



CIRAS Partnering with IEDA, Alliant Energy to Open New Digital Manufacturing Lab This Summer

Iowa manufacturers who are struggling to modernize and grow—either because of uncertain technological needs or because they're short of the people they need to get work done—will soon have access to a new option.

CIRAS, backed by substantial assistance from Alliant Energy and the Iowa Economic Development Authority (IEDA), will open a new laboratory this summer where Iowa companies will be able to experiment with new manufacturing technology and explore how the machines might impact their particular businesses.

Mike O'Donnell, director of the CIRAS Manufacturing Extension Partnership (MEP) program, said the ISU Digital Manufacturing Lab Powered by Alliant Energy will focus on helping two types of companies improve their businesses: those that are struggling to make the right choices in an ever-changing technological landscape and those that feel stuck because a shortage of people

is preventing them from growing the way they'd like.

Technologies exist to help both kinds of companies become more efficient and do more work with the same number of people, O'Donnell said. "This is what CIRAS does. We are going to be an unbiased source to help them identify the right technology for them at the right time."

Debi Durham, director of IEDA, said the new lab "will be invaluable for small-to-mid-sized manufacturers who may not otherwise have access to this type of technology. The ability to more readily adopt automation technology gives these businesses a competitive advantage as they innovate in a global economy."

Across Iowa, CIRAS experts see evidence that companies are anxious to embrace the industry's growing number of new manufacturing technologies. O'Donnell estimates that "dozens to hundreds" of Iowa businesses currently want to upgrade their manufacturing equipment and become more competitive. But they have no idea where to start. The options, including collaborative robots, vision systems, and new data analytics tools, seem to expand every day. But which technology is the correct choice? And how do you avoid wasting capital on an expensive mistake?

"All of this new technology is happening at the same time, and companies don't

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know where to start because there are so many opportunities,” O’Donnell said. “We’re going to help them figure out what the right steps are for them.”

The new digital manufacturing lab is expected to open late summer with a range of cobots (collaborative robots) and vision systems (smart cameras that monitor a production process and make changes based on what they see).

The lab will be located in the ISU Research Park in a building that is being remodeled to create a flexible factory floor. Companies will be able to bring in their own equipment, integrate new technologies into their production processes, and see which one of the new technologies performs better. (For one example of how cobots can help a company save time and money by automating monotonous work, see the Miracle Tools story on page 3.)

The goal is to make Iowans smarter shoppers and make implementation of new technology as risk free as possible.

“The next new idea or machine could hold the key to success that a growing

company needs,” said Joel Schmidt, vice president of business development for Alliant Energy. “This lab provides the perfect opportunity to refine a

new approach before it is introduced into the workplace.”

IEDA officials contributed \$250,000 to purchase equipment and remodel part of a building in the ISU Research Park. The rest of the equipment costs, as well as some rent, will be paid by a contribution of more than \$100,000 from Alliant Energy—the largest such

donation in support of a CIRAS project since the center was created in 1963.

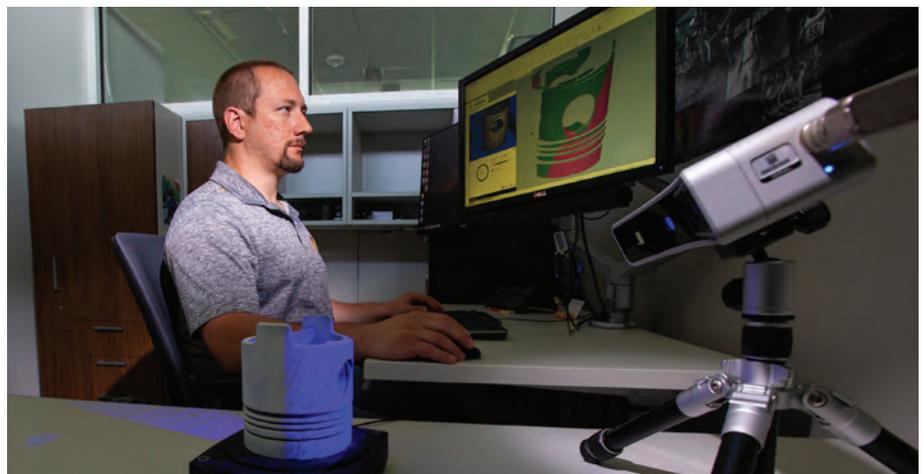
Terry Kouba, president of Interstate Power and Light Company, Alliant’s energy company in Iowa, described the new partnership with CIRAS as an investment in Iowa’s economy that will benefit all of Alliant Energy’s present and future customers.

