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HIGHLIGHTING IOWA'S INNOVATORS

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Economic Development and Industry Relations

SUPPORTING

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Uncover Iowa's innovation network

Although Iowa is frequently identified with farming corn and soybeans, our state is diverse with innovative discoveries in companies and cities of all sizes – and in all corners.

Expert Iowans are making discoveries daily in bioscience, advanced manufacturing, information technology, energy and more. And they're tackling important issues around the globe, including human health and renewable resource development.

In this issue, get to know these educators, students, business leaders, entrepreneurs, scientists and visionaries growing Iowa's innovation ecosystem. And learn about the up-and-coming innovators who will continue to show the nation how committed Iowans are to improving lives around the world.

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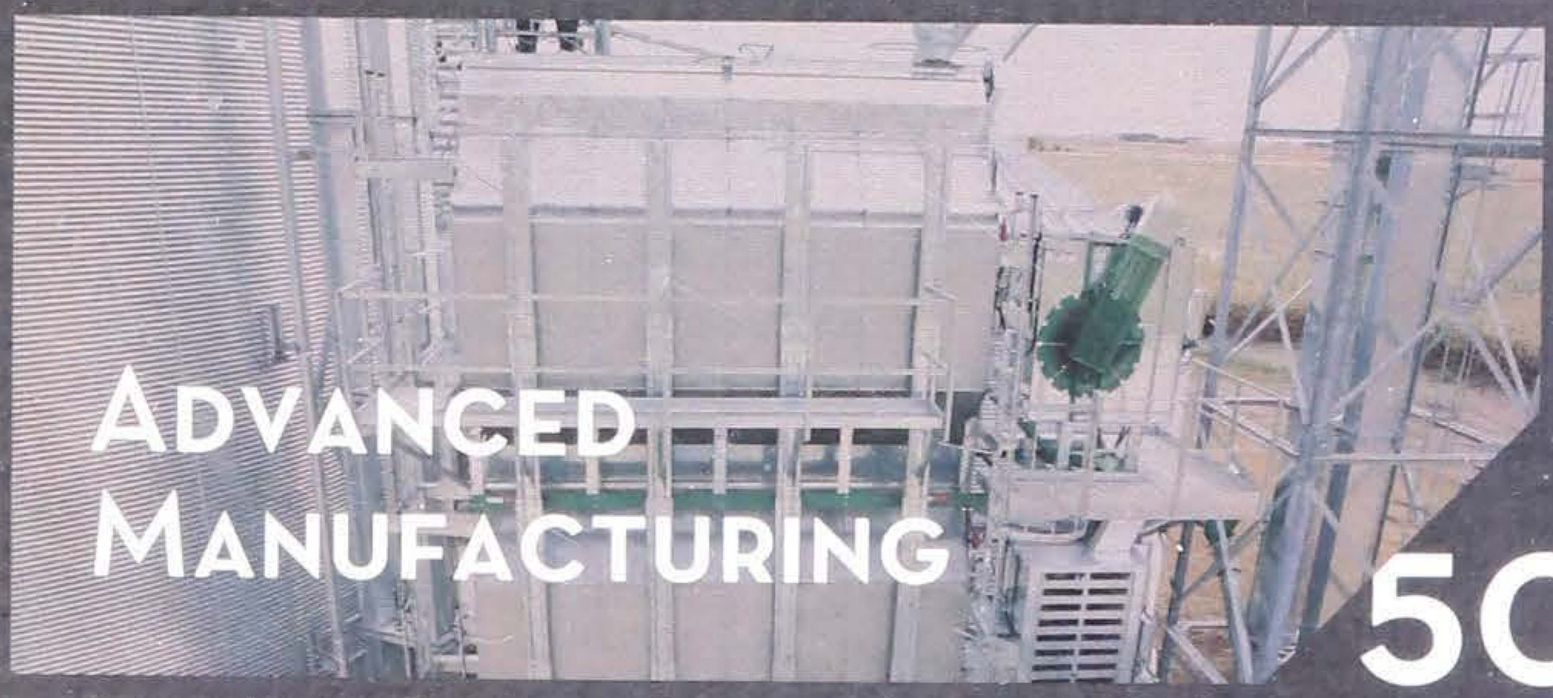

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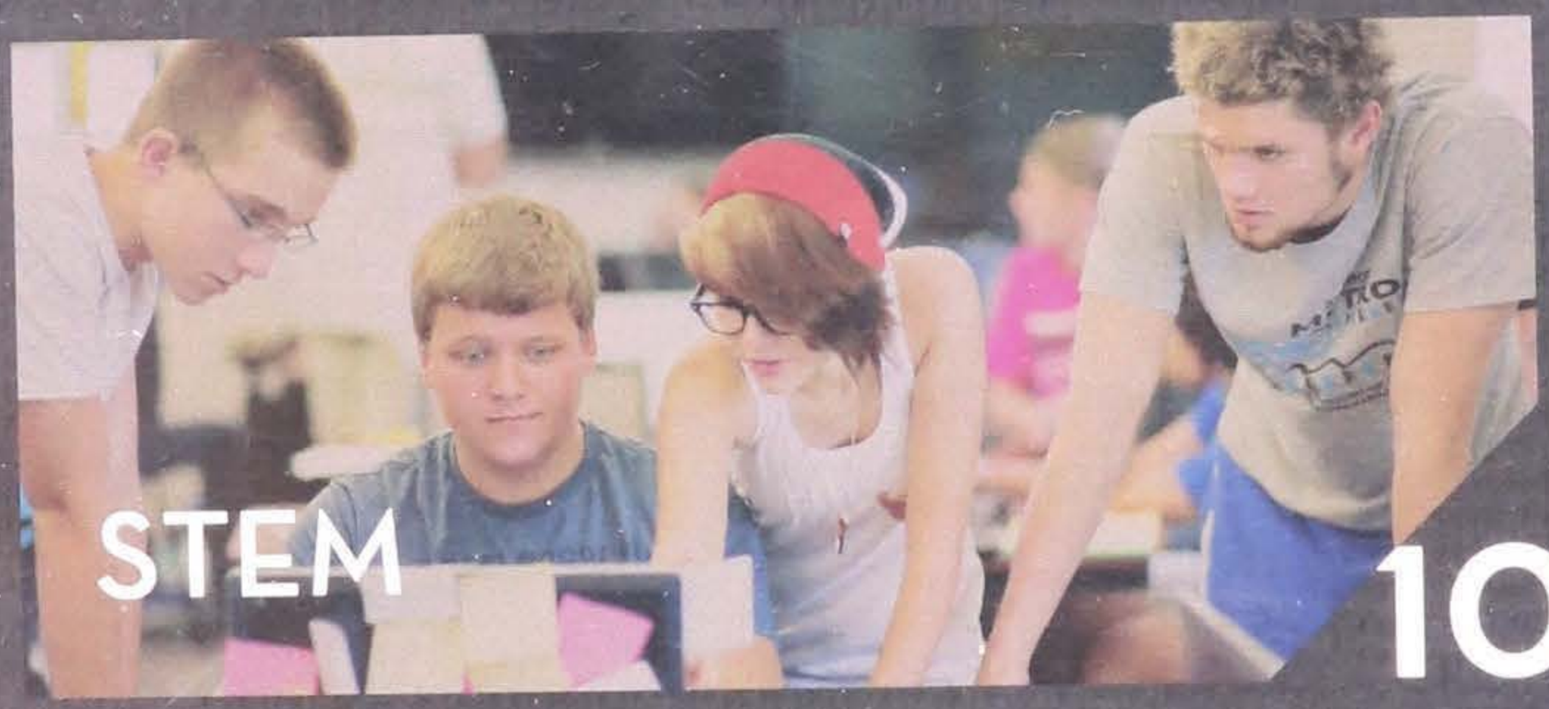

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CREATING SOLUTIONS FOR TOMORROW

WORKING TOGETHER

A public-private partnership among the Iowa Economic Development Authority (IEDA), the Iowa Innovation Council and the Iowa Innovation Corporation (IICorp) is working to create an innovation ecosystem in Iowa that connects good ideas to the resources they need to grow and thrive as Iowa companies. Together, these organizations provide the framework for companies to succeed in today's innovation-driven economy.

IICorp is an independent, non-profit organization formed in 2011 by the Iowa Economic Development Authority (IEDA). The Iowa Innovation Council, an advisory group to the IEDA, launched the the IICorp, as a public/private partnership, to assist the IEDA in supporting innovation-based research, development and commercialization in the state.

"It's all about connections," said IICorp President and CEO Kirk Bjorland. "We create connections between entrepreneurs and sources of funding to turn good ideas into bankable ventures." Bjorland's banking background has helped the IICorp gain a foothold in the many avenues of revenue including angel investors, seed capital funds and institutional venture/private equity fund managers as well as traditional bank programs. In addition, IICorp administers several technical and financial assistance programs on behalf of the IEDA.

"It's all about connections."

The IEDA focuses on creating a robust economic climate to attract and retain businesses in Iowa, with the IICorp focusing on statewide innovation initiatives to help grow small-to-medium innovative enterprises, increase commercialization of university technologies and connect capital providers to investable Iowa deals.

"The way we collaborate among the public and private sectors is Iowa's competitive advantage in growing and attracting companies that are poised to excel in today's economy," said Debi Durham, director of the IEDA. "We must position companies – new and mature – to take advantage of the opportunities before them. We do that by ensuring that they are always innovating."

TO **FIND OUT MORE** VISIT:

IOWA ECONOMIC DEVELOPMENT AUTHORITY
200 E. Grand Avenue, Des Moines 50309
iowaeconomicdevelopment.com

IOWA INNOVATION CORPORATION
505 5th Avenue, Suite 835, Des Moines 50309
iicorp.com

INCREASED ACCESS TO FEDERAL PROGRAMS

Iowa has intensified its efforts to increase the number of successful applications for federal innovation funding, particularly the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) awards. The IICorp helps small businesses every step of the way in the application process – from preparing the proposal to providing a professional technical review to submission. State funding is also available to help companies move through the phases of the grant awards, including reimbursement of costs associated with preparing the proposal to financial assistance for Phase I and II SBIR/STTR award recipients.

Iowa's flexible funding programs, like SBIR/STTR assistance, are in place to support companies at all stages of development – and together, IEDA and IICorp help businesses get from point A to point B.

IOWA innovation

IOWA SUCCESS STORIES

Paul Oulman
Director of Manufacturing
HMR Supplies

Moving Big Stuff

HMR Supplies, based in Forest City, provides heavy transport equipment for large product industries. They received a $100,000 grant from the IEDA Demonstration Fund in 2011, and used those funds primarily for marketing, which has allowed the company to expand into new worldwide markets including the oil, gas, wind, heavy transport and marine. All of these industries have potential need for to move cumbersome objects within their manufacturing facilities or in the field. Exciting new projects, since conducting the research and expanding marketing efforts, include a custom project for Duke Energy in South Carolina and stage movement apparatus for the Cheyenne Frontier Days in Wyoming.

Making Medicine Accessible

Athena GTX was recruited to Iowa from California by the IEDA in 2007, and has been proving itself ever since. The Johnston-based company designs and manufactures a number of medical devices including wireless, patient-worn, miniature medical monitors for military and civilian markets, and smart monitors for first responders. Athena received an IEDA Demonstration Fund grant in 2010 and a $100,000 Propel loan in 2014, which helped them develop two of their key products. The company was recently awarded a $250,000 Expansion Fund loan to help grow the business.

Mark Darrah
President/CEO
Athena GTX

INSPIRING FUTURE LEADERS

Science, Technology, Engineering, and Mathematics – better known as STEM – represents the well-rounded skill set crucial to the workforce in our company, the state, nation, and world.

In fact, by 2018, the U.S. will need an estimated 8.65 million workers in STEM-related jobs.[1]

Yet, according to the U.S. Department of Education, a mere 28 percent of high school freshmen express an interest in STEM-related fields. Furthermore, by the time these students graduate, 57 percent of them will have lost interest in the STEM fields.

That is why Kemin Industries is proud to partner with the Iowa Governor's STEM Advisory Council to help promote and support STEM education and economic development in Iowa.

[1]STEMconnector.org

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PROJECTED TO GROW 2X FASTER
THAN IN NON-STEM FIELDS.

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STEM EDUCATION
WILL **IMPROVE IOWA'S ECONOMY**

KEMIN: MAKING STEM A PRIORITY

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- 20+ summer internship programs annually
- Financial support for the world-renown interactive exhibits and programs at The Science Center of Iowa
- Job shadowing opportunities with Kemin scientists
- Member of Iowa Biotechnology Association
- Member of the Iowa Innovation Corporation

"There is an increasingly global need for preparing students to become skilled in STEM subjects. The challenges presented by the scale and pace of change throughout the world calls for new innovative solutions from the fields of science, technology, engineering and mathematics. I'm proud to personally further support the advancement of STEM in Iowa schools."

– Dr. Chris Nelson, President and CEO of Kemin Industries and Iowa Governor's STEM Advisory Council Co-Chair

GREATNESS STEMS FROM IOWANS
GOVERNOR'S STEM ADVISORY COUNCIL

GOVERNOR'S STEM ADVISORY COUNCIL
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Economic Development and Industry Relations

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Michael Crum
Vice President

The Iowa State University Office of Economic Development and Industry Relations (EDIR) helps individuals and businesses plug in and connect to the unique capabilities and services of Iowa State University.

EDIR helps navigate the university's vast network of assets and highly trained individuals. We offer a single point of contact to streamline the process of making connections in the areas of business and technical assistance, research and development, access to facilities (including the ISU Research Park, laboratories, and equipment), and assistance with talent/workforce development.

The following operations are within EDIR:

Center for Industrial Research and Service (CIRAS) – The Center for Industrial Research and Service (CIRAS) works to build healthy Iowa communities through business prosperity. CIRAS provides an array of services rooted in applied research and best practices, including: Emergency Management, Engineering, Government Contracting, Industrial Research, Innovation, Management Practices, Productivity, Quality Management, Supply Chain Management, Sustainability, and more.

ISU Research Foundation (ISURF) and Office of Intellectual Property and Technology Transfer (OIPTT) – A non profit entity that manages the protection and commercialization of its research results, the ISURF works closely with OIPTT. Together they protect research results and work with companies to transfer these results for the use and benefit of society.

Pappajohn Center Entrepreneurship – The ISU Pappajohn Center for Entrepreneurship brings together the people and ideas necessary for launching or growing successful enterprises. Whether the undertaking is a student initiated enterprise, a new small business, a high technology start-up, or a corporate spin-off, the Pappajohn Center provides assistance and resources toward individual elements of the development process.

