



CIRAS' Technology Assistance Program—Connecting Iowans with Tech, Each Other

Pengo Corporation had a problem.

Pengo, one of the world's largest manufacturers of drilling attachments and related wear parts, went in late 2016 to test a new auger in front of a major client. And it failed.

The company turned to CIRAS materials specialists Paul Berge and Adam Bosenberg, who quickly found decarburization in the area surrounding holes created for a driveshaft pin. Further testing at Iowa State University's Center for Nondestructive Evaluation identified tiny cracks extending from the pin holes deeper into the metal.

Berge diagnosed the problem as improper heat treatment. When the process is conducted in the wrong environment, he said, "you end up with the surface of the steel losing carbon. And then it turns back into soft iron, which is a lot weaker.

Eric Matthias, director of business development/engineering for Laurens-based Pengo, later valued CIRAS' work on the project at \$450,000—partly because the corrections helped Pengo land new business and avoid expensive third-party testing. "They've been

huge for us," Matthias said of CIRAS. "I actually just sent two more of my engineers down there today to work with them again."

Pengo Corporation was one of 379 companies that received help from the CIRAS Technology Assistance Program (TAP) in the fiscal year that ended June 30, 2017. Clients spanned 82 of Iowa's 99 counties, and the work they were involved with—a mixture of additive manufacturing experiments, materials-related testing, and contract research projects—produced a

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combined economic impact of more than \$164 million.

Matthias initially learned about CIRAS through a regularly scheduled tour of Iowa State laboratories. Chris Hill, CIRAS TAP director, said many companies are learning about CIRAS from those tours and from the roughly 20 educational events that TAP experts held last year around the state.

Connecting to Technology

"We're out there talking about technologies," Hill said. "Companies are listening and discussing the issues they are having. We are linking those issues to technologies that could help them. In some cases, we're providing direct services by faculty and staff. In other cases, we're referring them to other companies."

Referral might mean assisting a company in finding someone who can help them automate a particular manufacturing process, Hill said. Or it may mean connecting two Iowa firms that each have something the other might need.

For example, CIRAS helped American Athletic discover a firm in Sully, Iowa, that since has made multiple tools for the company. That connection came as part of CIRAS' work helping the company finalize a new product aimed at assisting cheerleaders in improving their balance.

By late 2016, American Athletic, a longtime manufacturer of steel sports equipment, had created a metal prototype of what would become the Elite™ Cheer Stand, said senior design engineer Senad Salkic. But the prototype was "big and bulky and didn't look all that great."

CIRAS TAP experts quickly helped Salkic design a plastic cheer

stand that could be manufactured from molds made with CIRAS' metal 3D printer. The result, Salkic said, was that American Athletic got a much-improved version of its cheer stand to market before Christmas while receiving a valuable window into an important new technology.

"I'm really excited that Iowa State and CIRAS are on the forefront of this cutting-edge technology," Salkic said. "I'm thankful that we at AAI got a chance to be a part of it."

Connecting to Companies

Cresco-based Upper Iowa Tool & Die and Innovations, a company that makes tools, dies, assembly and checking fixtures, and a variety of other manufacturing equipment, also found new success by partnering with an Ottumwa firm it discovered through CIRAS.

Upper Iowa owner Scott Fortune said a CIRAS-arranged connection with Ottumwa-based Angstrom Precision Molding has helped his company regain once-lost business. Upper Iowa now works seamlessly with its Ottumwa counterpart, building tooling for parts that are then produced by Angstrom.

From the customer's standpoint, "we look like we're one business," Fortune said. "We're like a family."

From Angstrom's standpoint, the relationship is just one more benefit of absorbing CIRAS' expertise.

Jim Johnson, COO of Angstrom Precision Molding, said CIRAS has been instrumental in helping his company

explore new technologies and expand its offerings.

"The first place I go to when we have a new product is CIRAS," Johnson said. "I like to get other people's opinions, and CIRAS has plenty of brains to pick."

"The first place I go to when we have a new product is CIRAS. I like to get other people's opinions, and CIRAS has plenty of brains to pick."
 — Jim Johnson

On the Cover: CIRAS helped Pengo Corporation diagnose problems with an auger drive shaft

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

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“People need to utilize the expertise that CIRAS offers,” Johnson said. “It doesn’t always have to be a paid service. Maybe conversations with them will lead you to something. Or maybe it’ll lead you to someone else who can solve your problem.”

Connecting to the future

One problem for Iowa manufacturers involves the relatively low percentage of companies that can use advanced engineering tools. Bridging that gap will be a major goal for TAP in 2018, Hill said, since coming technologies will require a computerized design.

One way to prepare companies is to help them learn existing tools, such as computer-aided design, Hill said. Another option involves scanning tools to help firms create digital files for parts that currently lack a digitized design.

“Probably 50 percent of Iowa right now is unable to take advantage of technologies such as additive manufacturing,” Hill said. “You’re talking probably close to 50 percent that can’t even get into the stadium to watch the game. If we can do things there, that opens up the market.”

