC program, how to claim the tax credit, and a list of state contacts, visit the Department of Labor's WOTC program website at [www.doleta.gov/wotc](http://www.doleta.gov/wotc) and the IRS website at [www.irs.gov/form8850](http://www.irs.gov/form8850). Also visit [www.benefits.va.gov/VOW](http://www.benefits.va.gov/VOW) for additional information related to VOW.



## Hagie Manufacturing Receives National Award

*The 2012 Excellence in Innovation Award was presented to Hagie Manufacturing of Clarion, Iowa, by the National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP) on May 8 in Orlando, Florida.*

Iowa State University Extension and Outreach Center for Industrial Research and Service (CIRAS) nominated the company for the award, which recognizes manufacturers whose outstanding innovation development and implementation has contributed significantly to business excellence.

Upon receiving the award at the national MEP conference, Alan Hagie, president of Hagie Manufacturing, said, "We appreciate CIRAS and the MEP for recognizing the work that we have done to transform our company and use innovation to be the company we are today."

"This award hasn't happened overnight. Our eight-year relationship with CIRAS has helped us see how great we can be and pushed us to improve. The outside eyes and education from CIRAS have forced us to ask and answer the tough questions, leading us to be a better company," Hagie added.

Hagie Manufacturing is one of three companies in the country to receive this award.

Learn more about Hagie Manufacturing in *CIRAS News*, Volume 47, No. 1 at [www.ciras.iastate.edu/publications/CIRASNews/2011Fall.pdf](http://www.ciras.iastate.edu/publications/CIRASNews/2011Fall.pdf).

Above (left to right): Eric Esoda, Chair of NIST MEP Award Committee; Ruth Wilcox, CIRAS; Steve Devlin, CIRAS MEP Program Director; Alan Hagie, President, Hagie Manufacturing; Lisa Hagie; Mike O'Donnell, CIRAS; Derek Thompson, CIRAS; and Roger Kilmer, NIST MEP Director



Wet processing pilot plant at the Center for Crops Utilization Research at Iowa State University.

## New Food Safety Law Focuses on Prevention

*Food processing is big business in Iowa. The state has more than 820 food processors generating more than \$32 billion worth of food products each year, according to Hoover's Database and the U.S. Census Bureau (2009). The entire industry is being impacted by the Food and Drug Administration's (FDA) Food Safety Modernization Act (FSMA), which was signed into law in January of 2011.*

In the most sweeping reform of food safety regulations in more than 70 years, the FSMA is designed to better protect public health by strengthening the food safety system and shifting the focus from responding to contamination that causes illnesses to preventing it. Recent data from the Centers for Disease Control and Prevention report about 48 million people (1 in 6 Americans) get sick, 128,000 are hospitalized, and 3,000 die from foodborne diseases each year.

Under the FSMA, the FDA has new enforcement authorities designed to achieve higher rates of compliance with prevention- and risk-based food safety standards and to better respond to and contain problems when they do occur. In addition, the law gives the FDA new tools to hold imported foods to the same standards as domestic foods and directs the agency to build an integrated national food safety system in partnership with state and local authorities.

With a focus on providing resources for the Iowa food industry, CIRAS has appointed Brenda Martin as project manager and CIRAS point of contact for all food production (human and animal) facilities in Iowa. "We recognize the need for industry support due to the developing new Food Safety Modernization Act that will impose more rigid compliance programs for our processors," Martin explains.

Martin is working closely with Dr. Angela Shaw, who began her role as assistant professor in food science and human nutrition and as food safety specialist for Iowa State University Extension and Outreach last year. Through her association with CIRAS, Shaw is conducting workshops and providing training and resource guides to the food industry; she will also do some company-specific project work. CIRAS is helping to purchase some analytical equipment for her lab as a resource to industry. This will allow her to teach industry representatives how to develop microbial intervention strategies.

One of Shaw's first assignments is to introduce food manufacturers to the first stage of FSMA regulations and how to comply with them. She emphasizes that the regulations are beneficial to food manufacturers as well as consumers. "It gives the food industry more guidance on ensuring the safety of the products they produce," she says.

While producers with food sales of \$500,000 or more for the last three years are the first ones required to comply with the new provisions, Shaw says smaller producers will eventually be expected to follow the regulations. “There will be more accountability and more inspections and fees if producers are not in compliance,” Shaw points out. “We want to make sure they’re prepared and ready ahead of time.”

To prepare for implementation of the new regulations, Shaw recommends taking the following actions:

- Conduct a hazard analysis to identify hazards (physical, chemical, biological, allergen) that could affect food safety.
- Determine the monitoring, record-keeping methods (i.e., logs, temperatures, training), and treatments to control all hazards identified.
- Prepare standard operating procedures that detail everything done within the facility, including sanitation, personnel training, and facility management.
- Make sure record keeping is maintained and checked regularly to ensure control of all hazards.
- Have a recall plan that includes regular mock recalls.