Small Business Development Centers – The Iowa Small Business Development Centers (SBDC) provides free, confidential, customized business advice in all 99 Iowa counties to businesses with 500 employees or less. With 15 regional centers located across the state, SBDC offers business counseling and training focused on specific business needs.

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Tim Zarley
Owner/Managing Partner

Intellectual property is all we do. As a small, specialty firm, you get to know us and the many different ways we can help. We get to know you, your needs, and what's important for the success of your business. Our clients have made a difference. With 5,000+ patent applications protecting ideas that improve lives and create jobs. With 2,500+ trademark applications identifying the source of quality products and exceptional service. With countless licenses and settlement agreements leading to profits that produce and safeguard innovation.

Earning a client's trust, loyalty, and respect is our greatest reward. Every aspect of our firm is structured to provide the best possible client experience. We strive to put the client's interests first in all we do. That is the only way to build relationships that last generations. The roots of our firm extend back over 60 years to a small, one-man office started by Don Zarley in 1954. The firm we have today is built on the same foundation as the first—providing sound, intellectual property guidance to our clients while sticking to the things that matter most—honesty, hard work, creative vision, common sense, and values.

IOWA innovation

SUPPORTING SPONSOR

Kirk Bjorland
President and CEO

Iowa Innovation Corporation is a private, nonprofit organization serving as Iowa's innovation intermediary. We collaborate with a variety of organizations including the Iowa Economic Development Authority, state universities and community colleges, economic development agencies, business organizations and private capital groups to facilitate private and public partnerships. We also help connect entrepreneurs to a number of state and federal funding programs that help get new companies off the ground and help keep existing companies going. We are committed to carrying on Iowa's entrepreneurial spirit as we work to accelerate good ideas and turn them into bankable ventures. Contact us today to discover how you can tap into the vast array of resources available to innovative businesses, or to find out how you can invest in Iowa's innovation economy.

IOWA STATE UNIVERSITY
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IT'S A GREAT TIME FOR BUSINESS AT IOWA STATE

The Iowa State College of Business is the perfect choice to continue your business adventure with a master's degree in: Business Administration, Business Analytics, Accounting, Finance or Information Systems.

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Sukup

AGRICULTURE / BIOSCIENCE

Sukup Manufacturing Co. is the largest family-owned, full-line grain handling, drying and storage equipment manufacturer. Three generations of the Sukup family are active in day-to-day operations. Sukup employs over 500 people, making it one of the largest employers in Northern Iowa. Along with advanced manufacturing facilities in Sheffield, Iowa, they also operate six distribution centers, as well as a newly-acquired European division based in Denmark. The Sukup product line includes farm and commercial grain bins, dryers and material handling equipment. Sukup also manufactures steel buildings for the agricultural, commercial and recreational markets. **For more information, contact Sukup Manufacturing Co., www.sukup.com; info@sukup.com; 641.892.4222.**

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John Deere Des Moines Works – Manufactures products for soil management, crop care, and cotton harvesting. These include self-propelled sprayers, cotton pickers, tillage equipment, and grain drills that are exported to over 30 countries each year.

John Deere Financial – One of the largest providers of financial services to agricultural and construction customers, supporting John Deere around the world with more than 1.7 million accounts and a managed worldwide portfolio of $38.5 billion.

John Deere Intelligent Solutions Group – Works with satellite-based global positioning technology to design operator stations, displays, receivers, guidance systems, field and crop management programs, and information and logistics systems.

Mark C. Petri
Director

Iowa energy center

ENERGY

The Iowa Energy Center supports economic development, environmental sustainability, and social well-being in Iowa through energy innovation, education, and entrepreneurship. We provide Iowans with reliable, objective information on energy and efficiency options. Four program areas – bioenergy, education and outreach, energy efficiency, and renewable energy – allow us to build relationships across many sectors including industry, non-profit, and education. Through our two research facilities, grant programs and a zero-interest renewable energy loan program, the Iowa Energy Center has been supporting Iowa's energy future for more than two decades.

Dr. Chris Nelson
President and CEO

KEMIN

STEM

Kemin combines sound molecular science with the human qualities of creativity, curiosity and collaboration to improve the lives of humans and animals around the world. Using superior science, Kemin manufactures more than 500 speciality ingredients for the global feed and food industries as well as the health, nutrition and beauty markets. Kemin products currently improve the lives of nearly 2.5 billion people around the world each day, and our goal is to reach half the world's population in the next three years. To achieve this, we're investing right here in Iowa by building new facilities, creating jobs, and developing molecular solutions to solve the challenges of the future. **Visit Kemin.com for more information.**

David Spalding
Raisbeck Endowed Dean

IOWA STATE UNIVERSITY
COLLEGE OF BUSINESS

TECHNOLOGY

There are many exciting things happening at the Iowa State University College of Business. We celebrated record enrollment this fall with 4,485 students — a 10 percent increase over last year. That breaks the 1986 record. Over the past two years, our undergraduate and graduate programs have been double-digit gainers in the U.S. News & World Report rankings. Our Supply Chain Management program is recognized as a top-10 program in the world for supply chain research (Transportation Journal) and 11th-best program in the world for supply chain talent (SCM World). We offer eight undergraduate majors, six graduate programs, and a Ph.D. program with four areas of specialization, with plans to add more. **Learn more at www.business.iastate.edu.**

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VENTURES

Investing in Iowa's Growth

"The product that wins is the one that bridges customers to the future, not the one that requires a giant leap." – Aaron Levine, co-founder of Box

At River Glen Private Capital, we are in the business of building strong bridges to the future.

We manage Iowa's first certified fund for seed and early stage investments in companies that offer transformative innovation for the future. River Glen Private Capital helps investors who wish to add a private capital component to their portfolios. To date, we have invested just under $7MM across nine early stage companies in Iowa and Minnesota, through five different pooled investment LLCs. Investing in early stage companies does carry significant risk of loss. Interested accredited investors should contact us to learn more about River Glen's process for matching investors with investments suited to their individual and unique requirements.

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DuPont Pioneer innovationLEADER of the Year:

HARRISVACCINES INC.

Despite being founded only 10 years ago, Harrisvaccines Inc. is revolutionizing animal health vaccines. The company generates state-of-the-art vaccines in the swine, poultry, bovine, equine, companion animal and aquaculture industry segments.

With about 40 employees, Harrisvaccines has become an emerging leader in the development and commercialization of rapid-response vaccines. These vaccines help protect against newer or difficult-to-control disease outbreaks that threaten livestock and human health. The company also ships vaccines to other countries, including Canada, Mexico, the Dominican Republic and the Philippines.

Harrisvaccines made headlines in 2014 for its work on an Ebola vaccine but gained prominence for its groundbreaking vaccine for PEDv, a lethal swine disease that was first diagnosed in the United States in April 2013. The company was most recently recognized for developing a vaccine for the avian flu.

In October 2015, Ames-based Harrisvaccines was awarded one of two contracts from the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA/APHIS) to provide 48 million doses of the avian flu H5 vaccine for its stockpile.

"We produced our doses of the avian flu vaccine for the H5 strain in March 2015, then the USDA did further testing of the product to confirm its effectiveness," said Joel Harris, vice president of Harrisvaccines. "In September 2015, we were granted a conditional license. It was an extraordinary collaboration with the USDA."

The bird flu virus spread through 15 states in 2015, resulting in the death of 50 million chickens and turkeys. In Iowa alone, almost 34 million birds were lost to the disease, including about 40 percent of the state's egg-laying hens. The outbreak cost the state nearly 8,500 jobs and $427 million in lost additional value, according to a study conducted by Decision Innovation Solutions and commissioned by the Iowa Farm Bureau Federation.

Custom-made prescriptions

Harrisvaccines' technology takes a portion of a virus or bacterium, rather than the entire organism like its competitors, and then uses it to make a vaccine. This allows the company to develop a vaccine faster and adapt it quickly if the virus changes.

"Most companies are still using this 50-year-old technology," Harris said. "The USDA didn't know how to handle us at first

DUPONT

PIONEER

innovationLEADER OF THE YEAR SPONSOR

Paul Schickler
President

DuPont Pioneer is the world's leading developer and supplier of advanced plant genetics, providing high-quality seeds to farmers around the world. With product sales in 90 countries, Pioneer provides local agronomic support and service to help increase farmer productivity and profitability and strives to develop sustainable agricultural systems for people everywhere.

Our future and the future of agriculture depend on leading with purpose, strong core values and people who are focused on making a difference. This is something Pioneer has always believed in and is part of how we do business. Pioneer is 90 years strong – and we are proud to continue a legacy of partnering with farmers and collaborating in projects that help alleviate hunger. Science with Service Delivery Success™.

with our licensing, since our technology is so different and fast. So most of the time we've been open, we've been under development and working with the USDA."

Harrisvaccines is known for its custom-made prescriptions, particularly for swine, which will work well with Merck & Co.'s animal health division after the merger of the two companies. Harrisvaccines works with veterinarians to put together an a la carte menu with a personalized focus on animal health and welfare, making the treatment safe and rapid for the animal.

"If the animal only needs one vaccine, we're not going to give it a host of others it doesn't," Harris said.

While conventional vaccine production methods can take months or even years, Harrisvaccines' process takes about four weeks, allowing producers to target diseases quickly, safely and more accurately. This rapid response can mean the difference between profit and loss, and assure the producer that animal health and well-being is restored rapidly.

Merck & Co. acquisition

In November 2015, Harrisvaccines announced that pharmaceutical giant Merck & Co. would be purchasing the company.

"We hope to expand to other species with Merck's help," Harris said. "We have the innovative technology they need, and they have the resources and support we need."

"For now, we're business as usual," he said. "We're continuing to educate the industry, the government and state representatives. We're excited to continue to grow."

Meet the leaders

One of the world's foremost authorities on infectious diseases in swine, Harrisvaccines President and CEO Hank Harris discovered the cause of swine dysentery in the 1970s and has been involved with animal vaccine research and production ever since. In the early 1980s, he was one of the founders — and CEO — of NOBL Laboratories, an animal health vaccine company eventually acquired by Boehringer Ingelheim Vetmedica.

Later that decade, he was vice president of PIC USA (formerly Pig Improvement Company), a worldwide leader in pig breeding and genetics. While at PIC, Harris introduced the concept of multiple-site production to the swine industry, an approach now used widely all over the world. Harris is an emeritus professor of animal science and veterinary medicine at Iowa State University.

"My parents are Iowans," Joel Harris, Hank's son, said. "My mom grew up in Fairfield, and my dad grew up in Central Iowa. They both attended Iowa State University, became vets and have Ph.D.s."

Harris said since he grew up with veterinarians as parents, he became familiar with and interested in animals. He received his bachelor's degree in economics, with concentrations in international trade and entrepreneurship, from the University of Iowa in 2008, and recently completed a post-baccalaureate certificate program in narrative communications from Northwestern University.

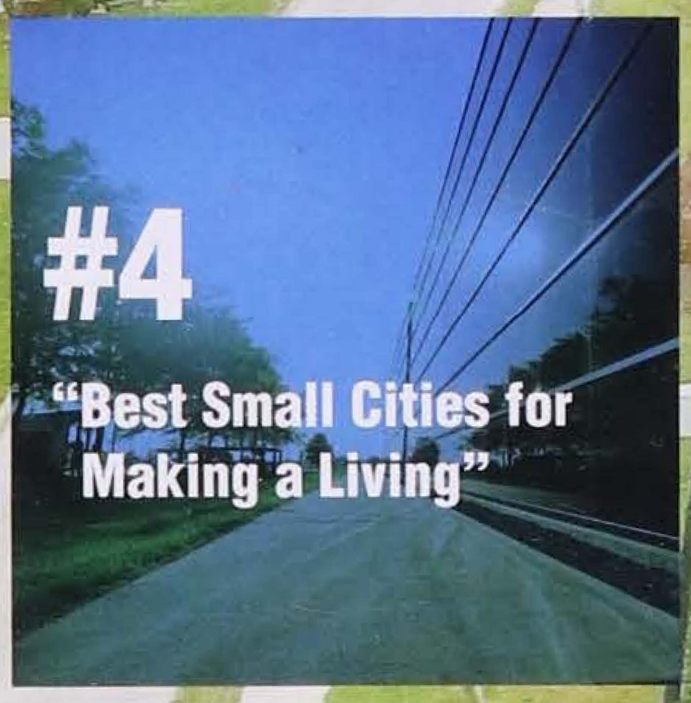
Harris works alongside his father and leads the company's sales and marketing efforts. In addition to overseeing sales and marketing, he negotiates licensing agreements and manages investor relations.

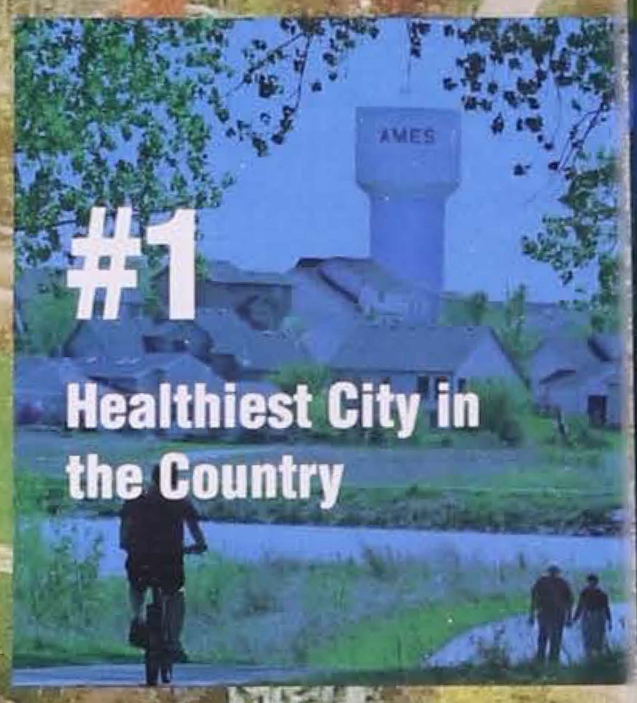
Less than a year after the original PEDv vaccine and second-generation vaccine debuted, Harrisvaccines received the 2014 World Pork Expo New Product Tour Producer's Choice Award, which honors a product for its exceptional quality and unique technology.

In addition, Harrisvaccines was named one of the 2015 Inc. 5,000 Fastest Growing Private Businesses, ranking second in Iowa. Hank Harris also earned the 2015 Ernst and Young Entrepreneur of the Year Award in Manufacturing for the Upper Midwest Region. ■

BUSINESS-READY, BUSINESS-FRIENDLY

The Ames Economic Development Commission (AEDC) stands ready to provide you with timely assistance in learning more about Ames and Story County as a first-class location for doing business. Ames, IA is a *Smart Choice* for your business and whether it is site location assistance, packaging of financial incentives or demonstrating an available workforce, you can rely on the AEDC for all of this and more as you contemplate investment in new or expanding operations.