For those companies that do have digital designs, CIRAS will be available to help optimize parts and products so they can be 3D printed more cost effectively with the least possible amount of material. Other experiments, such as using plastic molds in a plastic-injection molding process, could open new doors for companies that make small batches of highly customized products.

“A lot of companies would like to innovate their products, but the capital requirements keep them from doing that,” Hill said. “With this, they could innovate.”

Stay tuned.



Above top: CIRAS materials specialist Paul Berge leads a tour demonstrating what his lab is capable of discerning about metals. **Above bottom:** CIRAS’ Chris Hill, center, discusses possible joint 3D printing projects with Neil Quellhorst and Hayley Yearian of MERGE Innovation Space at the University of Iowa.

➤ For more information, contact Chris Hill at chhill@iastate.edu or 515-313-8251.



Iowa State College of Engineering students display projects at a Design Expo in 2016.

Iowa State Engineering Students Help Develop ‘Internet of Things’ Applications for Companies

Two Iowa businesses have taken major technological steps forward following work by teams of Iowa State University students involved in capstone projects.

Several Iowa State engineering students working for an Urbandale start-up designed a real-time chatbot to answer plain-English questions about the state of a building’s infrastructure systems, while another group of students developed a software platform to help control autonomous farm machinery.

Critical Labs is a division of the DPT Group, an Urbandale-based manufacturers’ representative for the commercial HVAC and electrical industry. Critical Labs was created roughly two years ago to begin linking various systems so they could talk to each other electronically and find savings for customers.

Company co-founder Taylor Greiner asked students during the 2016–2017 academic year to create a new voice for Critical Labs—a chatbot able to answer plain-language questions about a building’s infrastructure.

Students provided “essentially a working library” of how the chatbot should respond to different questions. It was not a finished product, Greiner said, but it’s the heart of something that the company eventually will implement.

“It was a project that we didn’t necessarily have time to do ourselves, but we were interested in seeing if it could be done,” Greiner said. “It’s in the pipeline to pursue further down the road.”

CIRAS project manager Carey Novak said Iowa State students from the Colleges of Engineering and Agriculture and Life Sciences worked on a total of 146 projects last year as the culmination of their educational experience. The projects involved 80 Iowa companies in 36 counties and resulted, according to the companies, in a combined economic impact of more than \$63 million.

One team, assigned to work with Ames-based Smart Ag LLC, developed a software platform that soon should be helping farmers control a variety of autonomous agricultural machinery.

Owner Colin Hurd said the project already has led to two new jobs at Smart Ag and is expected to spark new sales of roughly \$300,000. Students started from scratch in spring 2016, then progress accelerated when one of the capstone students was hired as a summer intern. The group eventually developed software that now is in beta testing.

“We assume that there’s some development to be completed on it, but we expect we’ll have a commercial product for 2018.”

— Colin Hurd

“We assume that there’s some development to be completed on it, but we expect we’ll have a commercial product for 2018,” Hurd said.

Hurd and Greiner both praised capstone projects as a low-risk way to explore new ideas.

“It’s a good way to sort of start the wheel spinning on some new stuff,” Hurd said. “Not the critical path stuff, but stuff that’s interesting. It’s kind of a good way to vet things and do some initial proof-of-concept on ideas.”

➤ For more information, contact Carey Novak at cenovak@iastate.edu or 515-408-4257.

Iowa State Research Shows Display Cases with Coolgenix® Technology Keep Meat Colder and Safer

An Iowa-made line of retail meat display cases keeps food colder and safer than its competitors, according to recently published research by food packaging experts at Iowa State University.

A study by Iowa State's Polymer and Food Protection Consortium, a research center established on campus in 2016, shows that display cases featuring Coolgenix technology manufactured at the Hill PHOENIX Inc. (Hillphoenix) plants in Keosauqua and Centerville kept beef and chicken internal meat temperatures colder on average than meat kept in the three other types of cases. The Coolgenix cases also did a better job controlling bacteria than similar equipment, according to the study, which was overseen by associate professor Keith Vorst.

Hillphoenix says the research, which was arranged with funding assistance from CIRAS' Technology Assistance Program (TAP), will help the company uphold its patents and maintain its share of a multimillion-dollar North American food retail display case market.

"Our competition is saying their technology is just as good or better, and we proved their statements incorrect," said Margie Proctor, marketing and design specialist at Hillphoenix. The company sought a third-party opinion from Iowa State because "we needed somebody to just give us the facts."

"This provides food retailers with educated facts and offers store owners, managers, and merchandisers the opportunity to review an unbiased study with clear markers of which technologies are best for meat and seafood applications," Proctor said.

CIRAS routinely helps businesses arrange faculty research. In some instances, in which the outcome could help grow Iowa's economy,

CIRAS can use money specifically appropriated by the Iowa Legislature's Economic Development Appropriations Subcommittee to match company investments in research.