“Affordability and success go hand in hand,” Kouba said. “When our industrial and commercial customers are more successful, it gives us greater flexibility to control costs for all our customers.”

“All of this new technology is happening at the same time, and companies don’t know where to start because there are so many opportunities. We’re going to help them figure out what the right steps are for them.”

—Mike O’Donnell

Three-dimensional scanning is just one technology that will be available in the new lab.



➤ For more about the ISU Digital Manufacturing Lab Powered by Alliant Energy, contact Abhay Grover at agrover@iastate.edu or 515-509-1485.

On the Cover: CIRAS, Iowa State, Ames, and Alliant Energy officials tour the future site of the Digital Manufacturing Lab.

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

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A test as CIRAS programs the cobot.

AT A GLANCE

Miracle Tools America, LLC

FOUNDED: 2002

OVERVIEW: A custom manufacturer of solid carbide cutting tools, the company is a joint venture of Mitsubishi Materials Corporation and M. A. Ford Manufacturing Company in Davenport.

EMPLOYEES: 71

IMPACT: The company hopes to reclaim 40 to 50 hours per week that currently are lost to cleaning tools.

CIRAS Teaches Cobot to Clean at Miracle Tools America

Multiple times each day, the skilled workers at Miracle Tools America in Davenport must stop what they're doing and clean. Making drill bits can be a dirty business, and the tiny water channels that keep tools from overheating have a tendency to clog.

Hence, the company decided to begin experimenting with a new type of employee—one that wouldn't mind the monotony.

One made out of metal.

Miracle Tools America expects later this year to begin using a collaborative robot to save time for its human workers and make the overall plant more productive. The "cobot" is being installed after an untrained CIRAS engineering student—someone with no particular expertise in robotics—spent three months learning how to program it.

"I'm very excited about the technology," said company president Ryan DeBarr. "The flexibility that it will give us down the road will be huge."

Miracle Tools bought the robot in fall 2017, shortly before an engineer slated to oversee the project left the company. The machine sat unused until DeBarr agreed to an experiment: CIRAS hired McKinley Spading, a senior majoring in mechanical engineering at Iowa State University, to program the machine and get it ready for duty.

For DeBarr, the introduction of cobots is a way to reduce the estimated 40 to 50 hours per week that Miracle Tools America employees currently spend simply blowing the gunk out of what they're trying to produce. Now, that task only involves setting tools in front of the cobot and pressing its arm as a signal to get to work.

"We're trying to be more efficient and make the most efficient use of our people's

time instead of paying someone to stand and put tools in this little water nozzle all day long," DeBarr said. He added that Iowa's workforce shortage means more automation is inevitable to help with other, similarly monotonous duties at the plant. "If I have a job that's more crucial, I'd rather have my human employees working on that instead of this."

For Spading, the project proves that modern industrial robots live up to their billing in terms of being cheaper and easier to operate than ever before.

"Definitely, anybody can pick this up and get 80 percent of the way to where they want to be," Spading said. "The last 20 percent may take somebody with a little more technical background to understand what tweaks need to be made."

➤ For more information, see the Digital Manufacturing Lab story on page 1. Or contact Abhay Grover at agrover@iastate.edu or 515-509-1485.

Global Security Services Follows CIRAS, Finds Abundant Opportunities

A Davenport security company expects to take in more than \$17 million over the next five years from new government contracts it landed after the firm's newly hired business development person spent roughly five months working closely with CIRAS.

Eric Sanders, bid coordinator for Global Security Services, says the credit for his company's success in government contracting belongs to Melissa Burant, a government contracting specialist with the CIRAS Procurement Technical Assistance Center

(PTAC) who helped Sanders understand the sometimes confusing world of government contracting.

"By listening to her advice, we not only were able to adjust the quality and content of our proposals, but we also were able to challenge the contracting officers and get them to make adjustment to the RFPs," Sanders said. "You can read a lot about it on the Internet, you can go to all these classes, but none of that matters without someone like Melissa to help you piece together how it works behind the scenes."

"We wouldn't be here without your program and her knowledge."

Sanders, a U.S. Air Force veteran and former congressional staffer, was hired by Global Security Services in 2018 to improve the company's approach to government contracting. The company had provided security services for

"You can read a lot about it on the Internet, you can go to all these classes, but none of that matters without someone like Melissa to help you piece together how it works behind the scenes."

— Eric Sanders

governments before, Sanders said.

But Burant believes the company found success this time because it decided to devote the time and resources necessary to make sense out of a complicated government contracting world.