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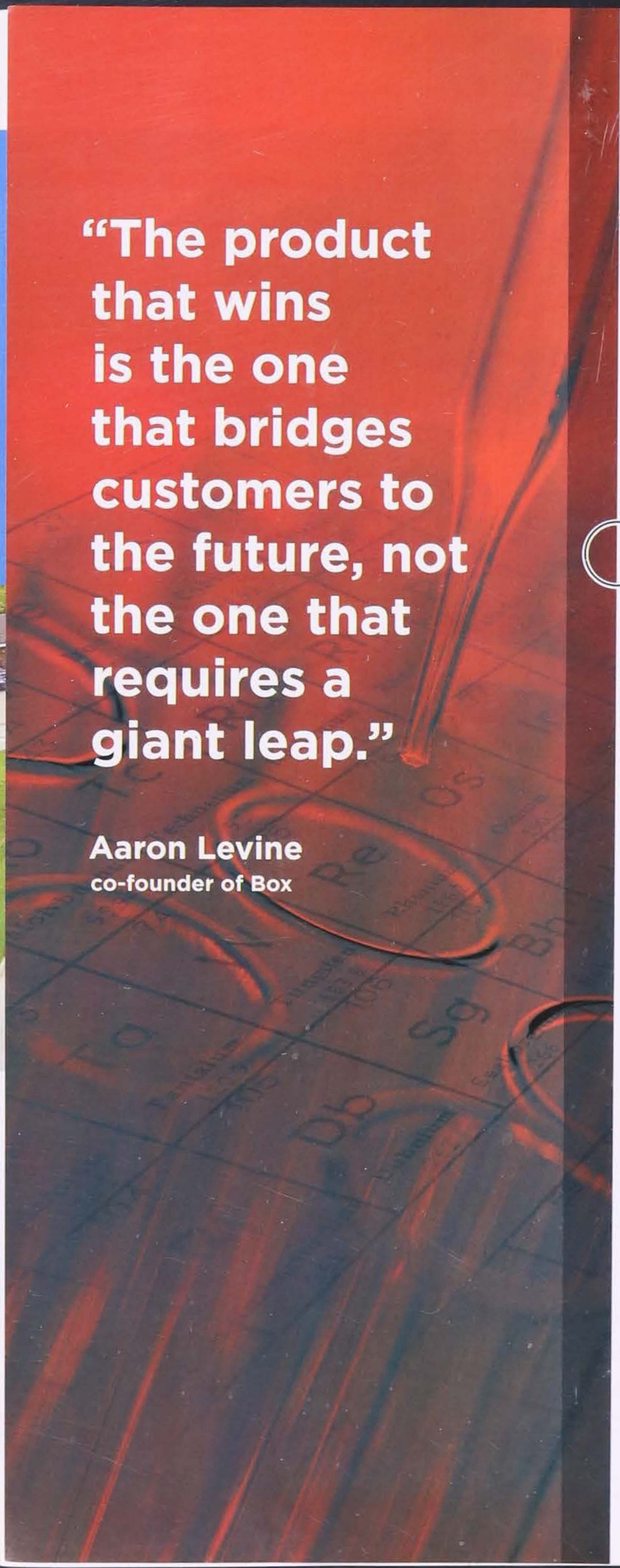
President Steven Leath
Iowa State University



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Investing in early stage companies does carry significant risk of loss. Interested accredited investors should contact us to learn more about River Glen's process for matching investors with investments suited to their individual and unique requirements.

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PRIVATE CAPITAL

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AGRICULTURE BIOSCIENCE

Sukup®

Manufacturing Co.

A History of Innovation

Eugene Sukup started Sukup Manufacturing Co. in 1963 when he invented an automatic stirring machine. His two sons, Charles and Steve Sukup, have grown this family-owned business eight times over since 2000. Through product expansion and a commitment to quality they have transformed Sukup Manufacturing Co. into a leader in the grain storage and handling industry. That same spirit of innovation continues to drive Sukup today. We continually evaluate our products and practices seeking ways to add value. This has lead us over 80 US patents and 17 AE50 Awards.

An Advanced, Global Manufacturer

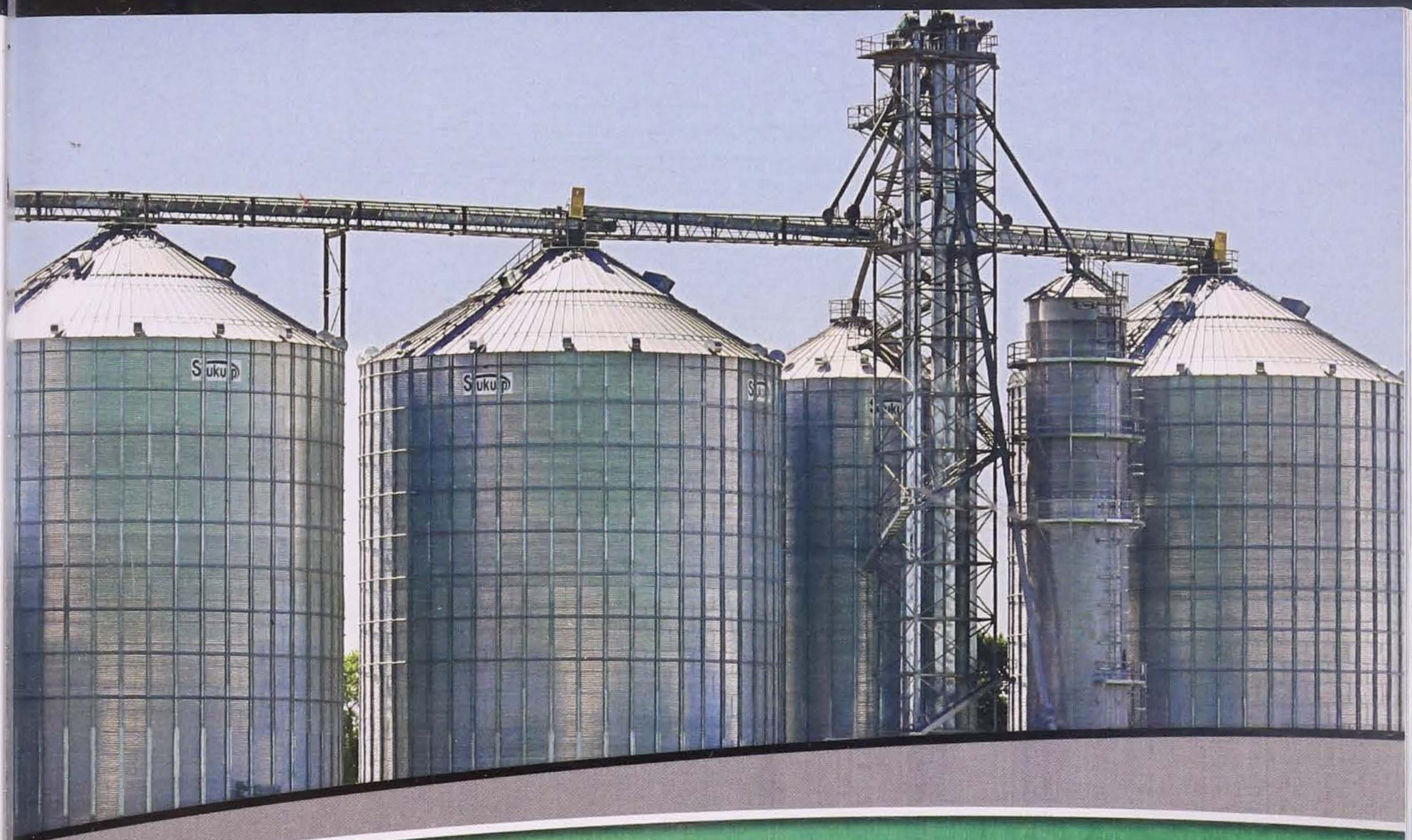
Photo by: David Bohrer of NAM

Since our first year of business we've seen tremendous growth. One reason is our impressive group of long-term employees who understand our products and are outfitted with top-of-the-line machinery. Today we employ over 500 people, have sold products in over 80 foreign countries, and operate six US distribution centers in addition to the main manufacturing facility in Sheffield, Iowa. We have also recently launched Sukup Europe via acquisition of one of our long-time overseas dealers. Based in Hedensted, Denmark, it serves our customers in Western Europe.

Family Owned Company

Photo by: David Bohrer of NAM

Headquartered in the heart of Midwestern farmland, Sukup Manufacturing Co. was founded in 1963 through innovation and hard work – two values that remain at the core of everything we do. As we look into the future, we're proud to have three generations of the Sukup family involved in our growing business. We pride ourselves in doing business by building relationships with our customers, dealers, and employees. We don't treat people like a number, but rather we believe every person deserves to be treated with dignity and respect.



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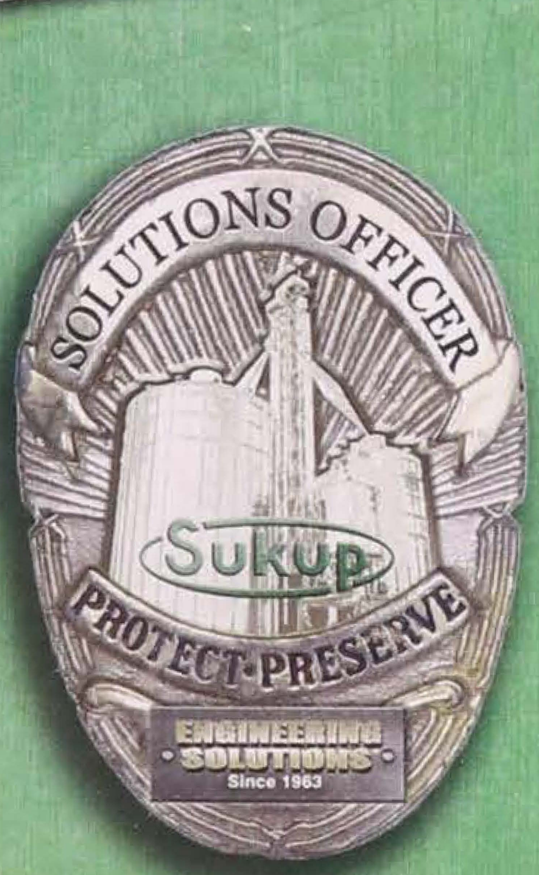

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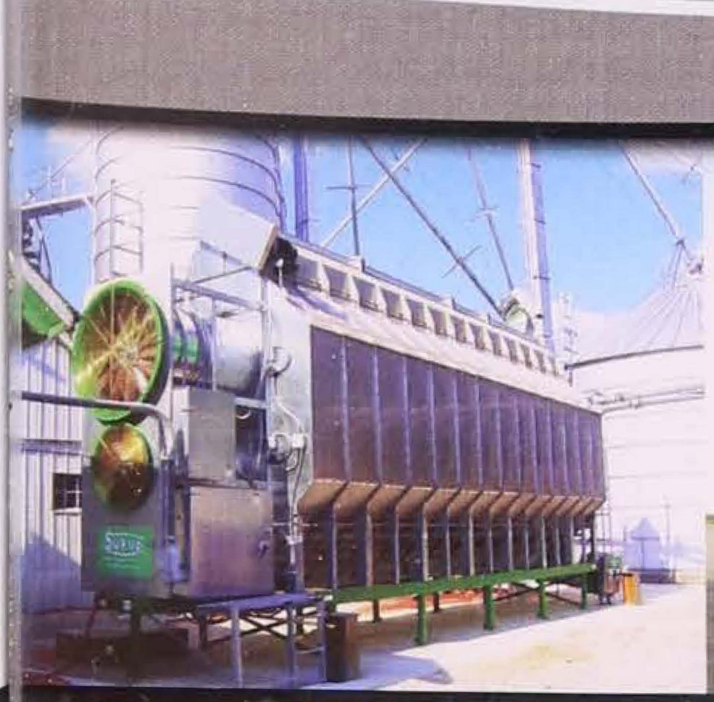

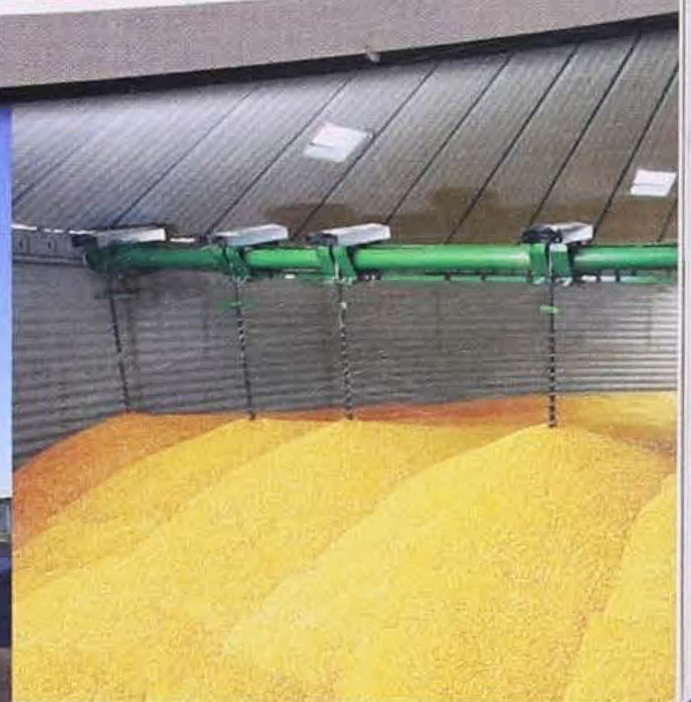

MEDICAL DEVICE STARTUP FORGING AHEAD

Just a few short years ago, Coralville-based Corvida Medical entered the medical device and life sciences scene. Now, this medical device corporation is creating cutting-edge technologies to ensure a safer environment for health care providers and their patients.

John Slump and his co-founder, Jared Garfield, started Corvida Medical as undergraduate students at the University of Iowa. After his sister was diagnosed with melanoma, Slump wanted to learn all about the disease and the chemotherapy treatments she received. From his research, he learned that some health care workers were being exposed to chemotherapy and developing cancer and other adverse effects themselves.