"We use this program to help de-risk the adoption of new technologies or business models for companies," said TAP director Chris Hill. "Typically, what we see is where a company has a mature concept and they want help from Iowa State faculty to gain additional information and insights."

"We're the connector," Hill said. "We speak 'Faculty,' and we speak 'Company,' so we can provide a good understanding of what all the deliverables will be and how success could be defined."

"Typically, what we see is where a company has a mature concept and they want help from Iowa State faculty to gain additional information and insights."

— Chris Hill

In the Hillphoenix case, CIRAS coordinated with experts both in the Polymer and Food Protection Consortium and in Iowa State's Meat Science Laboratory to help design and execute a study. Hillphoenix was pleased with the process and ultimately decided to invest

in further research by joining the consortium. Proctor attributed that decision to "the credibility of Iowa State University's reputation in food science and the assistance CIRAS provided with the Service Case Insight Study."

Hillphoenix also donated the nine tested display cases to Iowa State for use in future food research.



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A DOVER COMPANY

➤ For more information about food company research, contact Brenda Martin at bkmartin@iastate.edu or 515-570-5282.



Digital Manufacturing—Better Efficiency via an Internet-linked Vending Machine

Asked to explain the value of his two-year-old electronic supply cabinets, the comparison Joe Greving reaches for is to a major technological shift.

“I can’t imagine going back to the way we used to do it,” said Greving, president of Iowa Steel Fabrication in Osceola. “Once you have an iPhone X for 30 days, you’re not going back to a flip phone.”

“I can’t imagine going back to the way we used to do it. Once you have an iPhone 7 for 30 days, you’re not going back to a flip phone.”

— Joe Greving

Greving’s “iPhones” in this metaphor are two large, industrial vending machines that dispense not sodas and snacks but welding sticks, safety glasses, and other items that Iowa Steel’s 70 employees need during the normal course of carrying out their jobs.

Two years ago, at the suggestion of Airgas, Iowa Steel’s main source for such supplies, the company stopped using its employees to handle and sort such items. Now the machines submit their own orders electronically to Airgas—while simultaneously giving the company detailed information about which of its employees is using what.

Ron Burmester, branch manager for Airgas’ central Iowa region, said such machines are used by nine of his office’s customers. The technology is not yet taking over. But it has proven incredibly popular with companies able to use the new data to control costs.

“Typically, it’s a larger customer that takes it,” Burmester said. “It depends on what the customers need.”

At Iowa Steel, Greving believes the machines have saved time and boosted productivity. Sensors inside the machine automatically detect what’s taken out, giving Airgas a precise list of what needs restocking via the trucks that visit Iowa Steel each Friday.

“Employees are difficult to come by,” Greving said. “If you can limit the amount of time your key employees are off task, stocking shelves, or looking for supplies, those are things that are immeasurable.”

Although the technology is not cutting edge, it appears to be growing.

Mike McGillis, art director at Wittern Group, a Clive-based business that includes vending machine manufacturing, said his company has been selling industrial vending machines for decades—mostly oriented toward tools, personal protection, information technology supplies, and medical-related equipment.

“You’ve got individuals who have to touch product and keep track of product all the time,” McGillis said. “Having it online and digital takes a lot of work away from the guy who has to order products. It’s becoming kind of a hot item.”

John Brand, CEO and founder of The MPI Group research firm, spoke at a CIRAS event last fall where he urged Iowans to use new technology, where possible, to enhance what they do.

“There is a real opportunity here,” he said. “But it’s only going to be for those who can imagine their businesses differently.”

➤ **For more information, contact Mike O’Donnell at modonnll@iastate.edu or 515-509-4379.**

An Iowa Steel employee uses the Airgas vending machine.

IMPACT: \$2.3 Billion

CIRAS' Economic Impact, 2012–2016



Jim Lange always intended to get into government contracting. But he needed CIRAS' help to make it work.

Lange, owner of the Always Moving Forward moving company in North Liberty, launched his business in 2013, shortly after leaving the U.S. Marines. He attended several CIRAS events over the next few years, seeking more information about doing business with the government. But Lange's company was growing, "and I was a one-man show."

"He was interested; he just didn't have the time," said CIRAS government contracting specialist Julie Fagle.

Fagle eventually sought Lange out when she recognized an opportunity. She walked Lange through various applications and ultimately helped Always Moving Forward land \$119,000 of work moving furniture to accommodate a residence hall renovation at Iowa State University.

Lange's company was one of 3,922 firms that CIRAS assisted over the last five years with projects that

Always Moving Forward is a veteran-owned moving company.



boosted business growth, improved productivity, increased technology use, and enhanced leadership. Combined, projects spanned all 99 counties and had an economic impact of more than \$2.3 billion.

In 2016 alone, CIRAS helped 1,616 businesses from 96 counties with projects that, according to the companies, sparked nearly \$680 million in new investment, new or retained sales, and costs that were reduced or avoided.

Always Moving Forward added two extra crews last summer to handle additional

work from the residence hall contracts. "There's just so much value in what you guys do."