"I think the trick was that they finally got someone who was designated to do this," she said. "A lot of companies, they're very small, and everybody wears multiple hats. That's hard when you're pursuing government work, because it requires so much research and understanding. Many companies take one look at it and get quickly overwhelmed with the volume of information and the number of choices you have to make."

Sanders said Global Security Services, which had 110 employees last fall, added 80 more at the beginning of 2019. Recently obtained contracts include handling security for public utilities, a public library system in Illinois, and a courthouse in Wisconsin.

"The lesson," according to Burant, "is that you can actually take this information that we provide and turn it into action. It works. But it's not easy."

AT A GLANCE

Global Security Services

FOUNDED: 1999

OVERVIEW: A full-service private security, investigation, and electronic security agency based in Davenport.

EMPLOYEES: 190

IMPACT: More than \$17 million in government contracts obtained after the company worked closely with CIRAS.

FOR MORE:

www.globalsecurityservices.com



GLOBAL SECURITY SERVICES
Helping to make our community safe!

➤ For more information, contact Melissa Burant at mmburant@iastate.edu or 563-726-9958.



Sewing machine operators at Polo Custom Products in Monticello.

Polo Custom Products—Using CIRAS as a Compass to Grow Government Business

For Mary Phelan, it all boils down to CIRAS being a sounding board she can trust.

Phelan, program manager for government and defense at Polo Custom Products in Monticello, has been working closely with the CIRAS Procurement Technical Assistance Center (PTAC) for roughly two years.

During that time, the company landed multiple government contracts, including a high-volume order for cargo tie-down straps that required Polo to seek out a subcontractor. CIRAS frequently hosts events where large and small companies can meet to discuss collaborating on federal projects, and Phelan ended up finding her new subcontractor following an introduction at a PTAC event.

“I think it’s mostly a matter of them pointing you in the right direction and giving you advice and counseling,” Phelan said of PTAC government contracting specialists. “I’m only one person here, so I don’t have anyone to bounce stuff off of. . . . With CIRAS, even if they don’t know the right answer, they know the right person to call.”

Phelan has attended multiple PTAC seminars, webinars, and networking events. Last fall, she successfully worked with government contracting specialist Julie Fagle to obtain HUBZone certification for the company.

HUBZones were created by an act of Congress in 1997. The designation, which applies to Historically Underutilized Businesses in certain government-defined areas, among other things gives Polo Custom Products a 10 percent price preference when its bids are evaluated for future contracts.

PTAC specialists are a tremendous resource, Phelan said. “I feel like I can pick up the phone and call them any time.”

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

AT A GLANCE

Polo Custom Products

FOUNDED: 1947

OVERVIEW: A custom manufacturer that engineers sewn, sealed, and thermoformed products for the medical, defense, fire and safety, and industrial markets.

EMPLOYEES: 430

IMPACT: Several new government contracts with a combined value exceeding seven figures.

FOR MORE:
www.polocustomproducts.com

MFG Day Focused on More Schools, Better Relationships

At least 6,250 people celebrated Iowa Manufacturing Day at more than 125 events last October, as CIRAS continued to partner with schools, economic developers, business groups, and manufacturers to help Iowans learn more about modern manufacturing.

American industry for years has used the first Friday in October to trumpet the enormous economic potential of a career in industry. That theme continued in Iowa during 2018’s MFG Day festivities, but with an added effort to forge lasting relationships between manufacturers and their future workers.

“More of Iowa’s economic development leaders and manufacturers are realizing that they need to have a strong connection with their high schools and middle schools,” said CIRAS economic development program manager Mark Reinig. “There’s a concentrated effort to get more students involved.”

CIRAS helped by contacting 33 Iowa high schools, more than 1,200 Project Lead The Way teachers, and more than 700 FIRST teams to encourage them to take part. CIRAS also recorded two “Meet the Experts” videos for use at school-based events, and the staff assembled a broad array of planning tips and online resources for event-hosting companies—including tips on how to talk to students.

Camille Sloan Schroeder, director of K–12 Outreach for Iowa State’s College of Engineering, said CIRAS plans to add more material in coming years to make it even easier for companies to host events.

“But this doesn’t have to be something that you just do in the month of October,” she said. “This is something that companies can do throughout the year.”

Planning is underway for 2019 MFG Day. If you want to participate, email manufacturingday@iastate.edu.



Muscatine hospital and community leaders meet for a Community Health Needs Assessment.

HNI Helps Improve Muscatine Government, Hospital by Spreading Lean

America's health care industry was running wild in 2008. Costs were out of control, and Trinity Hospital in Muscatine was struggling to keep up. The small institution lost \$6.8 million that year, and it ultimately sought financial stability in a merger with the Iowa Health System.