Since 2006, Slump and Garfield raised money to establish and build their company. From the start, they won as much as $100,000 in business model contests and founded Corvida Medical in February 2008. By 2009, they started designing their product, launched full development in 2010, and more recently, just received clearance from the U.S. Food and Drug Administration to begin marketing and selling their first product, the Halo™, a device designed to ensure

the safe preparation and delivery of hazardous drugs.

The company gained other funding sources as well, including nearly $5 million from the National Cancer Institute and close to $1 million from the Iowa Economic Development Authority board.

Sioux City native Slump has a Bachelor of Business Administration in finance from University of Iowa and is responsible for raising nearly $6 million of non-dilutive funding and significantly more in private investment as part of a Series A closing in 2011, and more recently, a Series B closing in 2015. Slump has a strong background in corporate accounting, equity analysis and financial modeling, with prior experience as an equity analyst, chief financial officer of a small startup and consultant to Fortune 500 senior finance executives.

Garfield, who is from the Chicago area, has a Bachelor of Business Administration in management information systems from University of Iowa and is responsible for more than 29 issued and pending patents for the company. He has a robust background in engineering, information technology, business management and marketing.

Located in the University of Iowa Research Park, the company is now led by CEO Kent Smith, a medical device industry veteran with experience helping to grow and exit an Indianapolis-based medical device startup company for more than $300 million, after ramping to nearly $30 million in sales. Previously, Smith spent more than 20 years at American Hospital Supply and Baxter Healthcare, with roles ranging from vice president of operations to various general management roles, including five years as president of Baxter Japan.

Halo™ Closed System Transfer Device

A new medical device enables safer, more efficient and user-friendly preparation, delivery and disposal of hazardous pharmaceuticals.

In July 2015, Corvida Medical received a 510(k) clearance from the U.S. Food and Drug Administration to market its first product, the Halo Closed System Transfer Device (CSTD), to protect health care professionals from exposure to hazardous drugs. The device showed no escape of hazardous drug or vapor concentration, no transfer of environmental contaminants and prevention of microbial ingress.

"It's a totally-enclosed system," John Slump, Corvida Medical co-founder and chief financial officer, said. "No bugs in and no drugs out."

Corvida is now entering a large, rapidly growing market. Slump said the company is scaling up manufacturing now that the testing has been completed and FDA 510(k) clearance has been secured.

"This device protects anyone who prepares and/or administers chemotherapy, and cancer centers in hospitals will likely be the first adopters, with pharmacies coming next," said Slump. "We're going after a worldwide market and are pleased to have the support of the National Cancer Institute, state of Iowa and private investors." ■

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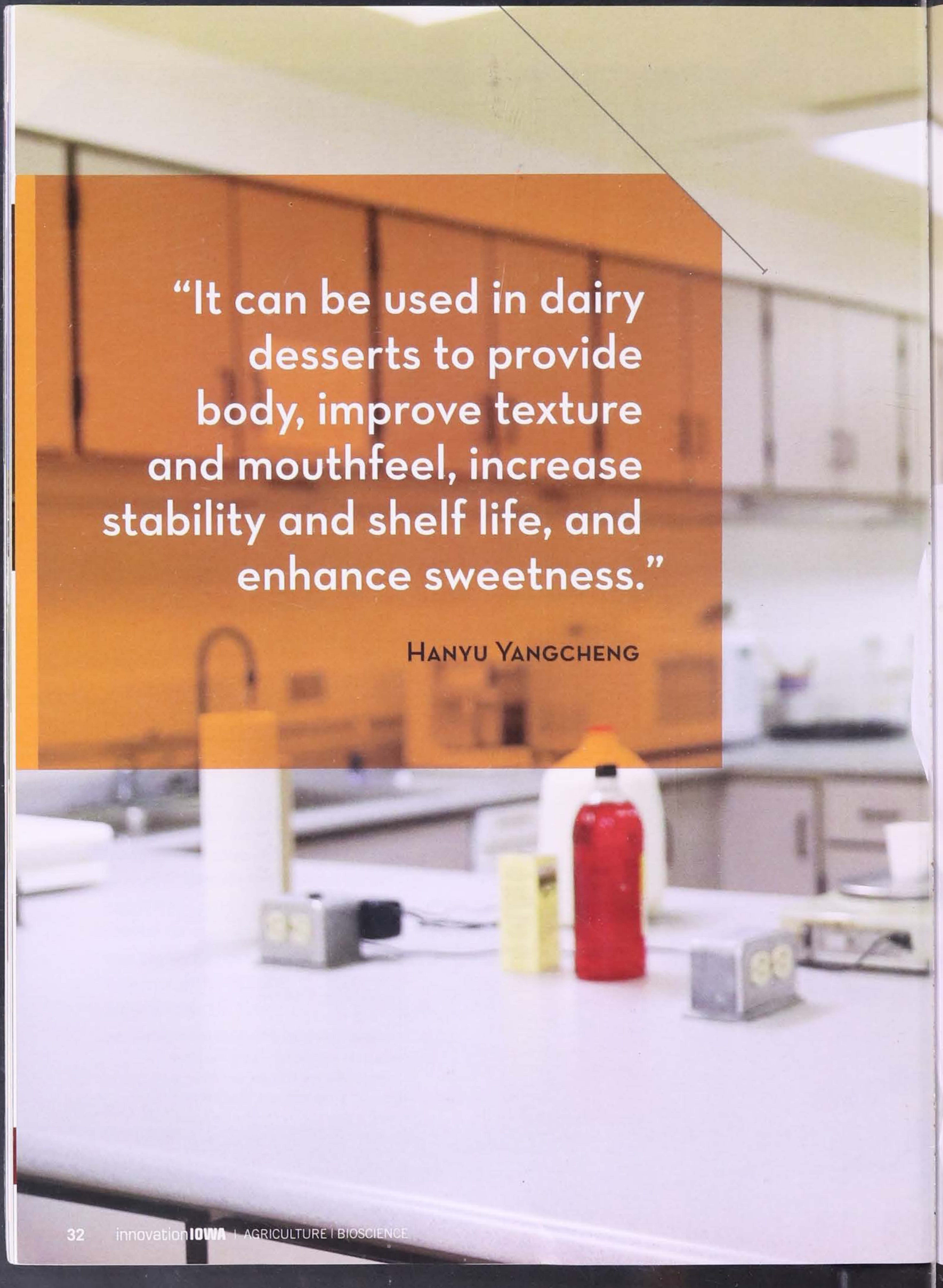
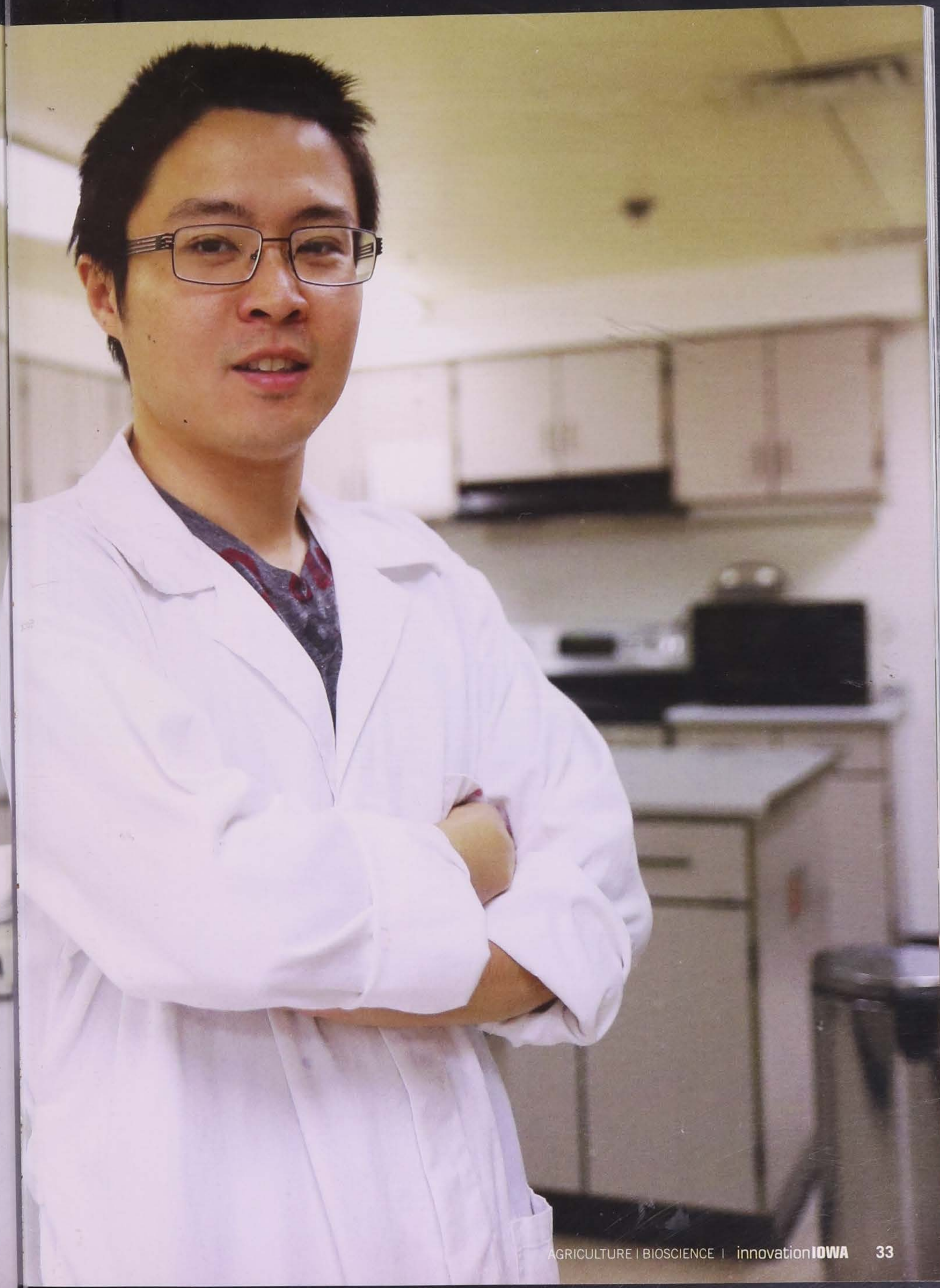
Dairy stabilizer helps dairy products taste better, last longer

The quality of dairy products could be improving, thanks to an Iowa State University student who developed a new system to help dairy desserts taste and feel better, and last longer.

Hanyu Yangcheng, a graduate student in food science and human nutrition, is the creator of KIK, a powdered food stabilizer system. KIK is an abbreviation representing the first letters of the ingredients of the powder.

"It can be used in dairy desserts to provide body, improve texture and mouthfeel, increase stability and shelf life, and enhance sweetness," Yangcheng said. "The KIK food stabilizer system is a dry blend of food gums, including kappa carrageenan, inulin and konjac glucomannan."


"It can be used in dairy desserts to provide body, improve texture and mouthfeel, increase stability and shelf life, and enhance sweetness."
HANYU YANGCHENG



The KIK food stabilizer system won the Institute of Food Technologists' Global Student Innovation Challenge sponsored by Tate & Lyle, a global provider of specialty food ingredients and solutions. Yangcheng was awarded first place in the Global Student Innovation Challenge at IFT15, the annual meeting and expo of more than 23,000 top food science and technology professionals from more than 90 countries.

The challenge is intended to nurture student innovation and scientific exploration of global food science issues. Students explore real-world industry challenges and identify potential solutions that promote the creation of new technologies, processes and products to create safe and scientifically sound products that meet consumer needs.

Yangcheng said he came up with the idea about a month before the competition's deadline for preliminary proposals. After submitting the preliminary proposal, he said he spent about a month testing different dairy dessert products in a test kitchen.

KIK is different from other commercial food-stabilizer products because of the combination of kappa carrageenan – removed from seaweed and used to jell dairy-based liquids – and a thickener, konjac glucomannan, a dietary fiber and food additive from the konjac plant.

The costs are expected to be low, because only a small amount of stabilizer is needed to improve dairy dessert quality.

As for next steps, Yangcheng's formulation will likely be used in a variety of applications.

"I expect Tate & Lyle will actually use Hanyu's ingredient concept as the basis for an actual product they can send to companies looking for dairy dessert stabilization," said Stephanie Clark, an associate professor in food science and human nutrition who is Yangcheng's adviser. "It's likely the original formulation by Hanyu will be tweaked to meet customer needs, but the initial idea was Hanyu's." ■

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ENVIRONMENTAL STEWARDSHIP AWARD

Glenn and Bev Rowe of Lorimor, Iowa were announced in July 2015 as the Region 3 winner in the Environmental Stewardship Award Program (ESAP). Their farm operation includes pasture, paddocks, wildlife refuge, and some crop acres. Cattle have always been an integral part of their farm's operation and environmental decisions that have improved land use, water quality and wildlife habitat. Cattlemen and women are America's original stewards of the land and the ESAP award honors their ongoing efforts to protect the environment.

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Iowa's cattle industry contributes in excess of $6.0 billion in business activity to Iowa's economy.

+ **3,900,000**
Total Cattle Inventory in Iowa[a]

+ **26,827**
Cattle Operations in Iowa[a]

+ **19,677**
Iowa Farms with Beef Cows[a]

+ **8,849**
Iowa Jobs Directly Related to the Cattle Industry[b]

+ **6,750**
Iowa Jobs Indirectly Related to the Cattle Industry[b]

+ **5,443**
Iowa Jobs Induced by the Cattle Industry[b]

[b]As of January 1, 2015 [b]2013 statistic

BEEF

Iowa Beef
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Startup focuses on cancer, kidney disease and infectious disease treatments

There's no shortage of companies working on innovative products designed to change the face of health care as we know it.

Spotlight Innovation Inc., based in West Des Moines, recently acquired two separate companies to develop early-stage clinical compounds that may have applications in the treatment of cancer, kidney disease and infectious diseases.

The company, which went public and began trading on the over-the-counter market in early 2014, specializes in identifying, acquiring, licensing and developing early-stage life sciences-related technologies and products. Its strategy involves cultivating relationships with leading research universities and institutions, acquiring and further developing high-potential intellectual property and then monetizing this through partnerships.

"Memcine Pharmaceuticals is based out of the University of Iowa, and we acquired a majority ownership," said Cristopher Grunewald, Spotlight Innovation CEO. "We founded Celtic Biotech Iowa and acquired Ireland-based Celtic Biotech Ltd. to develop their intellectual property."

He said Spotlight Innovation chose these two opportunities because the company recognized enormous potential as "platform technologies" in their intellectual property and in their people.

"When I speak of platform technologies, I mean there is more than one application for the drug," Grunewald said. "We believe the intellectual property is strong, and our development efforts are well underway. The scientists that are driving the research are world-class scientific minds with entrepreneurial instincts, which can be a rare combination but which is really important for us for the future of the companies."