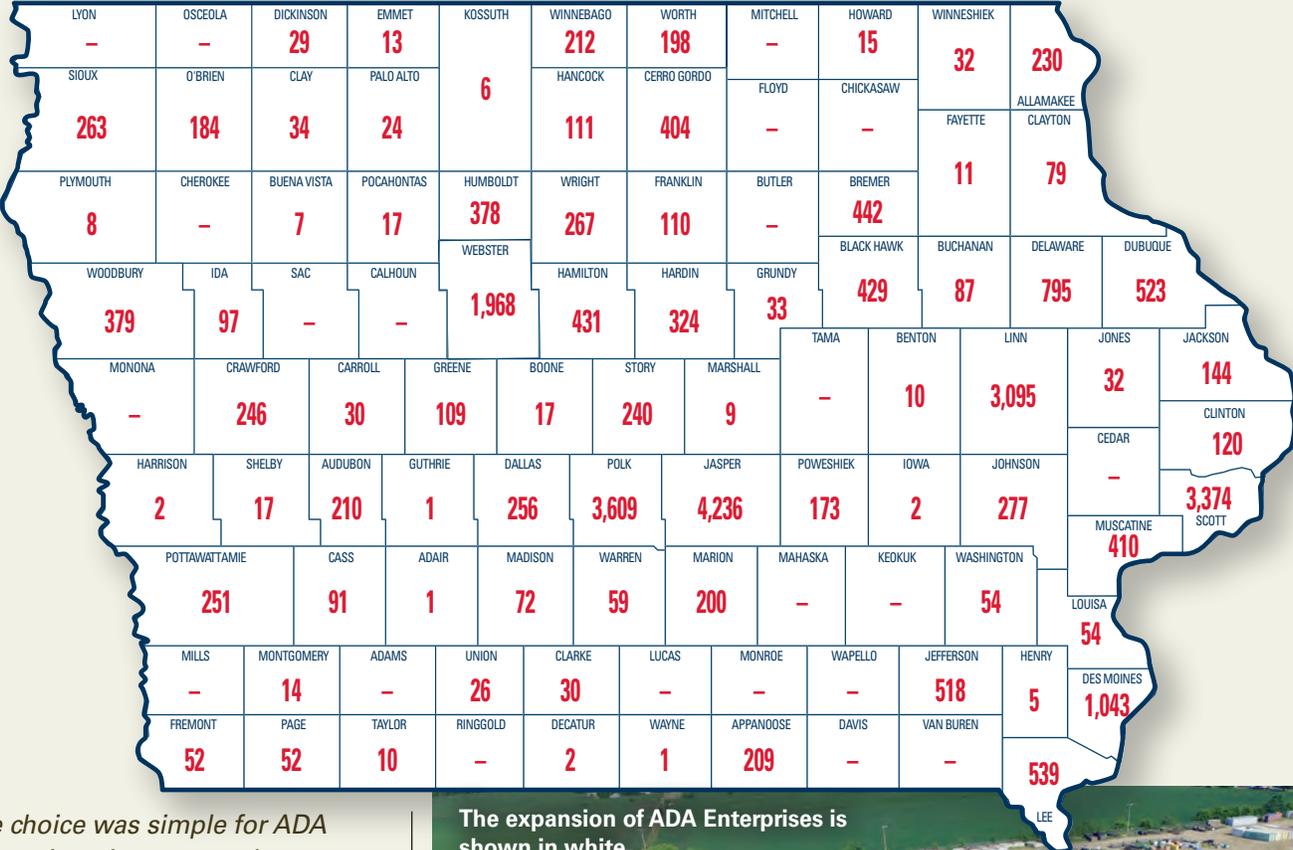
"It's just a little overwhelming to do it all by yourself and then try to run a business," Lange said. "Without Julie, I wouldn't have even known the contract was out there, let alone how to apply for it."

"CIRAS was absolutely instrumental in making it happen."

For help growing your company's sales, explore www.ciras.iastate.edu.

JOBS: 28,727 Saved or Retained

Jobs Saved or Retained (reported by clients), 2012–2016



The choice was simple for ADA Enterprises: improve and grow, or tread water indefinitely.

Company leaders chose the former—and asked CIRAS to help.

ADA Enterprises, a Northwood, Iowa-based manufacturer of pig and calf flooring and commercial outdoor furniture, has increased its payroll by 40 percent over the last two years following CIRAS-assisted projects to install a new coating process and more than double the plant's production capacity. The project was estimated in 2016 to have had an economic impact of roughly \$10 million—but that only counted half of the 16 jobs that ADA has added since work began.

"We basically are just setting our table for the next 20 years of growth," said company president Thomas Stensrud. "We're really happy with CIRAS. You guys are awesome."

The expansion of ADA Enterprises is shown in white.



Over the last five years, CIRAS clients across Iowa have added or retained 28,727 jobs as a result of work done by the center and its partners. Combined, those nearly 4,000 companies estimated that the projects they completed had an economic impact of more than \$2.3 billion.