Trinity's new corporate parent (now known as UnityPoint Health) spent the next few years finding a myriad of new back-office efficiencies to save money, said Angela Johnson, current executive director of the hospital's Muscatine campus. But by 2012, it nevertheless had become clear that broader change was still needed in Muscatine.

"That was when HNI came to the table and said, 'There's no reason why this can't be done.'"

They were talking about Lean. HNI Corporation by 2012 had become world famous for its success with Lean manufacturing, a streamlined production method built on efficiency and eliminating waste. HNI literally wrote the book on Lean; *Leading the Lean Enterprise Transformation* is a well-regarded management textbook written by the man credited with solidifying HNI's Lean culture during the 1990s.

Ever since, Muscatine business people say, HNI employees have served as unofficial Lean ambassadors, frequently suggesting to manufacturers, health care companies, and government groups

alike that Lean tools are useful for organizations of almost any stripe.

"Our company was founded on the belief that there's a better way to do things, and it should be member driven," said Todd Murphy, vice president of manufacturing for HNI Corporation. "We called our employees 'members' from the very beginning and empowered those members to take action to improve our company."

HNI began in 1944 as the Home-O-Nize Company, later known as HON, making coasters and small recipe boxes for kitchens. It expanded into office furniture in the early 1950s and grew steadily for decades. Then, in the early 1990s, an unprecedented downturn in sales across the office furniture industry prompted HON to formalize its problem-solving culture. The company began to fully embrace Lean manufacturing methods in 1992, and volume tripled over the next seven years.

Murphy said the company long has believed that it has a duty to help where it can—especially when it comes to Lean. HNI, a strong backer of the Iowa

AT A GLANCE

HNI Corporation

FOUNDED: 1944

OVERVIEW: A leading global provider of office furniture and hearth products.

EMPLOYEES: 8,500

IMPACT: HNI's advocacy for Lean has helped multiple organizations become more productive and more cost efficient.

FOR MORE: www.hnicorp.com

Lean Consortium since it was formed in 2010, regularly hosts its own training events for company members and has made a habit of inviting outsiders to share the seats.

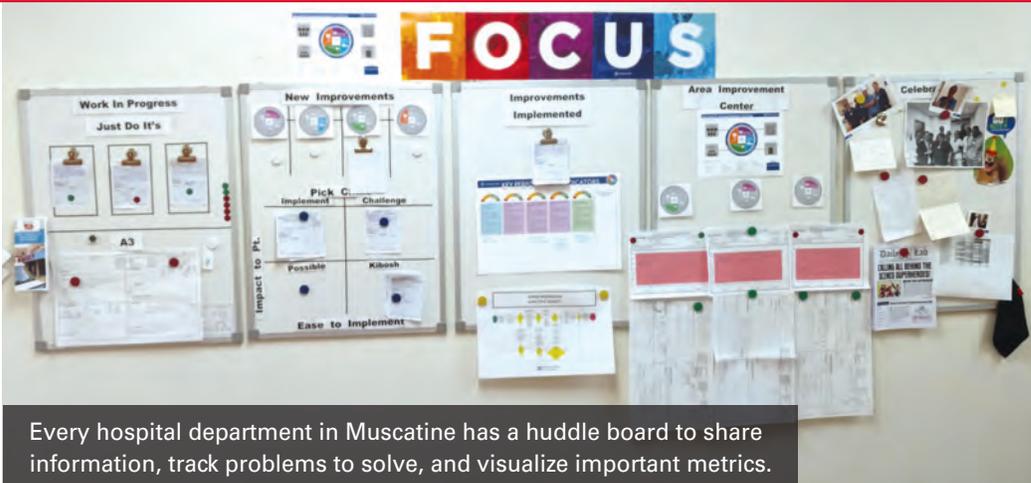
"We're not going to just write checks to give back to the community," Murphy said. "We want to be fully engaged."

HNI ultimately helped Trinity executives spend two days benchmarking ThedaCare, a Wisconsin health system that had found success transferring Lean methods into the medical industry. HNI then gave Trinity \$150,000 to help hospital officials get Lean training, Johnson said.

"They also provided us with 18 months of multiple on-site services," she said. "Obviously, at that time, financially, we wouldn't have been able to get the ball rolling without them."

The result?

Johnson said Lean has "definitely



Every hospital department in Muscatine has a huddle board to share information, track problems to solve, and visualize important metrics.

allowed us to be financially sustainable in a time when rural health care continues to be struggling”—all while continuing to score four-star quality ratings.