Memcine Pharmaceuticals

Memcine Pharmaceuticals' core intellectual property is the Immunoplex™ technology platform. The Immunoplex technology allows for a universal approach to the development of immune complex vaccines and circumvents existing industry production hurdles by using a single antibody for all immune complex vaccines.

"This means that a single antibody can fight various viruses — Ebola, flu, what have you — by implementing the Immunoplex technology, without having to develop unique antibodies for each specific threat," Grunewald said. "We feel there are significant advantages to this approach, both from health and wellness, and manufacturing, perspectives."

Immunoplex also has the potential for use as a "personalized medicine" immunotherapy as a cellular vaccine for cancers. Memcine has recently signed a lease with the BioVentures Center at the University of Iowa for laboratory space, and preparations are underway to continue its pre-clinical studies.

Celtic Biotech Iowa

Celtic Biotech's intellectual property is protein compounds derived from the venom of South American rattlesnakes and cobras. The medicinal properties of venoms have been known for centuries and are well-documented in contemporary research literature, Grunewald said.

Celtic Biotech is about to begin the second part of trials for Crotoxin in patients with advanced cancer using intravenous administration.

"We are tremendously excited to be moving forward with Crotoxin's clinical trial path," Grunewald said. "And we hope these clinical trials will eventually lead to significant help for people with lung, breast and skin cancers."

In 2015, the company completed a license agreement with Instituto Butantan in Brazil and is currently working with Emory University in Atlanta on developing the imagery enhancing technology.

Staying in Iowa

Grunewald said there are a number of good reasons for him and his companies to stay in Iowa.

"A recent national stock analyst called the Midwest a 'competitive advantage' when reviewing our company," he said. "And Iowa has a commitment to STEM and technology in general, born, I think, of our agricultural background, which is a much more technical endeavor than some people may realize."

He added that Iowa has a great support system of associations and educational resources, one of the lowest costs of doing business in the country, a favorable tax structure, an engaged investment community and amazing infrastructure resources like the BioVentures Center at the University of Iowa Research Park, where Memcine Pharmaceuticals has its wet lab.

"I honestly don't know anywhere else we could go that would have a confluence of this many favorable factors, productivity and people," Grunewald said.

As far as the future of these companies, he said it feels like the stars are aligning and they've only just begun.

"Research and development is underway for both subsidiaries, as we planned and hoped," he said. "If anything, I have a greater appreciation for the potential in the intellectual property. The work our university partners conduct on a daily basis is amazing. They lead the world in health care development. There are people facing difficult health challenges who can and, we trust, will, benefit from the work we are doing to bring these technologies to market."

Grunewald said Spotlight Innovation will continue to seek out additional opportunities to add to its family of companies, other extraordinary intellectual property that have the "potential to positively impact the health and well-being of people everywhere."

"I honestly don't know anywhere else we could go that would have a confluence of this many favorable factors, productivity and people."

CRISTOPHER GRUNEWALD

About the CEO

Grunewald was born and raised in Iowa, and his introduction to the world of medicine started early.

"My father is a physician, and my mother was a nurse," he said. "He always talked technical medical jargon and health care at the dinner table. He didn't spare us by dumbing it down, so the entire family got a medical education surreptitiously."

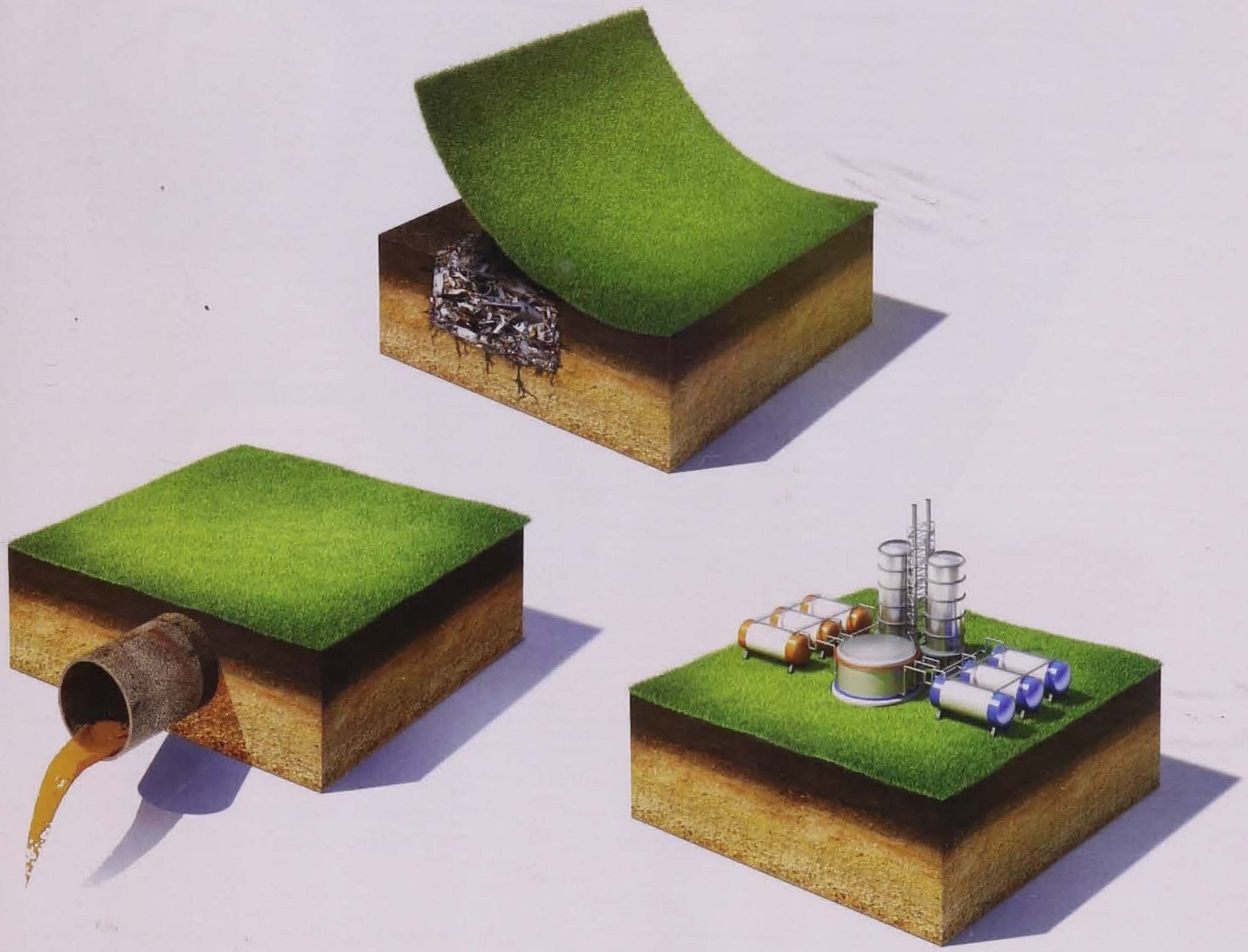
After high school, Grunewald joined the Marine Corps, keeping with the strong national service vein in their family, as a topographical intelligence specialist. When he finished, he attended Iowa State University and earned a bachelor' degree. After college, Grunewald began his career in finance.

"I've been fortunate that my experience has covered a wide range of industries and skill sets," he said. "I've done everything from corporate development and operations, to due diligence and risk management, to private equity development and investment banking."

And though his experiences with numerous startups and well-known national companies have covered a number of industries, Grunewald said he's always gravitated to health care, thanks to his family.

"Spotlight Innovation is my home and where I intend to spend the rest of my career," he said. "Every morning is a new day in a way I've never experienced before, and I couldn't be more energized." ■

ENVIRONMENTAL LAW



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The pace at which health care is transforming drives a clear call: we must improve the health status of our communities in big, bold ways. **At Mercy Medical Center – Des Moines, this means continuously innovating to better serve Iowa and beyond.** For more than 120 years, we have built a history of innovation as Des Moines' longest continually operated hospital.

Today, Mercy operates four not-for-profit acute care hospital campuses throughout Iowa. Additionally, Mercy includes more than 50 primary care and specialty care clinics, Iowa Heart Center, Mercy College of Health Sciences, Mercy Foundation, Mercy Auxiliary of Central Iowa, House of Mercy, Bishop Drumm Retirement Center, Mercy Hospice, Mercy Home Care, YMCA-Healthy Living Center and the Mercy Accountable Care Organization (ACO).

Mercy strives to be on the forefront of the health care industry. This is evident in several of our key service lines. Here are some examples of innovation at Mercy.

CARDIOVASCULAR CARE

Iowa Heart Center is recognized by academics, device manufacturers and pharmaceutical companies as one of the top cardiovascular research programs in the country. What started as a one doctor – one nurse research team in the early 1980s, today has grown to a staff of 14 who are conducting more than 40 medical research trials.

Participating in research studies allows the cardiologists to work with leading-edge technology to provide innovative solutions and advanced treatment options to the thousands of Iowans affected by heart disease. Patients benefit by receiving state-of-the-art care from experienced leaders in the cardiovascular field years before they are commercially available.

Most recently, Iowa Heart Center has participated in several innovative trials to study new technology such as the Abbott MitraClip, WATCHMAN Left Atrial Appendage Closure Device and transcatheter aortic valve replacement (TAVR). Iowa Heart Center continues to grow through research and innovative studies that provide scientific value to the medical field and their patients.

NEUROSCIENCE CARE

Surgeons at Mercy Neurosurgery Center are performing a procedure called deep brain stimulation (DBS) for patients who suffer from movement and affective disorders. The procedure involves the implantation of a medical device which sends electrical impulses through implanted electrodes to specific parts of the brain (brain nucleus). DBS in select brain regions has provided therapeutic benefits for otherwise-treatment-resistant disorders such as Parkinson's disease, essential tremor, chronic pain, major depression, and obsessive compulsive disorder (OCD). Mercy is one of the few places in Iowa offering DBS.

Lemtrada is a new medication for long-term treatment for patients with relapsing multiple sclerosis (MS). Lemtrada is given via IV infusion for five days. Dr. Bruce Hughes and the team at Mercy Ruan Neurology Clinic are one of the few groups in Iowa to offer this leading-edge treatment.

MERCY CONNECT AND EMERGENCY CARE

Mercy is the first hospital in central Iowa to provide a dedicated on-site transfer center. Mercy Connect is staffed 24/7 with advanced practice clinicians (APCs) who facilitate seamless transfers from referring hospitals and clinics inside and outside of Mercy's network.

Mercy Connect also works hand-in-hand with our adult and pediatric emergency services to get patients the care they need, fast. Mercy Children's Hospital & Clinics provides pediatric and neonatal transport teams for air and ground ambulance transports. In an emergency, every second counts, which is why Mercy stations helicopters in Des Moines and Knoxville; and Mercy One is the fastest and most-advanced air ambulance in Iowa.

To learn more, visit mercydesmoines.org. You can also download the Mercy app (Mercy DM) in the Apple and Google Play stores.

Mercy | LIVEUP

MORE HEALTHFUL OPTIONS TO BE MANUFACTURED IN BOONE

KemX Global Corp. has broken ground on a state-of-the-art network of refineries that will produce pharmaceutical-grade glycerin and non-genetically modified organism (GMO) cooking oil to bring natural products from Midwest growers to consumers worldwide. The West Des Moines-based company's goal is to offer more healthful options for use in food, consumer, pharmaceutical, nutraceutical and other specialty applications.

One of the largest vegetable glycerin refineries in the United States will be housed in a 30,000-square-foot facility with an annual production rate comparable to the largest plants in North America. The new plant in Boone Industrial Park will include an on-site manufacturing facility and is expected to create 30 to 45 jobs in Central Iowa with salaries ranging from $60,000 to $200,000 per year.

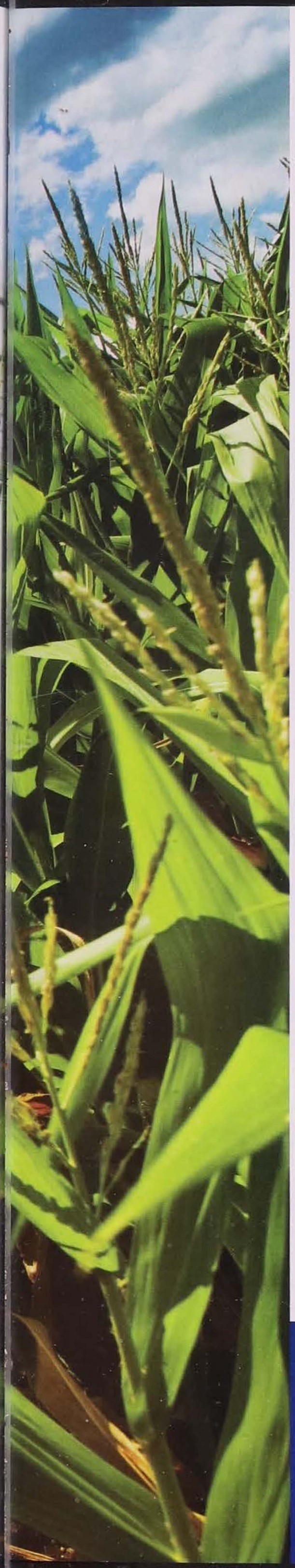
"We're committed to maintaining a strict level of compliance with all standards while producing renewable, natural and organic products made exclusively from vegetable-based sources," said Mark Merritt, the company's president and CEO.

KemX, in addition to making a GMO-free vegetable oil for use in food production, will create chemically pure building blocks for use in more than 1,500 consumer products, as well as for use in high-value pharmaceutical, nutraceutical and other specialty applications. The U.S. Pharmacopeia-grade glycerin produced by KemX will be kosher-certified and 99.7 percent pure.

"More than 60 countries have already enacted GMO-labeling laws or banned the use of genetically modified crops in food production," Merritt said. "It's our job to meet the demand and bring better options to the marketplace."

The KemX facility will also house a state-of-the-art fermentation division dedicated to the production of the company's innovative KemGrow plant growth technology. KemGrow is a broad-spectrum growth promoter intended to stimulate the emergence of seedlings, encourage subsequent plant development and improve the consistency of yields.