Last year, a total of 1,616 CIRAS clients added or retained more than 5,700 jobs.

In Northwood, CIRAS helped ADA Enterprises both improve its production process and design the layout of a new, more efficient factory expansion.

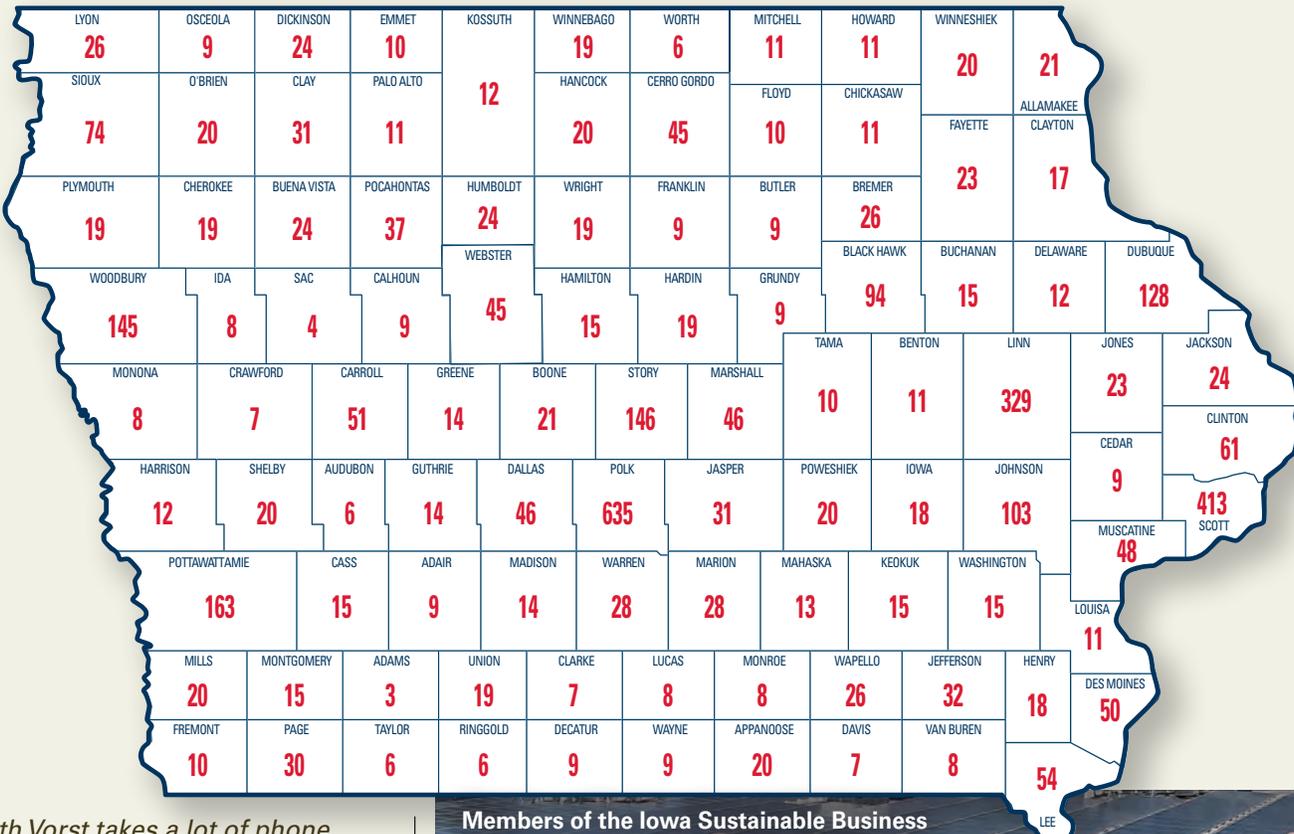
Stensrud said the growth will allow officials to strengthen ADA and insulate the company against future economic downturns. In short, growing now will better position the company to be a strong Northwood, Iowa, employer for a long time.

CIRAS helped, Stensrud said. "We've done a number of different programs through CIRAS. They've all worked out very well."

For help expanding your business, explore www.ciras.iastate.edu.

CONNECTIONS: 3,922 Distinct Clients Served

Distinct Clients Served by CIRAS, 2012–2016



Keith Vorst takes a lot of phone calls these days from companies searching for an edge.

Vorst, an associate professor in Iowa State University's Department of Food Science and Human Nutrition, established the Polymer and Food Protection Consortium two years ago to help companies explore safer, cheaper, and more efficient approaches to food packaging. (CIRAS assisted through its state-funded Technology Assistance Program.)

"Packaging is one way to draw customers in but at the same time reduce costs," Vorst said. Brick-and-mortar retailers, facing online competition, yearn for products "that are more appealing on shelves, last longer, and come with lower costs."

The consortium is just one resource that CIRAS clients used last year to make their businesses better. Over the past five years, CIRAS has worked with 3,922 companies by providing educational seminars, one-on-one counseling, or technology assistance. Many received

Members of the Iowa Sustainable Business Forum tour a McFarland Clinic building.



help through CIRAS' connections with Iowa State faculty, specialists at partner organizations, or the national Manufacturing Extension Partnership.