City of Muscatine officials similarly benefited from HNI’s generosity and Lean expertise when HNI offered seats for municipal employees at internal HNI training classes.

Stephanie Romagnoli, a City of Muscatine human resources employee and chair of the city’s Lean committee, said the government has slowly worked Lean into a host of its processes in the intervening years.

“We streamlined the purchase order process, saving some time and some steps, and automated a lot of that,” she said. “We did the same thing with the payroll process.

The library did quite a bit of Lean work and really worked on cutting down the amount of time that it took to get checked-out books back on the shelves.”

Muscatine’s fire department also improved its paperwork processing, and the city’s independent utility, Muscatine Power and Water, believes that it has saved a great deal of time and money by

continually improving its processes.

Jennifer Peterson, Lean coordinator for Muscatine Power and Water, said the journey began when an HNI official on the utility’s board of trustees suggested Lean as a way of coping with the financial downturn of 2007. Utility officials read books, watched videos, and attended training—through both HNI and the utility’s membership in the Iowa Lean Consortium.

“I would say that HNI provided us that initial spark and kind of pointed us in the right direction,” Peterson said. “It’s great to know that if we have a problem that we come up with a solution to, then we have that resource in town where we can get some help.”

Romagnoli said the city has encouraged municipal employees “to find ways in their own work to wean steps out

of the process...and make the process work better.”

“These are not necessarily big changes,” Romagnoli said. “Sometimes you get these ‘aha!’ moments; more often it’s just these little things. . . . But it’s really the culmination of saving those little bits of time here and there that starts to matter.”

“Our company was founded on the belief that there’s a better way to do things, and it should be member driven. We called our employees ‘members’ from the very beginning and empowered those members to take action to improve our company.”

— Todd Murphy

- Subcontracting Opportunities**
May 13, 2019
 9:00 a.m. to 10:00 a.m.
 Webinar
- Lean Government Exchange**
May 16, 2019
 9:00 a.m. to 5:00 p.m.
 Des Moines
- Blended PCQI Human Food Part 2: Instructor Led**
May 17, 2019
 9:00 a.m. to 4:00 p.m.
 Ames
- Lean Safety**
May 21–22, 2019
 8:00 a.m. to 5:00 p.m.
 Davenport
- Creating a Deliberate Lean Culture**
June 5, 2019
 9:00 a.m. to 12:00 p.m.
 Des Moines
- Growing with CIRAS**
June 12, 2019
 11:00 a.m. to 2:00 p.m.
 Bettendorf

June 18, 2019
 11:00 a.m. to 2:00 p.m.
 Independence
- Sausage and Processed Meats**
July 15–19, 2019
 8:00 a.m. to 5:00 p.m.
 Ames
- Materials, Structures, and NDE Lab Tour**
August 8, 2019
 9:45 a.m. to 2:15 p.m.
 Ames

➤ For more information on Lean, visit www.iowalean.org. Or contact Iowa Lean Consortium program director Teresa Hay McMahan at thmc@iastate.edu or 515-715-0293.

Metal 3D Printer Helps Prove a Robot's Tanker-cleaning Power, Viability

An eastern Iowa manufacturing company landed an important job providing parts for a railcar-cleaning robot after CIRAS helped the company prove its design under a tight deadline.

Precision Metal Works, of Maquoketa, first approached CIRAS in March 2018 for help producing a thick stainless steel elbow that was intended to be part of a wash head for the automated Raptor® Tank Cleaning System.

"This particular type of part and the material they wanted traditionally would have been a cast part, but they couldn't turn that around fast enough to meet the time constraints," said Chris Hill, director of the CIRAS Technology Assistance Program (TAP).

Instead, CIRAS agreed to use its metal 3D printer to create a prototype elbow for the larger machine. After multiple, complicated steps, the completed elbow performed to expectations and the company won the business. The robot began cleaning railcars in Davenport last fall.

Wes Merryman, president of Precision Metal Works, estimates that his company now will see several new jobs and up to \$1 million in new business over the next few years if the still-evolving Raptor® meets all its expected production milestones. Merryman praised Scott Tinsman III, founder of Davenport-based Twin State

Environmental, who plans eventually to sell tank-cleaning systems in addition to operating the railcar-cleaning service.

"Scott has researched and developed a remarkably advanced product," Merryman said. "Based on the projected payback, it would seem he will continue to have customers contacting him to improve their cleaning costs and employee safety."

Both men agree that CIRAS played a key role in helping Tinsman's team assemble a finished product on schedule.

"Without the CIRAS program, we wouldn't have been able to have the prototype done cost effectively—or at all," Tinsman said. "Really, they were a pivotal part of us getting our product up and running."