"We are strategically positioned in Central Iowa," Merritt said. "From an agricultural point of view, Boone is a microeconomic hub of the United States with close proximity to both the rail line and interstate systems. In addition to minimizing our footprint by building in one spot, this logistical convenience is advantageous to people who want to do business with us across the Midwest. We are an all-Iowa group of owners and investors that is using what we have today to ensure a better tomorrow." ■



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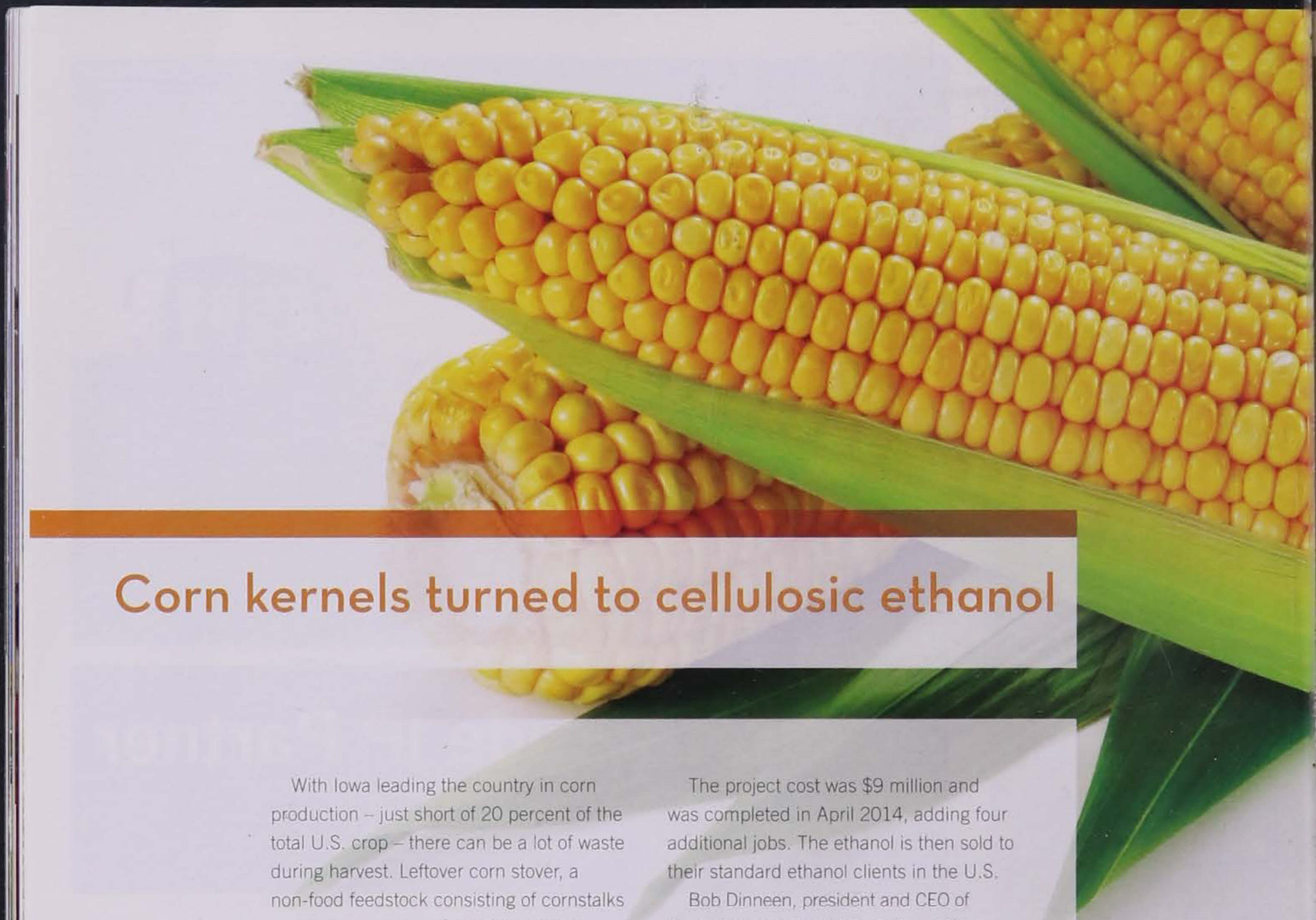

Corn kernels turned to cellulosic ethanol

With Iowa leading the country in corn production – just short of 20 percent of the total U.S. crop – there can be a lot of waste during harvest. Leftover corn stover, a non-food feedstock consisting of cornstalks and leaves, can interfere with planting, dominate nitrogen in the soil, and harbor damaging insects, pathogens and pests.

Quad County Corn Processors (QCCP) in Galva, Iowa, offers farmers a lucrative outlet to dispose of their corn stover. The ethanol plant's new "bolt-on" refinery turns corn kernel fibers into cellulosic ethanol using Cellerate™ technology.

"Our 35 million-gallon-per-year cornstarch facility produces 2 million gallons per of cellulosic ethanol," said Delayne Johnson, the company's CEO. "With Enogen corn enzyme technology, Cellerate could increase ethanol yields by 6 percent, increase corn oil removal by three times and create a feed product that is high in protein and low in fiber."

QCCP will contract with local farmers to gather, store and deliver corn stover to the facility. Johnson estimates that the process for producing cellulosic ethanol reduces greenhouse gas emissions by 34 percent compared to petroleum.

The project cost was $9 million and was completed in April 2014, adding four additional jobs. The ethanol is then sold to their standard ethanol clients in the U.S.

Bob Dinneen, president and CEO of the Renewable Fuels Association, said QCCP received $4.25 million from the U.S. Department of Agriculture and the U.S. Department of Energy as part of the Biomass Research and Development Initiative to advance this technology. The research and development process took four years.

Other ethanol plants can integrate Cellerate process technology into their existing production process, as QCCP will license the bolt-on process.

The cellulosic ethanol industry was struggling to catch traction just a few short years ago, but is now making progress.

DuPont completed a $200 million facility in 2014, producing 30 million gallons of cellulosic ethanol a year. Also in 2014, Spanish company Abengoa constructed a 21 million-gallon-per-year cellulosic ethanol biorefinery in Hugoton, Kansas. That same year, Poet, based in Sioux Falls, South Dakota, built a 25 million-gallon-per-year facility in Emmetsburg, Iowa. ■

"Iowa Farm Bureau's Renew Rural Iowa program helped us turn our idea into a growing business. Their hands on mentoring helped us get from the blackboard to investors' boardrooms – making our dream a reality."

Stuart McCullough – Renew Rural Iowa Participant
Co-founder of Scout Pro

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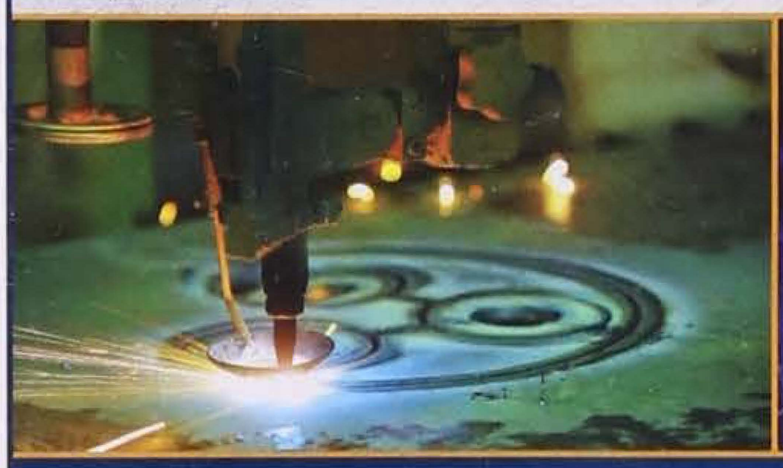
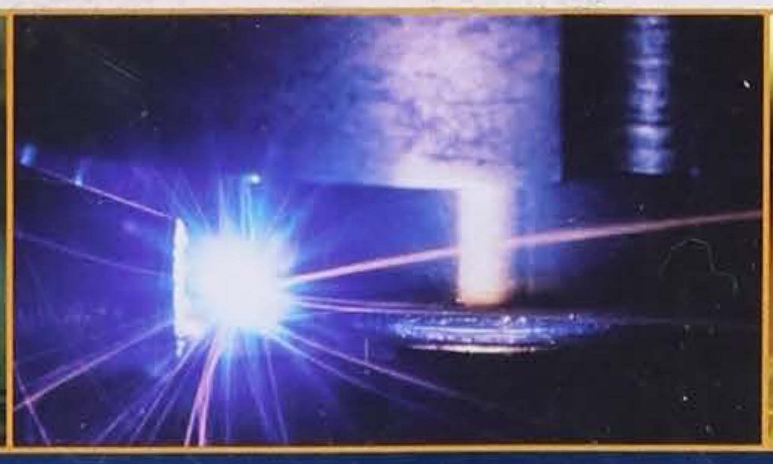

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‘Maker space’ brings together like-minded inventors

Cedar Valley Makers Inc. just opened a metal shop, a wood shop and an electronics laboratory and installed 3-D printers in about 5,000 square feet of space on the third floor of the Cedar Valley TechWorks building.

The “maker space” is open to people of all ages and skill levels, and the cooperative atmosphere allows members to generate a synergy of creative minds that could lead, potentially, to new products, new companies and new jobs for the area.

“It’s like a gym membership, except for tools,” said Wendy Knapp-Bowman, director of communications for the Greater Cedar Valley Alliance and Chamber. “The space provides education by giving access to tools, machines and training inside our maker space. It promotes scientific thinking, learning and an entrepreneurial spirit for all members of our community.”

The equipment is open to use by artisans, crafters, inventors and manufacturers who would pay a monthly fee targeted at $40-$50, but the fee can be offset by volunteering. It's a full wood shop, full metal shop, 3-D printer lab, electronics lab and space for arts and crafts.

"One of the coolest projects they have is a 3-D printed artificial arm being developed in partnership with veteran and quad-amputee Taylor Morris (vice president of the board of directors)," Knapp-Bowman said.

Cedar Valley Makers aspires "to promote collaborative learning, creative design and manufacturing for people of all ages and skill levels," according to the group's mission statement.

In coordination with the Cedar Falls and Waterloo public libraries, public schools and other community organizations, Cedar Valley Makers shares knowledge and the love of learning with the goal of promoting science, technology, engineering and mathematics (STEM) activities and creating a "maker's culture" in the Cedar Valley.

Already, the group has used its technical experience to lead 14 littleBits electronics sessions in the last year at the Cedar Falls and Waterloo libraries to serve approximately 70 children aged 10-12. It has also provided advice about the procurement and setup of 3-D printers at the libraries, and assisted in the planning for the new CoderDojo to mentor kids in computer programming.

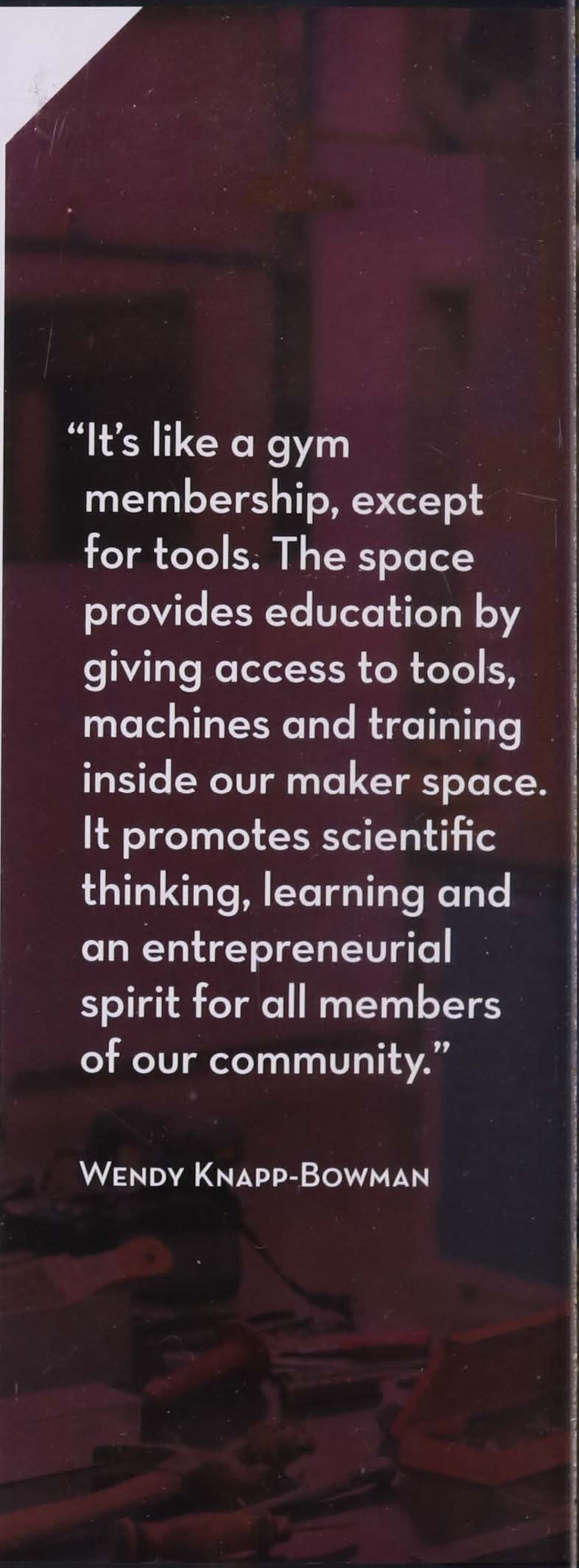
About TechWorks

TechWorks is a 30-acre advanced manufacturing and biotechnology research, development and education center, creating business and manufacturing cluster. The campus is located in downtown Waterloo adjacent to the John Deere Westfield manufacturing operations. The campus includes two historic former Deere manufacturing buildings: Tech I and Tech II.

The Tech I building includes the University of Northern Iowa Metal Casting Center featuring the ExOne 3-D printer, the largest in North America; industrial manufacturing space; tech shop or "tinker's" space; incubator; and classrooms.

Tech II is the starting point of the larger Green@TechWorks development project which includes the John Deere Regional Training Center; an internationally recognized business class hotel; a fine-dining establishment; and office and conference space. The John Deere Waterloo & Tractor Museum is also located on the campus, which includes parcels suitable for larger-scale manufacturing facilities.

TechWorks is the first technology park of its kind in Iowa to combine business amenities within a brownfield industrial redevelopment project. TechWorks has been designated as the site of the Iowa Advanced Manufacturing Network Hub by the Iowa Innovation Corp. ■



Ankeny, Iowa – Invested in the Cultivation Corridor

"Ankeny has supported Accumold from the start and we have a strong partnership. The City of Ankeny, the residents, DMACC and the State of Iowa are truly invested in Accumold's success!"

Roger Hargens
President & CEO Accumold

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- Innovative workforce
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To learn more about doing business in Ankeny, visit www.Ankenylowa.gov.