The list of accessible partners includes the Iowa Lean Consortium, which focuses on advancing Lean throughout Iowa's economy. "Certainly, CIRAS helped get the word out about the ILC," said executive director Teresa Hay McMahon. "CIRAS is a key partner, helping connect Iowa companies to the operational excellence resources available through people like us."

In 2014, CIRAS helped establish the Iowa Sustainable Business Forum so that Iowa businesses could share expertise in the area of sustainability. Experts from 23 companies now meet regularly for discussions and to tour local facilities.

"It's very much built around sharing best practices business to business," said ISBF director Adam Hammes. "We're trying to go from ideas to implementation."

For more ways that CIRAS can connect, visit www.ciras.iastate.edu.

CIRAS Helps Avoca Surface Take Smooth First Steps into Government Contracting

It was a quest for help with the paperwork that sent Patrick Richards to the Flying J truck stop in Avoca.

In 2016, Richards was in the beginning stages of creating what would become Avoca Surfaces, a countertop business owned by Richards, his son, and another father-son team. Lori Holste, executive director of the Western Iowa Development Association, suggested that Richards meet with Andy Alexander, a government contracting specialist with CIRAS' Procurement Technical Assistance Program (PTAP). And a long-term partnership was born.

"I was just looking for someone who could help me with the business plan," said Richards. "But Andy ended up being instrumental in helping us locate a number of things."

With Alexander's help, Avoca Surfaces last year landed multiple jobs installing countertops for Pottawattamie County municipalities, as well as \$6,300 worth of work for the U.S. Army Corps of Engineers. The extra business has not been life changing, Richards acknowledged, but it's been helpful.

"We've got a lot of commercial stuff that's popped up for us, but we're going to keep our feet in there," he said. "I still like that government work."

Alexander, who has advised Richards on multiple aspects of his business over the last two years, said the process started with one Flying J conversation and the agreement to draw up a step-by-step plan for breaking into the confusing world of government contracting.

"Every time they did something, we went on to the next one," he said. "One thing leads to another. Eventually, we identify some contracts, and we go after them . . . one bite at a time."

Beyond the business plan, CIRAS helped Richards work on the business' capability statement, its registration for the federal government's System for Award Management (SAM), and its registration with several state and local government purchasing entities.

Most recently, Avoca Surfaces also has been working with CIRAS and Iowa State University engineering experts to test materials for a possible new type of cabinet product.

"Whenever I have questions about anything, Andy is more than happy to spend the time with me," Richards said. "He's very valuable to us."

Richards added that "the guidance, the experience" that CIRAS brought to his business was essential.

"I learned a lot from Andy," he said. "Just the little things from him—where to look, how to look for government contracts."

"I'm not looking for somebody else to do it," Richards said. "I'm looking for somebody to show me, and he's done exactly that."

➤ **For more information, contact Andy Alexander at andyalex@iastate.edu or 402-547-0333.**

Patrick Richards (right) and his son, Ryan.



UPCOMING EVENTS



■ You Are a Certified Targeted Small Business—What's Next?

March 21, 2018
9:00 a.m. to 10:00 a.m.
Webinar

■ Dry & Semi-Dry Sausage Short Course

April 10–12, 2018
8:00 a.m. to 5:00 p.m.
Ames

For more information on these and other similar events, please visit www.ciras.iastate.edu/events.asp.

Watch for It: CIRAS Is Expanding Networking Events

When Bob Hickman sets out to meet business people, he usually has a specific type in mind. The owner of Chenhall's Staffing & HR Network in Davenport wants to find someone at a large enough company, with the right expertise, who he can partner with to pursue government contracts.

And that, Hickman says, is one reason he frequently attends CIRAS' partnership and networking events.

"Sometimes, that's the only place they come out."

It's all about networking—whether you define the term to mean actively courting business deals or simply searching for help with a problem. Networking among manufacturers is so important that it was identified as a key strategy during the Iowa governor's 2017 "Year of Manufacturing" initiative.

CIRAS program director Mike O'Donnell believes Iowa's industrial potential may be going unfulfilled because business leaders don't realize the expertise that exists in offices just down the road. Someone a town or two over just may need your product or have an answer you're seeking.

"Networking is incredibly important. But networking for the sake of networking rarely works. We need to help leaders from across the state connect in more meaningful ways."

— Mike O'Donnell

"Networking is incredibly important," O'Donnell said. "But networking for the sake of networking rarely works. We need to help leaders from across the state connect in more meaningful ways."

In 2018, CIRAS is expanding its long-standing slate of

networking offerings to help companies be more focused in their networking effort. We now will offer the following:

- **Matchmaking Events**—Targeted, one-on-one interactions focused on creating new business relationships
- **Peer Networking Events**—Professional peers developing connections and sharing best practices
- **Regional Networking Events**—Informal events aimed at helping expand business networks

A CIRAS matchmaking event last May drew 64 people from 44 companies to take part in more than 400 face-to-face meetings.