Raptor® uses an automated, high-pressure, computer-guided wash head to systematically spray the inside of tanker cars. Twin State says this process is safer, faster, and more efficient than placing a human in a contaminated tank.

Tinsman estimates that the system will pay for itself in less than a year.

"The main advantage of working with CIRAS is the knowledge," Tinsman said. "We're not industry experts in 3D printing, in robotic motion, or in metals, but Iowa State University is. . . . Without their knowledge, we wouldn't be able to do this."

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

Raptor photos from Twin State Environmental.



AT A GLANCE

Precision Metal Works

FOUNDED: 1983

OVERVIEW: Supplies standard and custom parts washers for companies that are the best at what they do.

EMPLOYEES: 71

IMPACT: PMW expects up to \$1 million in new business; Twin State Environmental was able to complete its product on time because of CIRAS assistance to PMW.

FOR MORE: www.pmwequipment.com

Polymer and Food Protection Consortium Adds Expert for Outreach

Iowa State University's Polymer and Food Protection Consortium has added a plastic manufacturing expert to help Iowa companies deal with their growing focus on the safety and effectiveness of food packaging.

Mitchell Michel, a longtime Iowa State instructor and research associate, began working full time with the consortium early this year. Michel's position is being partially funded by CIRAS in a bid to make certain that businesses have access to the kind of expertise that they increasingly need.

CIRAS program manager Mike O'Donnell said many Iowa companies are looking for someone to help them prove the worth of new innovations or guide them through concerns about their existing packaging. "Mitch and the Polymer and Food Protection Consortium are positioned to provide critical help," he said.

Iowa State's packaging consortium has grown steadily since it was established in 2015. Director Keith Vorst, an associate professor in the Department of Food Science and Human Nutrition, last fall announced plans to create a new home for the consortium in the Iowa State University Research Park.

The expansion coincides with Vorst's efforts to create the nation's first scientific process for certifying the quality of recycled material and biobased packaging. The researchers' goal essentially will be to establish a recipe and testing scheme so companies can make certain that any new recycled packaging is both effective and safe for consumers.

Michel, whose background includes expertise in processing plastics through extrusion and molding processes to create products, said his role is to "help be a bridge" by working both with companies and with student researchers.

Researchers at the Polymer and Food Protection Consortium are "kind of the go-to people the industry is actually looking for," Michel said. "There are a lot of people worldwide who want guidance on what to do, especially when it comes to recycled plastics."

For more information, contact CIRAS food industry account manager Brenda Martin at bkmartin@iastate.edu or 515-570-5282.



Mitchell Michel

BDC Group Benefits from CIRAS Connections

Sometimes, you just need a little help from somebody who knows how to make things happen.

That's where Trent Pearson found himself last year, when a registration change involving the System for Acquisition Management (SAM), the federal government's online supplier portal, suddenly led to the system refusing to accept Cedar Rapids-based BDC Group.

BDC Group, which builds and provides infrastructure for telecommunications equipment, was not alone. Similar problems had sprung up nationwide. At that point, the company had been working for roughly three years with Julie Fagle, a government contracting specialist with the CIRAS Procurement Technical Assistance Center (PTAC). BDC Group, which secured nearly \$725,000 worth of federal contracts in 2018, was experienced in doing business with the government. But this was a new issue for them, so the company called Fagle for help.

"We had a pending NASA contract that was waiting to get awarded to us, but they couldn't award it until we got our registration straightened out," Pearson said. "Julie helped push that through."

Pearson left BDC Group early this year, but the company continues working with CIRAS to explore new government relationships.

Courtney Senters, BDC Group's new head of sales and marketing, said her firm continues to be "actively pursuing government contracts and always searching for opportunities that are a good fit."

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

AT A GLANCE

BDC Group

FOUNDED: 2015

OVERVIEW: Solutions-based provider of a wide variety of equipment and services for telecom infrastructure projects.

EMPLOYEES: 50

IMPACT: Avoided a potential costly delay when government computer system locked them out.

FOR MORE:
www.bdcgroupinc.com

"The people at SAM were just overloaded. I had a pending NASA contract that was waiting to get awarded to us, but they couldn't award it until we got our registration straightened out. Julie helped push that through. If not for her, God knows what could have happened."

— Trent Pearson





Grover Joins CIRAS to Oversee Digital Manufacturing Lab

Abhay Grover has joined CIRAS as a project manager focused on new technologies. Abhay received a bachelor's degree in agricultural engineering from Punjab Agricultural University, after which he spent 2½ years working in John Deere's India Engineering Center as a continuous improvement leader. In August 2017, Abhay received a master's degree in industrial technology from Iowa State University. Since then, he has served as a senior quality engineer for Hagie Manufacturing, leading integration of advanced data management and analytical tools for the factory. His role at CIRAS will include overseeing work in the new Digital Manufacturing Lab Powered by Alliant Energy.