Shaw has already conducted several workshops, and plans are being made for additional trainings to help manufacturers learn the steps to take in achieving these actions. Industry response to the regulations has been very positive thus far, but she notes that it takes a lot of time and due diligence from companies to create a comprehensive food safety plan.

While many of the FSMA regulations are already in effect, Shaw points out that there are many more to come and encourages food manufacturers to subscribe to the FSMA list serve at [www.fda.gov/Food/FoodSafety/FSMA/default.htm](http://www.fda.gov/Food/FoodSafety/FSMA/default.htm) to get regular updates. In addition, information about upcoming workshops and training events can be found on the CIRAS website at [www.ciras.iastate.edu/conferences.asp?q=Conferences](http://www.ciras.iastate.edu/conferences.asp?q=Conferences).

The CIRAS focus on the food industry goes beyond food safety, according to Martin. “In my role as project manager, I will meet with companies and coordinate resources to support all aspects of helping them grow their business,” she says. Topics will include such things as regulatory compliance, new product development, current product improvement, food safety and related quality systems, operational continuous improvement tools, supply chain management, market development, supervisory and leadership development, and environmental health and safety programs. Martin will also introduce food processors to the Iowa State University Center for Crops Utilization Research for product development assistance.



*Dr. Angela Shaw, who joined the Iowa State University faculty in August 2011, works with Iowa producers and manufacturers to promote food safety. She is an assistant professor in the Department of Food Science and Human Nutrition and is an Extension and Outreach food safety specialist.*

An Iowa State University alumna, Shaw earned her bachelor’s degree in animal science in 2003 and her master’s degree in meat science in 2006. She completed her doctorate in 2010 at Texas Tech University in animal science with an emphasis in food safety and microbiology. While in Texas, she worked on food safety issues with growers of vegetables, fruits, and nuts and with the meat industry.

At Iowa State, Shaw is working with farmers and food manufacturers covering nearly every type of food that has food safety concerns. One of her first assignments is introducing food manufacturers to the Food Safety Modernization Act (FSMA). With support from Brenda Martin, CIRAS project manager for food processors in Iowa, Shaw is conducting workshops and providing training and resource guides to industry to aid in compliance with the FSMA.

Shaw’s research focuses on intervention strategies against foodborne pathogens including *Salmonella*, *Listeria monocytogenes*, *Campylobacter*, and *E. coli* O157:H7 within a variety of food types. She also is studying the non-O157 STEC bacterium that was responsible for the sprout outbreak in Germany in 2011 and has been responsible for outbreaks in the United States. “It’s not as common, but more deadly and causes more illness than the *E. coli* O157:H7 that people hear about so much,” Shaw says.

› **For more information, please contact Brenda Martin at 515-570-5282 or [bkmartin@iastate.edu](mailto:bkmartin@iastate.edu).**

## Green 101 and Dumpster Dive: Two Workshops That Provide Tools for a Greener Bottom Line

With the world's increased focus on sustainability and greener business practices, many Iowa businesses are looking for opportunities to make their processes more ecofriendly while improving their bottom line.

CIRAS now offers two fast-paced workshops that combine classroom-style learning with interactive "live" simulations: Green 101—Green Generalist Training; and Dumpster Dive—Materials Use and Solid Waste Management.

The Green 101 workshop gives participants the necessary tools to redesign a fictitious company's business by using green techniques to improve customer and employee satisfaction. Participants are then able to apply methods of improving their overall environmental sustainability in the workplace and in personal situations.

The Dumpster Dive workshop focuses on concepts relating to life cycle analysis, alternative material selection, and byproduct reduction. It demonstrates some practical tools that can be implemented to reduce or eliminate the solid waste stream. These concepts are put into practice with a simulation activity where participants sort the trash they produce, calculate the costs associated with managing this waste, and generate ideas for reducing, reusing, and recycling to save money and lessen environmental impacts.

Marty Fox, president of Decker Manufacturing, was a recent participant in the Dumpster Dive workshop. Fox says the seminars were a great tool used to implement green practices. "We learned how to use materials more efficiently and how to reduce our amount of waste," says Fox.

**Training is available at public workshops or by scheduling a training at your company. For more information, please contact Mike O'Donnell at 515-294-1588 or modonnll@iastate.edu.**

- **Green 101**  
September 11—Burlington, IA  
September 18—Cedar Rapids, IA  
8:00 a.m.—5:00 p.m.
  - **Dumpster Dive**  
September 12—Burlington, IA  
September 19—Cedar Rapids, IA  
8:00 a.m.—5:00 p.m.
  - **Engineering Career Fair**  
September 25  
12:00 p.m.—6:00 p.m.  
Ames, IA
  - **TAP Your Steam System Training**  
September 26 and 27  
8:00 a.m.—5:00 p.m.  
Johnston, Iowa
  - **Iowa's Advanced Manufacturing Conference**  
October 4  
8:00 a.m.—5:00 p.m.  
Ankeny, IA
  - **Preventive Controls Webinar**  
Food Safety Modernization Act—Staying in Front of the Changes  
October 10  
11:00 a.m.—1:00 p.m.
- See the Events section of the CIRAS website, [www.ciras.iastate.edu](http://www.ciras.iastate.edu), for details.**