"This just puts a lot less pressure on everyone," said CIRAS project manager Paul Gormley. "It's a more organized way of connecting than just putting people in a room . . . The CIRAS approach provides at least some confidence level that business is going to happen."

"I didn't know what to expect," said Brian Nicolet, vice president of global purchasing for Dee Zee Inc. in Des Moines. "In general, it seemed like it was a good way to get information or meet with a large group of people in a short amount of time. . . . You get in there, and you get it done."

John Nelson, sales manager at ESCP Corporation in Davenport, prefers the smaller networking events. It's easy to waste time if you don't understand the purpose of the event, Nelson cautioned. But it's a great way to learn.

"People have helped me," Nelson said. "I've made some integral contacts by going there that have helped me do better business."

➤ For more information, contact Paul Gormley at gormley@iastate.edu or 319-721-5357.

A CIRAS networking event in November.



Freda Sojka

Every so often, CIRAS likes to take a moment and tell you a little bit about the people who make Iowa businesses better.

Freda Sojka was already retired when she turned her Columbus Junction candle shop into a popular maker of all-natural bug repellent. Here's what's buzzing through her mind.



NAME: Freda Sojka
EMPLOYER: Simply Soothing
JOB TITLE: CEO/Owner
FAMILY: Husband, Jim; four children and five grandchildren

■ Explain your job.

I run the company and make decisions about future growth. I'm involved in almost every aspect of the company, from formulation of new products to manufacturing.

■ How did you get started in Iowa industry?

I worked at Monsanto for 23 years in various positions, including as a lab technician. I started Simply Soothing as a side company in 2003 with candles, air fresheners, and other products. I retired from Monsanto in 2004 and created Bug Soother four years later. We now sell it in more than 6,000 locations around the world.

■ How has the business changed?

Retail has become brutally competitive thanks to Amazon and e-commerce, while manufacturing is more expensive due to the increased benefits necessary to retain quality people. It's more difficult for manufacturers to make money.

■ Boil it down. What's the key to success?

Be versatile (but persistent) and have plenty of back-up plans. Always look for opportunities to extend your peak business months, and be open to partnering with other Iowa businesses.

■ If you could change one thing about business in Iowa, what would it be?

I belong to a founder's group in Cedar Rapids that has been extremely useful. I wish there was something to connect Iowa businesses so we could reach out and help each other. *[EDITOR'S NOTE: CIRAS is currently assembling a list of such groups around the state. Details coming soon.]*

Also, there could be a website concentrating on Iowa-made products. We need to make it easier for people to choose local.

Know someone worthy of recognition as a Face of Iowa Industry? Email CIRAS at eckhoffj@iastate.edu.



Thousands Commemorate 'MFG Day'—with talks, tours, and walking tacos

For Eric Cook, national Manufacturing Day was a chance to show 40 high school vocational students what the future may hold.

"They get exposure," Cook said. "Just seeing what's out there, seeing what the job takes, what it's really like out on the shop floor."

Cook, a welding instructor at Des Moines Area Community College, was one of more than 5,800 Iowans who took time during the month of October to appreciate Iowa manufacturing. Combined, organizers held more than 160 events to celebrate "MFG Day" throughout Iowa's 99 counties.

This is the third year that CIRAS has worked to organize the event—alongside community colleges, Elevate Iowa, the Iowa Area Development Group, the Iowa Association of Business and Industry, Iowa Workforce Development, and Iowa State University Extension and Outreach. Events ranged from a Chamber of Commerce mixer in Adel to students from three high schools touring the Tommygate plant in Woodbine.

"I think the goal in general is to keep people interested and get them to understand that these opportunities are right here," said Scott Moyer, director of marketing for Dee Zee, a Des Moines maker of truck accessories who offered touring students a lunch of walking tacos. "We need good people."

For the third year in a row, Iowa was among the top five states in terms of the number of MFG Day events held.

➤ **For more information or to suggest an event for MFG Day 2018, contact Paul Dunnwald at dunnwald@iastate.edu or 515-509-1377.**



Iowa State Solar Car Team Probes the Practicality of a Sun-powered SUV

Members of Iowa State University's PrISUm solar car team see a silver lining in the clouds that dampened their October trip to Australia for the Bridgestone World Solar Challenge.

Despite rainy weather and a missed checkpoint that knocked them out of the finish, the Iowa State engineering students are taking pride in the fact that they managed to build a practical and highly functional solar-powered SUV—one that, once tweaked, appears destined for future competitions.

“Basically, we went down to Australia and did exactly what we said we were going to do,” said Dylan Neal. “We built a practical car, and it was incredibly reliable. We had zero breakdowns the entire race, and we proved that our car could go 230 miles on a moderately sunny day and 180 miles without sun—all while hauling four passengers.”

Team PrISUm, competing in its first international solar car race throughout Iowa State’s 28-year history of such contests, was knocked out of the finish roughly halfway through the weeklong race.