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city of Ankeny
bringing it all together

Innovating with grain drying technology

With more than 80 patents, Sukup Manufacturing Co. is a family-owned manufacturer of grain bins, grain dryers, grain bin accessories and material handling equipment for farm and commercial use. Sukup also manufactures steel buildings for agricultural, industrial and retail use. The company is known for manufacturing improvements, earning 13 American Society of Agricultural and Biological Engineers AE50 Awards for innovations in agriculture.

"Our grain dryers alone have earned five AE50 awards," said Nicole Poock, advertising director. "And all five of these innovations have led to more efficient grain drying."

Sukup's patented Quad Metering Roll System, standard on all Sukup portable grain dryers, provides grain quality and speed.

In traditional dryers with one metering roll per side, the inner layers are over-dried and the outer layers are under-dried, so they're blended. It also means the kernels on the inside are much hotter, which can result in stress cracks and lower quality grain. The Sukup dryer can reduce moisture variation and maintain grain quality without blocking airflow or creating spots in which debris can accumulate.

By using two metering rolls in each dryer column, Sukup dryers can pull the grain down the columns at different speeds, allowing the inner, hotter layer of grain to come down the column faster than the outer, cooler layer. The process produces more even moisture content in the dried grain, minimizes damage and maintains higher test weights and overall quality.

Sukup was the first company to make true moisture sensing standard on its dryers. Sampling the grain moisture, rather than the grain temperature, gives a more accurate measure of the drying progress and results in more consistent final moisture content.

Sukup bins are available in sizes up to 156 feet in diameter and a 1.5 million bushel

maximum capacity. Sukup also manufactures continuous flow and tower dryers with easy-to-use touch screen controls.

The Sukup QuadraTouch generates graphs of dryer operations, providing an at-a-glance display of dryer performance and efficiency. The graph data, along with the information stored in the system log, can easily be transferred to a computer using a USB drive or Compact Flash card. The data can then be opened and manipulated in Microsoft Excel.

"QuadraTouch controls use advanced algorithms and calculus to increase dryer

efficiency and reduce large swings in temperature and discharge moisture," Poock said. "This system minimizes, and virtually eliminates, under- and over-shooting of your set target moisture content. It also helps the dryer to run more efficiently, since large temperature swings are eliminated."

The QuadraTouch control box can be remotely located up to 200 feet from the dryer. There is no heavy cord – just an Ethernet cord and a 100-volt plug-in. The box that houses the control system weighs less than 15 pounds, so it's easy to handle. The Sukup dryers' computerized controls were designed to eliminate around-the-clock monitoring and increase productivity.

Support towers complete the Sukup lineup of products.

Based in Sheffield in north-central Iowa, Sukup Manufacturing Co. employs more than 600 people and has distribution centers in Arkansas, Illinois, Missouri, Nebraska, Ohio and South Dakota. The company has provided grain storage, handling and drying solutions to the agricultural industry for more than 50 years. Sukup products are sold in more than 80 countries. ■

Prairie Trail

Prairie Trail is a planned urban development strategically located on Interstate 35 between Ames and Des Moines, in the center of Ankeny, Iowa.

In 2006, Dennis Albaugh, CEO and founder of Albaugh, LLC., purchased the land that had once been home to Iowa State University's dairy research farm. A thoughtful and strategic approach to developing this 1,031-acres was critical because businesses and residential housing had grown up around it. The City of Ankeny and D.R.A. Properties formed a partnership and brought together a team of people for the strategic planning committee. They brought in experts in urban planning, stormwater management, traffic analysis and more.

PRAIRIE TRAIL

a new urbanism community in the heart of Iowa

Prairie Trail is one of the largest new urbanism communities in the Midwest and the first in Iowa. It is a walkable community with shops, restaurants, bars, offices, boutiques and more all located nearby. There are more than 200 acres of parks and open spaces meaning nearly 20 percent of the development is devoted to public use.

Today, Ankeny is one of Iowa's fastest growing cities and Prairie Trail is at the center of it all. Walkable, urban places are in high demand by people in all life stages and Prairie Trail offers a full spectrum of residential choices, including townhomes, villas, rentals and senior living.

Prairie Trail is the essence of urban sophistication and small town charm where people can live and work and play.

To learn more about commercial and residential opportunities at Prairie Trail, contact:

Ashley Johnson,
Director of Sales & Marketing
515.964.4444
or ashleyj@albaughllc.com

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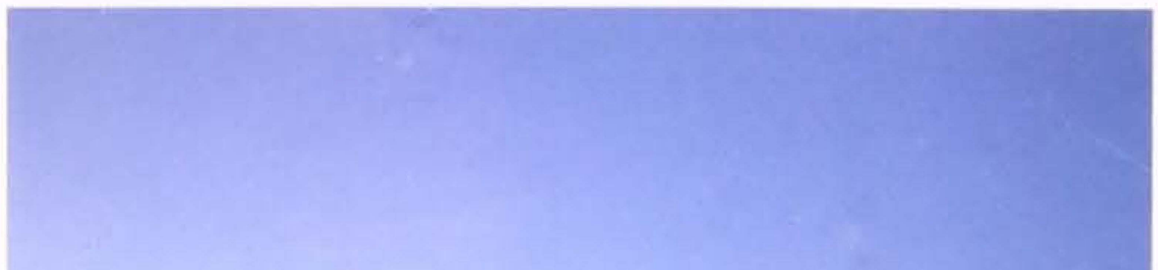
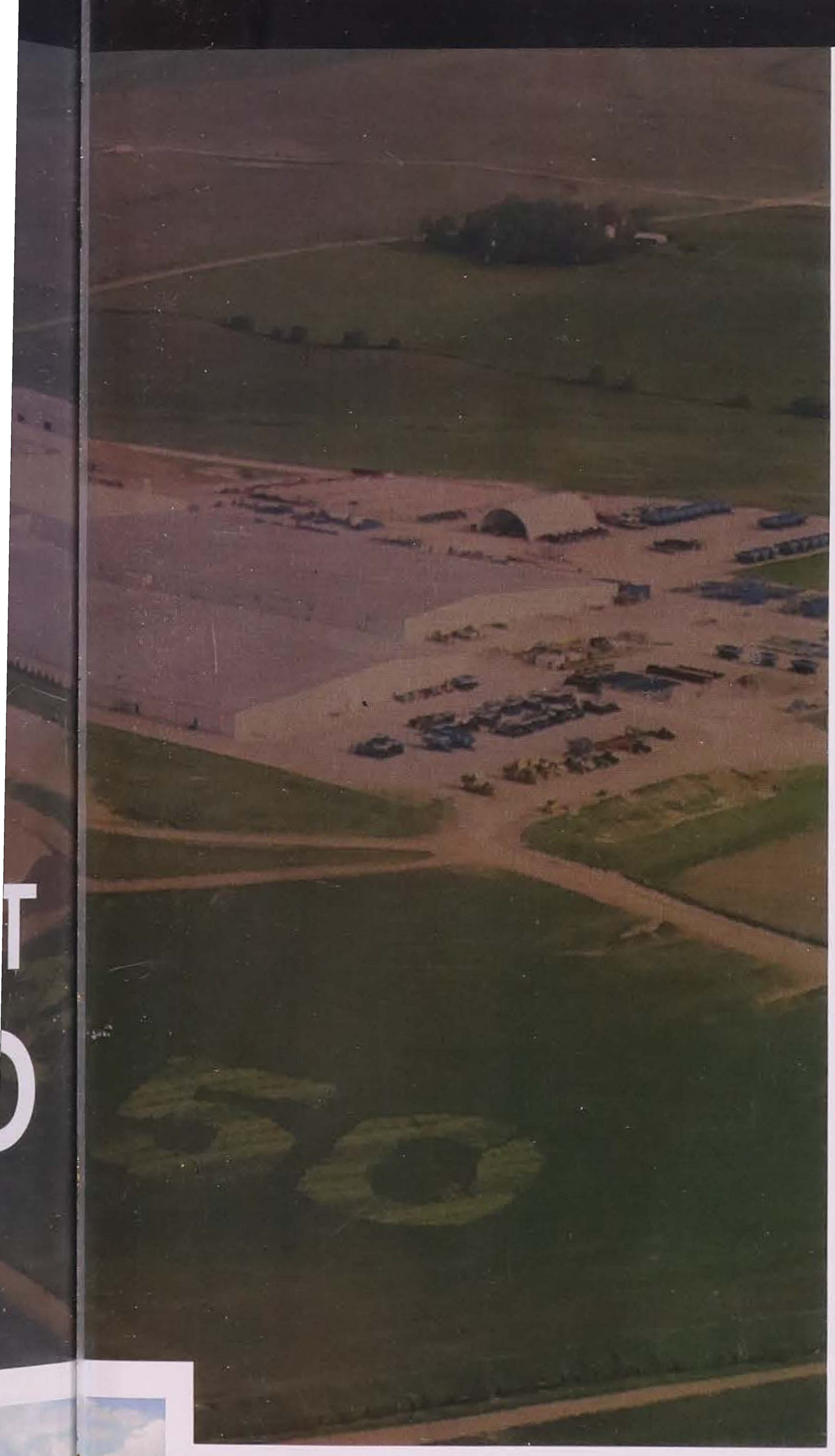
FARMING EQUIPMENT GOING HYBRID





In 2015, corn planted in Iowa was estimated at 13.7 million acres – about the same as last year but not hitting the 2007 record – according to the latest figures from the U.S. Department of Agriculture's National Agricultural Statistics Service. Some of the biggest costs associated with planting can be fuel and seed.

Kinze® Manufacturing, Inc. made the world's first electric multi-hybrid planter commercially available in spring 2015 to help keep those costs lower. With these machines successfully used for planting across the Midwest, they provide farmers with the ability to change the seed hybrid they are planting automatically as the planters move through the field.

In planting trials from spring 2014, the planters successfully demonstrated automatic on-the-go changing of seed hybrids and population. Hybrid changes were conducted within a single seed drop, so there were virtually no gaps or overlaps when switching from one hybrid to another.

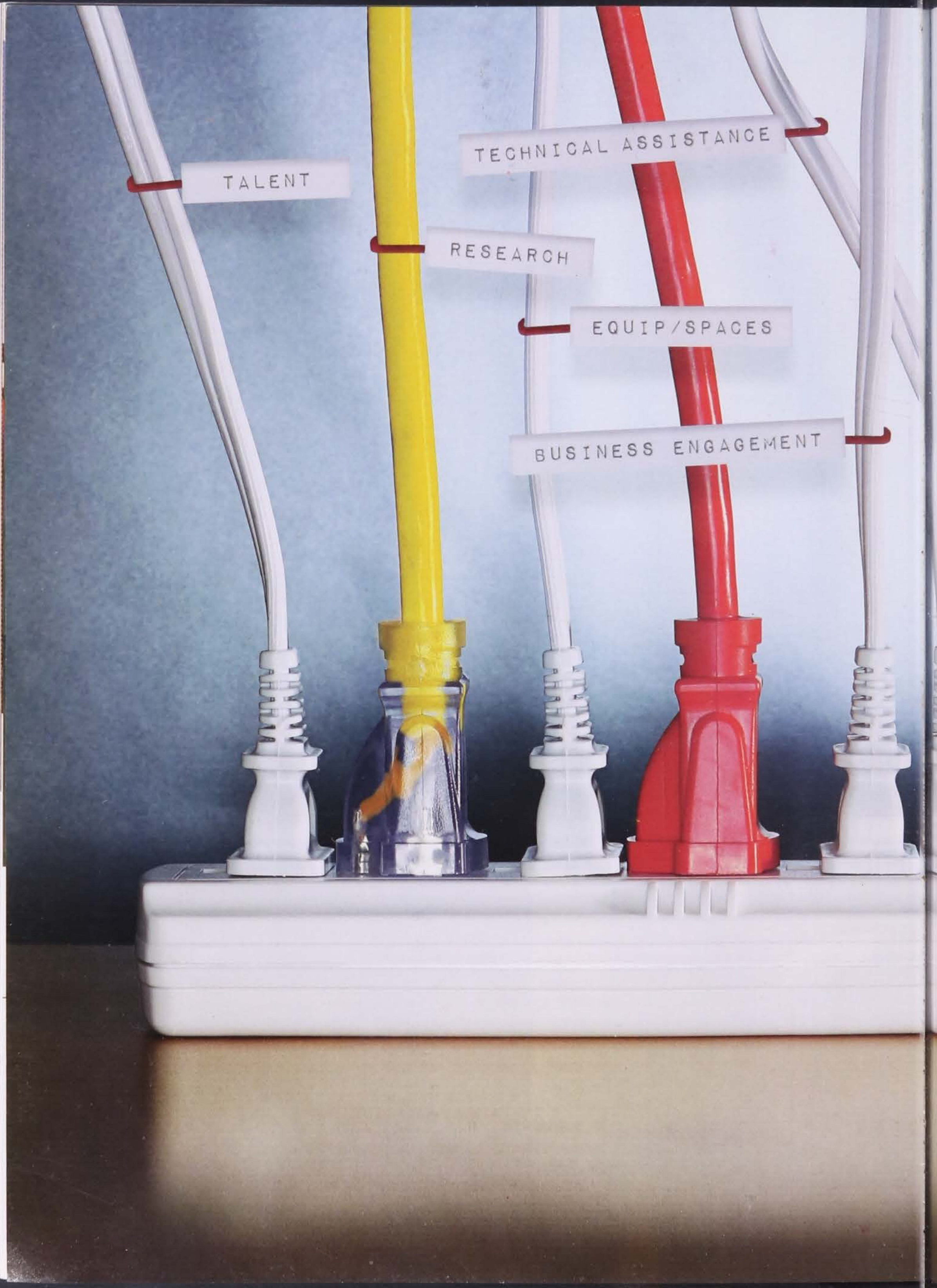
"Before, the farmer had to decide which hybrid seeds to plant for various conditions in their field, as soil conditions can change acre-to-acre," said Phil Jennings, Kinze's service manager. "This planter addresses that issue, carrying two seed varieties. As a result, farmers can see increased yields, as much as nine bushels per acre, according to our testing."

Kinze Manufacturing is no stranger to innovation, as that's one of the company's core values. Founded 50 years ago on that very premise, Kinze markets its planters and grain carts globally and is known for a number of industry "firsts." The company is a recognized technology leader and innovator of planters for row-crop production and grain auger carts. Planters and grain carts can be purchased through any authorized Kinze dealer.