## New CIRAS Staff



### Ranojoy Basu—Postdoctoral Associate

Ranojoy Basu joins CIRAS as a postdoctoral associate specializing in macroeconomics, industry economic performance, and biobased products survey analyses. Previously Basu worked as a research assistant with CIRAS, where he compared the economic performance of Iowa industry with the overall national industry performance. He also analyzed survey results to better understand the characteristics of companies that produce biobased products and intermediate materials. Prior experience at Iowa State includes instructor with precollegiate programs and teaching assistant in the Department of Economics. Basu earned a BS in economics from the University of Calcutta, India. He received an MS degree in quantitative economics and a PhD in economics at Iowa State.



### Brian Muff—Project Manager

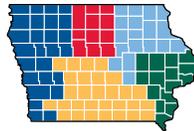
Prior to joining CIRAS, Brian Muff spent five years with the Institute for Physical Research and Technology Company Assistance group at Iowa State University connecting Iowa companies with Iowa State faculty and staff and managing collaborative research projects. During the past two years, Muff negotiated agreements and managed industry relationships for the Vice President for Research and Economic Development Office at Iowa State. Muff was previously employed as a chemist at Kemin, Novartis, and Purac, and he worked in product management at Streck Labs in Omaha. He earned a bachelor's degree in chemistry as well as an MBA from Iowa State University.

# CONTACT INFORMATION



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 ciras.info@iastate.edu • www.ciras.iastate.edu

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



|                        |              |                      |                | Account Manager | Bioindustry | Economic Development | Energy | Engineering | Government Contracting | Growth Strategies | Management Practices | Productivity | Quality Management | Safety | Supply Chain Management | Sustainability | CIRAS Operations |
|------------------------|--------------|----------------------|----------------|-----------------|-------------|----------------------|--------|-------------|------------------------|-------------------|----------------------|--------------|--------------------|--------|-------------------------|----------------|------------------|
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| Srinivasan, Shankar    | 515-290-6702 | srigshan@iastate.edu | Campus         |                 |             |                      |        | •           |                        |                   |                      |              |                    |        |                         |                |                  |
| Thach, Chris           | 515-294-7731 | cthach@iastate.edu   | Campus         |                 |             |                      |        |             |                        |                   |                      |              |                    |        |                         |                | •                |
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## CIRAS PARTNERS

Iowa State University  
 Center for Crops Utilization Research  
 College of Engineering  
 Department of Environmental Health and Safety  
 Engineering Career Services

Engineering-LAS Online Learning  
 Industrial Assessment Center  
 Institute for Physical Research and Technology  
 Meat Science Extension

Des Moines Area Community College  
 Iowa Association of Business and Industry  
 Iowa Business Council  
 Iowa Central Community College  
 Iowa Farm Bureau Federation  
 North Iowa Area Community College



## Business Spotlight—Tero International

*For close to twenty years, Tero International has earned a distinguished reputation as an interpersonal skills research and corporate training company.*

In 1993, Rowena Crosbie, founder and president of Tero, launched her business with \$200 in hand and a vision to help others improve their image by acquiring social and presentation skills necessary for success in the business world.

Flash forward to 2012. Tero now boasts 19 staff members who work together to provide leadership development and executive coaching as well as orchestrate specialized trainings in presentation skills, negotiation techniques, professional image, etiquette and protocol, intercultural competence, interviewing skills, team building, time management, and building customer relationships.

### CIRAS and Tero exchange expertise

Crosbie met Ron Cox, the director of CIRAS, when he was a participant in one of her leadership development workshops. Cox immediately recognized the benefits of the trainings, and soon Crosbie and other Tero trainers were invited to conduct leadership workshops for CIRAS team members.

Crosbie has also worked with David Bogaczyk, a program director at CIRAS, who provided Tero with counsel on government contracting pursuits and strategies to increase government sales.

In 2010, Crosbie began a three-year term serving on the CIRAS Advisory Council, bringing her service industry perspective to the board.

### The evolution of corporate training

While Crosbie has witnessed a technological evolution in communications over the years, she emphasizes that strong interpersonal relationships, people dealing directly with people, continues to be the most important skill set within an organization.

“Today’s business challenges rely on capable and competent professionals,” states Crosbie. “The most critical skills that successful professionals master are the ability to relate well to others, the ability to listen well and understand different perspectives, and the ability to make a positive and lasting impression.”

### Training programs backed by solid research

Tero invests between 50 and 60 hours of research, program design, and curriculum development for every hour of personalized training that is offered in the classroom.

The trainers translate complex findings of scientific research into relevant, practical, and fun programs that make a real difference in the bottom line for Tero clients.

“Research indicates that 85 percent of your professional success rests on your interpersonal skills, with only 15 percent



*Continued on page 4*