“We made it three days into the competition, but we hit a really bad spell of weather at the end of the day, when our battery pack was dying,” Neal said. “We weren’t able to hit a checkpoint.”

PrISUm, which started out competing among 14 teams in the World Solar Challenge’s “Cruiser” Class, was instead knocked into the noncompetitive “Adventure” category (along with 10 other teams). However, Iowa State still finished fourth among the 14 teams when judges rated the practicality of the various cars.

This year’s car, named Penumbra, was a departure for PrISUm, Neal said, in that the team deliberately set out to create a vehicle that was as close to a “normal” car as possible.

The four-passenger vehicle was built with multiple 3D-printed contributions from CIRAS—including a portion of the steering linkage, the latch on the rear hatch, and a metal emblem on the steering wheel.

“We’re happy CIRAS could contribute,” said Chris Hill, director of CIRAS’ Technol-

ogy Assistance Program. “We provided parts using both our metal and plastic technologies. The metal is stainless steel. The plastic uses chopped carbon within a nylon filament, and we added carbon fiber strands within those parts. They’re lightweight and extremely tough.”

Neal said Team PrISUm intends to modify Penumbra slightly and compete in the American Solar Challenge this summer. Meanwhile, students will be working on the next iteration of the design—for the team’s return to Australia in 2019. And they will be paying particular attention to the additive manufacturing technology CIRAS can provide.

“Additive technology is the future of vehicles like Penumbra,” Neal said. “It opens the door for lightweight, strong structures never thought possible before, and we are proud to have the support of CIRAS.”



➤ For more information on 3D printing (additive manufacturing), contact Chris Hill at chhill@iastate.edu or 515-313-8251.

Career Fair 2018

Agriculture and Life Sciences Ag Career Day

10 a.m. to 2 p.m., Wednesday, January 31, 2018, Memorial Union.

CONTACT: mikegaul@iastate.edu.

Engineering Career Fair

Noon to 6 p.m., Tuesday, February 6, 2018, Hilton Coliseum and Scheman Building.

CONTACT: ecs@iastate.edu.

Business, Industry and Technology Career Fair

Noon to 6 p.m., Wednesday, February 7, 2018, Hilton Coliseum (Business, Liberal Arts & Sciences, Human Sciences).

CONTACT: hscareers@iastate.edu

People to People Career Fair

Noon to 6 p.m., Wednesday, February 7, 2018, Scheman Building. Focuses on Human/Social Services, Education, Health/Wellness, Government, and Hospitality; Hosted by the Colleges of Human Sciences and Liberal Arts and Sciences.

CONTACT: hscareers@iastate.edu.

Design Career Fair

Noon to 5 p.m., Wednesday, February 14, 2018, Memorial Union.

CONTACT: designcareers@iastate.edu.

Teacher Education Career Fair

1 p.m. to 4 p.m., Monday, March 5, 2018, Alumni Center.

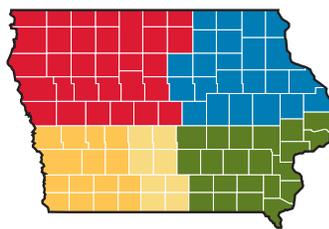
CONTACT: tecareerfair@iastate.edu



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GROWING YOUR BUSINESS

Internet Marketing Is at the Core of Any Growth Strategy

For most of the online era, companies were able to maintain two separate growth strategies: a traditional marketing plan and a web/e-commerce plan. Not anymore.

Buyers, from consumers to professional B2B purchasing agents, have changed. It is now imperative to include your website, search engine optimization, search engine marketing, social media marketing, email marketing, and web analytics as integrated pieces of your overall marketing plan.

Effective growth strategies use a complex mixture of online and traditional toolsets to find new customers. Nearly half of today's B2B buyers are millennials. They are "online first" and make 60 to 90 percent of their purchasing decisions before they ever engage with a potential supplier. To succeed, you need to get people's attention through search, social media, email, and other marketing tools; keep that interest with effective messages and authentic content; help buyers take action; and use the data generated by these activities to improve your process.

CIRAS is seeing signs that social media marketing has now become an effective part of that growth strategy. In our

2015 manufacturing survey, we found that social media marketing was not meeting company expectations. However, our most recent survey (conducted last summer) indicates that social media marketing is generating tangible results and sales growth. Specifically, several companies commented that they are engaging B2B buyers and generating new sales through social media.

The first step in integrating your internet marketing strategy is to go back to basics. Learn which people are making the buying decisions—their habits, their approaches to finding suppliers—and focus your marketing strategy on them.

Feel free to seek help if you don't understand something. There are plenty of great companies out there that can assist you. But make sure you remain involved. Be certain you understand what you do and don't want to do and are able to tell whether you're getting the results you desire.

In short, to grow strategically, you need to own your internet marketing strategy.

➤ **For more information, contact Paul Gormley at gormley@iastate.edu or 319-721-5357.**