Meseke Joins CIRAS as Point Person for Finance

Jennifer Meseke has joined CIRAS as finance and strategic projects manager. Jennifer, who graduated from Iowa State University with bachelor's degrees in accounting and early childhood education, first worked for the ISU Foundation as a student employee. After graduation and a year spent working for a private accounting firm, she returned to the ISU Foundation and worked there for 11 years before moving to a similar finance role at the College of Engineering dean's office. Jennifer comes to CIRAS after serving as the head finance employee in Iowa State's Engineering-LAS Online Learning unit. At CIRAS, she will serve as the chief financial officer.

Birmingham Manufacturing Gets Reawakened to the Value of Innovation

Michael Nunn is still searching for the perfect product improvement idea. But thanks to some help from CIRAS, Nunn now believes he's on the correct path.

Nunn is the owner of Birmingham Manufacturing, a four-person company in Birmingham, Iowa, that makes condensated evaporating pans for use in commercial coolers. The pans, which contain a heating element and sit below refrigeration units, work to evaporate the water that drips from inside coolers.

Nunn approached CIRAS last fall seeking help in making his products more efficient.

"Appliance companies in general are being scrutinized more closely for their energy efficiency," said CIRAS project manager John Roberts. "He wanted to be able to go to these companies and say, 'Hey, we provide one of the most energy-efficient condensate pans.'"

Roberts and Iowa State University engineering student Jacob Meyer eventually walked the company through various possibilities for changing the design of the pans and/or the shape of the heating element to make certain that as

little energy was wasted as possible. The most efficient suggestion involved moving from solid heating elements to flexible heating pads that would conform to the interior shape of the pan. Such a switch would mean more heat energy going directly into the water to be evaporated. It also would save Nunn's customers money and make his products more appealing. But Nunn quickly was forced to back away from that idea when the flexible pad's manufacturer balked at having the product perpetually submerged in water. Birmingham Manufacturing since has begun evaluating other possible options, but Nunn has yet to settle on any particular design.

As the search continues, Nunn remains confident that Birmingham Manufacturing has been revitalized by working with CIRAS engineers. Financial rewards will come eventually, he believes, because the company now is on a better path.

"We still got value out of the process," Nunn said. "It just kind of re-awoke us to try new things more frequently, to get ourselves into a position where we can actively be searching for product improvements."

"The best part we got out of it was a fresh perspective," Nunn said. "Looking at it from the standpoint of a disconnected person, CIRAS was asking questions that we had quit asking years before. It was beneficial for us to get that new set of eyes and a fresh set of ideas."

AT A GLANCE

Birmingham Manufacturing Inc.

FOUNDED: 1993

OVERVIEW: Produces highest quality condensate evaporating pans for use in retail coolers.

EMPLOYEES: 4

IMPACT: A new outlook for the business and a new attitude toward continuously seeking product improvements.

FOR MORE:

www.evap-pans.com/home.php

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

Spreading Technology Awareness—One Battery Plug at a Time

Nitzan Friedberg knows a little bit more now about 3D printing than he did before—and he's anxious to do something with that knowledge.

Friedberg, who is finishing his junior year at Ames High School, also serves as design manager for Team Neutrino, a FIRST robotics team sponsored by the Story County 4H. The team competes by designing and completing tasks using robots powered by lots of 12-volt batteries.

Brian Steward, lead mentor for Team Neutrino and an engineering professor at Iowa State, said league custom involves placing special plugs in the battery connectors once a battery is charged so other team members know the process is complete. Last season, Team Neutrino battery plugs were digitally designed by the students and created via the CIRAS metal 3D printer.

"Before working on this project, I had no idea about what metal additive manufacturing was," said Friedberg. "Through CIRAS, I was able to learn about how impactful metal additive manufacturing is, and I was able to get hands-on experience designing parts."

Friedberg currently is planning to become a mechanical engineer when he graduates.

Chris Hill, director of the CIRAS Technology Assistance Program (TAP), says fostering and expanding that interest in manufacturing technology is why CIRAS spends time reaching out to student groups throughout the area.

In addition to Team Neutrino, CIRAS worked closely last year with students from PrISUM, the Iowa State University solar car team, and with a miniature tractor-pulling club at Iowa State University. Hill also has helped numerous Iowa State faculty members learn more about 3D printing and find ways to share that knowledge with students.

James Shelledy teaches a manufacturing engineering class at Iowa State that, with help from CIRAS, last year began including a section on additive manufacturing. Coursework involves setting up a computerized part design for 3D printing.

"As an engineer, you have to understand that it is a different process," Shelledy said. "It is another tool that goes in our toolbox."

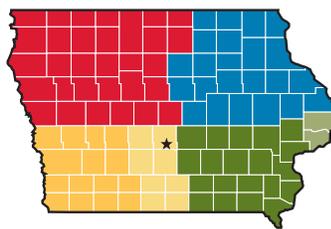
For more information, contact Chris Hill at chhill@iastate.edu or 515-313-8251.

CIRAS Engage. Educate. Embed.

Since 1963, we have delivered proven services to enhance the performance of industry. Our approach—Engage. Educate. Embed.—creates specific solutions that allow each business and its community to prosper and grow. Coupled with a satisfaction guarantee, our typical client has achieved a 200% ROI. Clients have reported an economic impact of more than \$2 billion over the past five years.

Locate your county to find your best introduction to CIRAS.

In addition to four regional account managers, CIRAS has seven regional government contracting specialists,* a statewide account manager for the food industry, and one for economic development. More staff information can be found at www.ciras.iastate.edu/staff.asp.



NORTHWEST

- **Derek Thompson**
thompson@iastate.edu • 515-419-2163
- **Mary Zimmerman***
maryz@iastate.edu • 515-450-1278

NORTHEAST

- **Sean Galleger**
galleger@iastate.edu • 515-290-0181
- **Julie Fagle***
jafagle@iastate.edu • 319-310-8612

SOUTHWEST

- **Paul Dunnwald**
dunnwald@iastate.edu • 515-509-1377
- **Andrew Alexander***
andyalex@iastate.edu • 402-547-0333
- **Jodi Essex***
jodir@iastate.edu • 515-509-0769
- ★ **Justin Niceswanger*** (*Des Moines*)
jnice@iastate.edu • 515-509-9565

SOUTHEAST

- **Glenn Volkman**
gvolkman@iastate.edu • 515-205-3786
- **Samantha Ferm***
siferm@iastate.edu • 319-333-9558
- **Melissa Burant***
mmburant@iastate.edu • 563-726-9958

STATEWIDE

- **Brenda Martin (Food Industry)**
bkmartin@iastate.edu • 515-570-5282
- **Mark Reinig (Economic Development)**
mreinig@iastate.edu • 515-231-4150

CIRAS PARTNERS

- Iowa State University
 - Center for Crops Utilization Research
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- Iowa Farm Bureau
- Iowa Sustainable Business Forum
- North Iowa Area Community College
- Northeast Iowa Community College

1805 Collaboration Place, Suite 2300, Ames, Iowa 50010-9166
Phone: 515-294-3420 • ciras.info@iastate.edu • www.ciras.iastate.edu



GROWING YOUR BUSINESS

Voice Search Trend Underlines Importance of Internet Marketing by Paul Gormley

Alexa and her relatives are everywhere. Understanding their role in modern shopping can be a powerful tool for growing your business.

Research says a majority of American consumers still prefer to type when looking for something on the Internet. But that's shifting. By 2020, an estimated 50 percent of searches will be done by voice—30 percent over a device (such as Amazon's Echo) that doesn't even offer a screen.

What does this mean for your company's website? The good news is that the keys to making it findable by voice are essentially the same as for typed searches. You still need to do the following:

- Make your website a center for expertise. Answer the questions people are most likely to ask—not only about your product, but about your industry as a whole.
- Watch your web analytics. What searches bring people to your site? Are those phrases changing over time?
- Be prepared to get specific. Voice searchers ask more "natural" questions and therefore tend to use 50 to 100 percent more words than typed searches. Companies may need to develop "longer-tail" keyword phrases to

match the words that people are actually using. (Think "heavy-duty American-made shovel" versus "shovel.")

- This may require broadening the match modifiers in your search marketing terms to catch people who are asking the question differently than they did before.

In a nutshell, marketing for voice searching boils down to the same few things that you should already be doing. It's just more important than ever that you do the following:

1. Know your market, what customers are looking for, and the keywords they'll use to find you.
2. Use your analytics to understand how you're doing at #1.
3. Tell customers who you are. Make sure your website includes addresses, operating hours, and phone contacts. This makes you more trustworthy—and more likely to be found, since 80 percent of "near me" searches now are being conducted via voice.
4. Answer the real questions that people ask. Search engines exist to help people answer questions. The more you're able to provide answers, the more people they'll send you.

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