If you've been on Interstate 80 near Williamsburg, exit 216, you've probably noticed the blue grain carts and planter signs alongside the road. That's where Kinze Manufacturing has its headquarters. In fact, visitors can check out the company's Innovation Center, which includes the history of Kinze's innovation as well as its current products.

With more than 600 global employees, Kinze sells products worldwide. With a second manufacturing location in Lithuania, Kinze says it will continue to innovate.

"With the growing population, we're relying on farmers to become more efficient," said Mark Parriott, Kinze's senior director of manufacturing. "We're an innovator in that space and have teams of engineers committed to that. We're helping farmers feed the world." ■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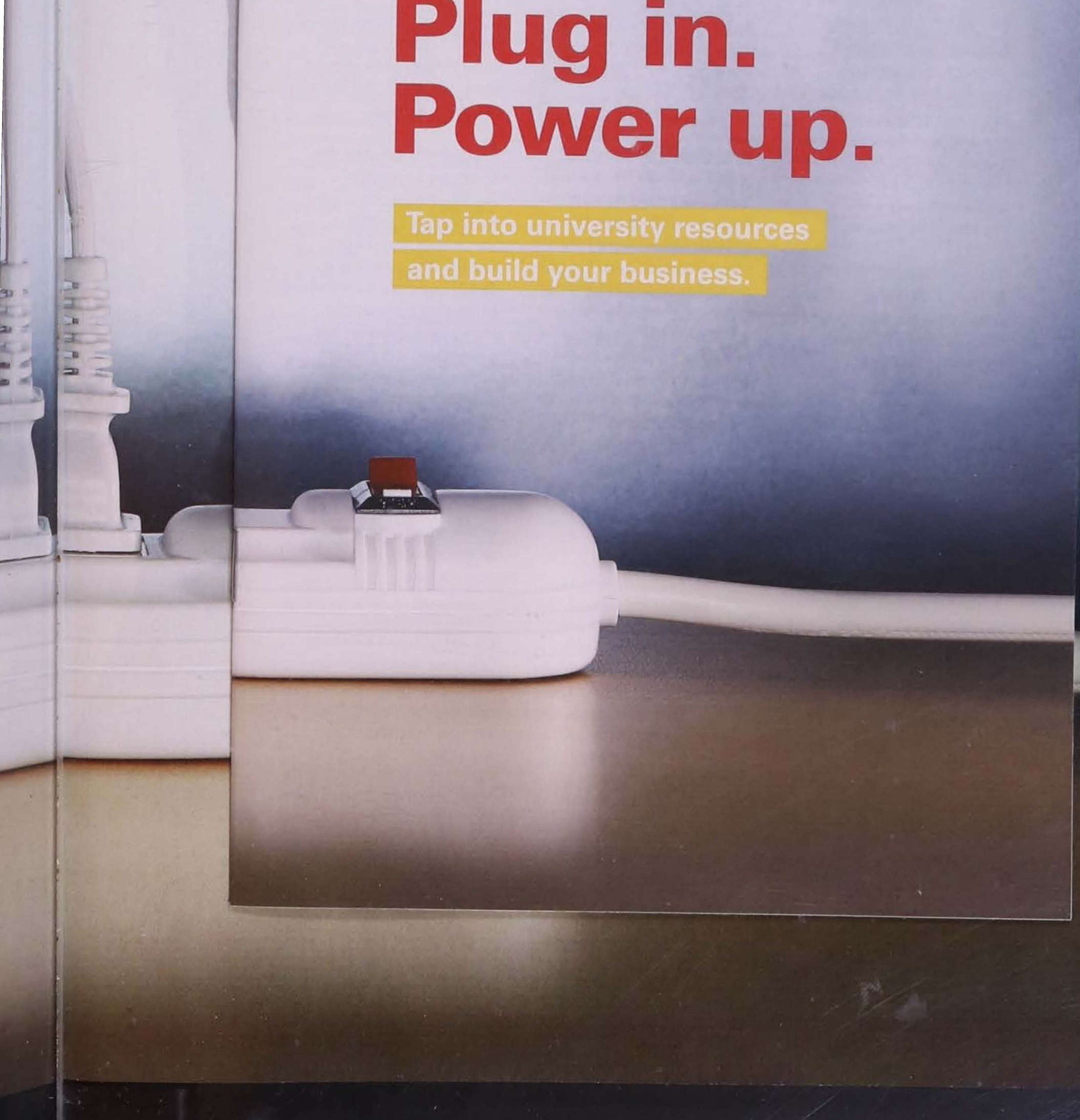


Winnebago continues to lead the recreational vehicle industry in innovation

Based in Forest City, Winnebago Industries, Inc., "The Most Recognized Name in Motorhomes®," continues to lead the U.S. as a manufacturer of recreation vehicles, which are primarily used in leisure travel and outdoor recreation activities. Winnebago builds motor homes, travel trailers, fifth wheel products and transit buses.

Currently, the company employs about 2,400 workers in Forest City with another 400 elsewhere in the United States. It's also adding about 60 jobs to its wire assembly facility in Waverly because of an increase in consumer demand.

"We have the most technologically-advanced facilities in the world," said Sam Jefson, a Winnebago public relations specialist. "We're modernizing our IT systems now to reduce costs and increase efficiencies, but one of our latest innovations is our electro-deposition (e-coat) paint system."

When the old system wore out on Winnebago's coating system, the company invested $7 million to replace it with a state-of-the-art e-coat paint system in its motor home chassis prep facility in Forest City.

"We use a lot of steel, and every product we have goes through this system," said Dave Midtgaard, plant manager. "Our products are known for their strength and durability, so we needed to keep protecting the steel with this e-coat process to help reduce corrosion."

The new e-coat system processes piece parts and assemblies through a 10-stage, full-immersion electro-coating system. The first seven stages are used for pretreatment and involve cleaning, treating with a nano-ceramic conversion coating and deionized water rinse for good conductivity. The final three stages are used for the e-coat and rinse cycles. Electro-deposition is accomplished by charging the components with electricity, and then paint film is bonded to the body to a desired thickness.

Matt Piper, production supervisor, said the new system replaces two previous ones – tubing and cap assemblies indexing and a linear change drip system. The system is expected to have a 15- to 20-year lifespan, just like the previous system, Piper added, and was fully operational in July 2015. ■

Since 1962, Geater Machining and Manufacturing Co. of Independence has been serving the aerospace, electronics and high-technology industries. With 240 employees, the company is four times the size it was just 10 years ago.

"We help protect those who protect others," said CEO Jerry Bitterman. "We offer a variety of secondary manufacturing processes that help eliminate the need to send machined and fabricated parts to multiple vendors."

Its high-quality parts and on-time delivery have developed the company's reputation into one that is synonymous with trust, and setting high standards for precision machined and fabricated parts.

School outreach initiative

In 2013, the company started an innovative initiative to get area middle and high school students excited about careers in manufacturing. The goal is to attract and retain a deep, readily available local workforce.

"We want to debunk the myths that manufacturing is dirty, hard, monotonous and low-paying," Bitterman said. "We're showing students there are quality jobs in Buchanan County that are challenging and rewarding."

The initiative was started after a manufacturing conference at Hawkeye Community College in Waterloo in 2012. Experts at the conference said the Cedar Valley was short 100 to 200 skilled machinists and the school was only turning out 25 a year. The shortage is expected to double in the near future.

Company growth

Bitterman said he predicts 30 percent growth in the next four to five years as the company continues to diversify in the commercial and military sectors worldwide.

"We were included in the early development of a Manpack (handheld radios to high-tech headquarters, one of the U.S. Army's top priorities), and through the growth of that program, we sought innovative ways to improve our processes," he said.

"Our Mazak FMS systems utilize a cell controller that integrates with our E.R.P. system to maximize system efficiency," he continued. "The need to eliminate operator variation led to the development of our own work instruction system. The system allows for the creation of visual work instructions, resulting in improved repeatability and quality. We are constantly working on ways to improve the system; I don't see it ever being finished. We are always finding new ways to improve the system's effectiveness."

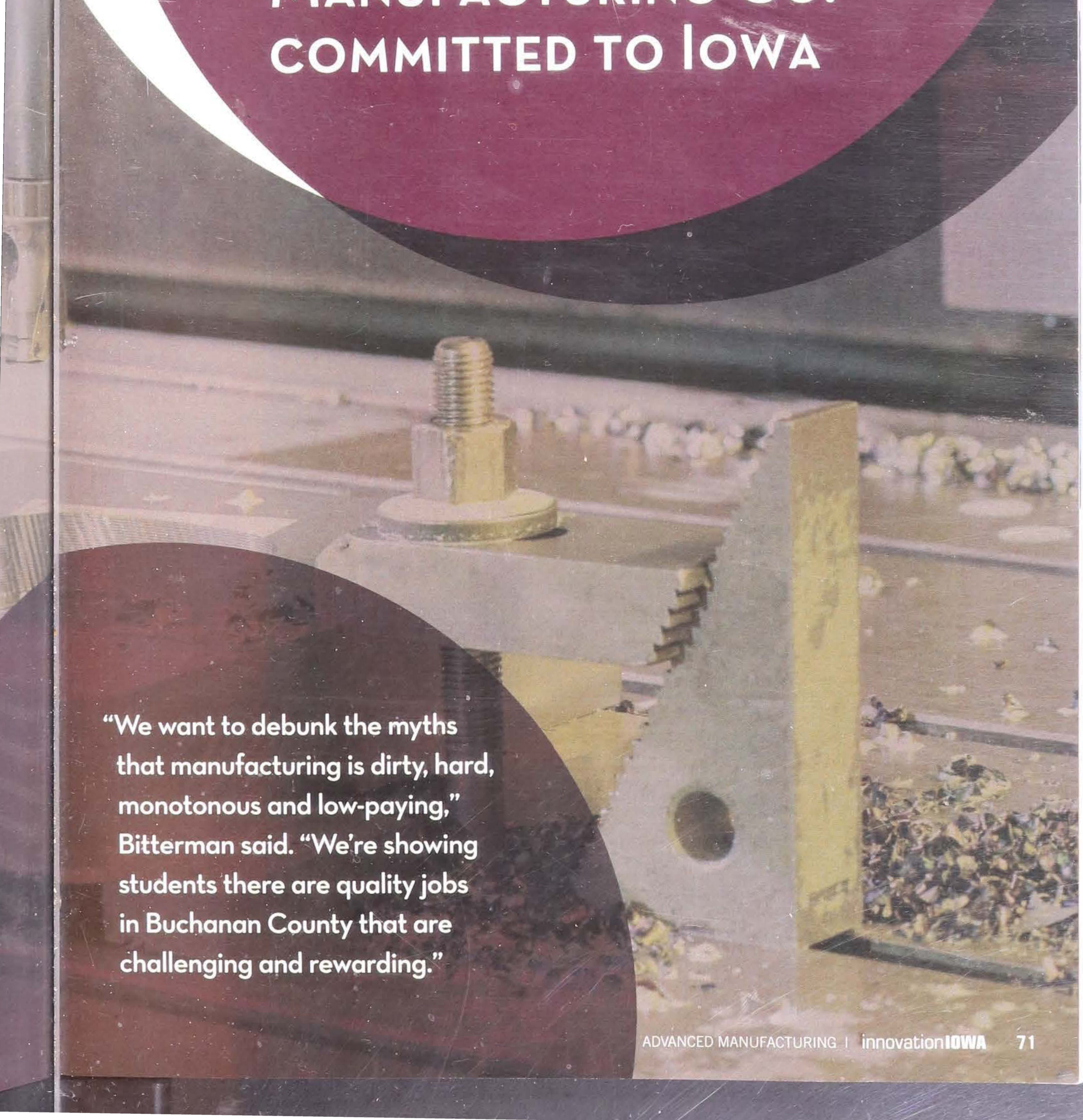
Staying in Independence

Bitterman himself was born and raised in Independence. He said he started with Deere & Co. in the 1970s, and then joined Geater in 1984 and worked his way up. Bitterman became CEO about 10 years ago, and has been partners with President Scott Geater for 20 years.

"We're a second-generation company and we're working on the third generation now," he said. "We have no intentions of leaving Independence or Iowa."

Cedar Rapids-based Rockwell Collins Inc., the company's biggest client, recently presented Geater with the Supplier of the Year Award for Mechanical Build to Print. Geater has been named one of Rockwell Collins' suppliers of the year 14 times. ■

GEATER MACHINING AND MANUFACTURING CO. COMMITTED TO IOWA



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Stellar Industries turning interns into

FULL-TIME EMPLOYEES

Stellar Industries Inc. in Garner, Iowa, was established in 1990 as the first North American corporation to design and manufacture hydraulic hooklifts. Since its inception, Stellar has created more than 40 different models within the single-pivot, double-pivot and sliding-jib lines.

One of its newest products is the Stellar® CDTplus™ crane control system, which is a proprietary collection of revolutionary, industry-first features that control, power and monitor the new cranes. The Stellar CDTplus is a combination of a hand-held integral capacity alert communication system, a crane boosting feature and the ability to function in safe mode.

The 323-employee company's core purpose is to make its customers more productive.

Intern to full-time

According to a 2010 U.S. Census Bureau report, Iowa ranks second in the Midwest in terms of value added per manufacturing worker. Iowa's factories have added 6,900 jobs since 2010, but there will be an estimated shortage of nearly 7,000 skilled workers by 2018. As a result, companies like Stellar are looking to hire from within.

One of Stellar's employees, Travis Dodd, began his career at the company as an intern and joined its manufacturing engineering team as a technician. After completing his education, Dodd joined the Stellar team as a manufacturing engineer.

"I first became interested in manufacturing at a young age watching

1993:

Stellar acquired a local company that designed and manufactured custom tire service trucks used by commercial, agricultural and off-road tire dealers.

1999:

Stellar's telescopic crane line entered the market with its industry-first hexagonal-shaped boom design, 28 feet of all-hydraulic reach, a radio remote control as a standard feature and a planetary winch speed of 60 feet per minute.

2002:

American Eagle Accessories Group was created after the acquisition of a line of air compressors.

2004:

Stellar partnered with Rinspeed Inc., a Swiss design company, to license, manufacture and sell the X-Tra-Lift pickup loading device.

2008:

Stellar acquired the K-PAC solid waste handling equipment product line of Krause Corp., which included hooklifts, cable hoists, container carriers and an automatic tarping system.

2011:

Stellar purchased a vacant facility in the Mason City area and opened the first Stellar service and retail center, Stellar Truck & Trailer, for customer service and maintenance.

2011:

Stellar added two companies to the family: Kiefer Manufacturing, which fabricates horse, living quarters, livestock and industrial trailers, and Valley Industries, which manufactures lube skids and fuel trailers under the LubeMate name.

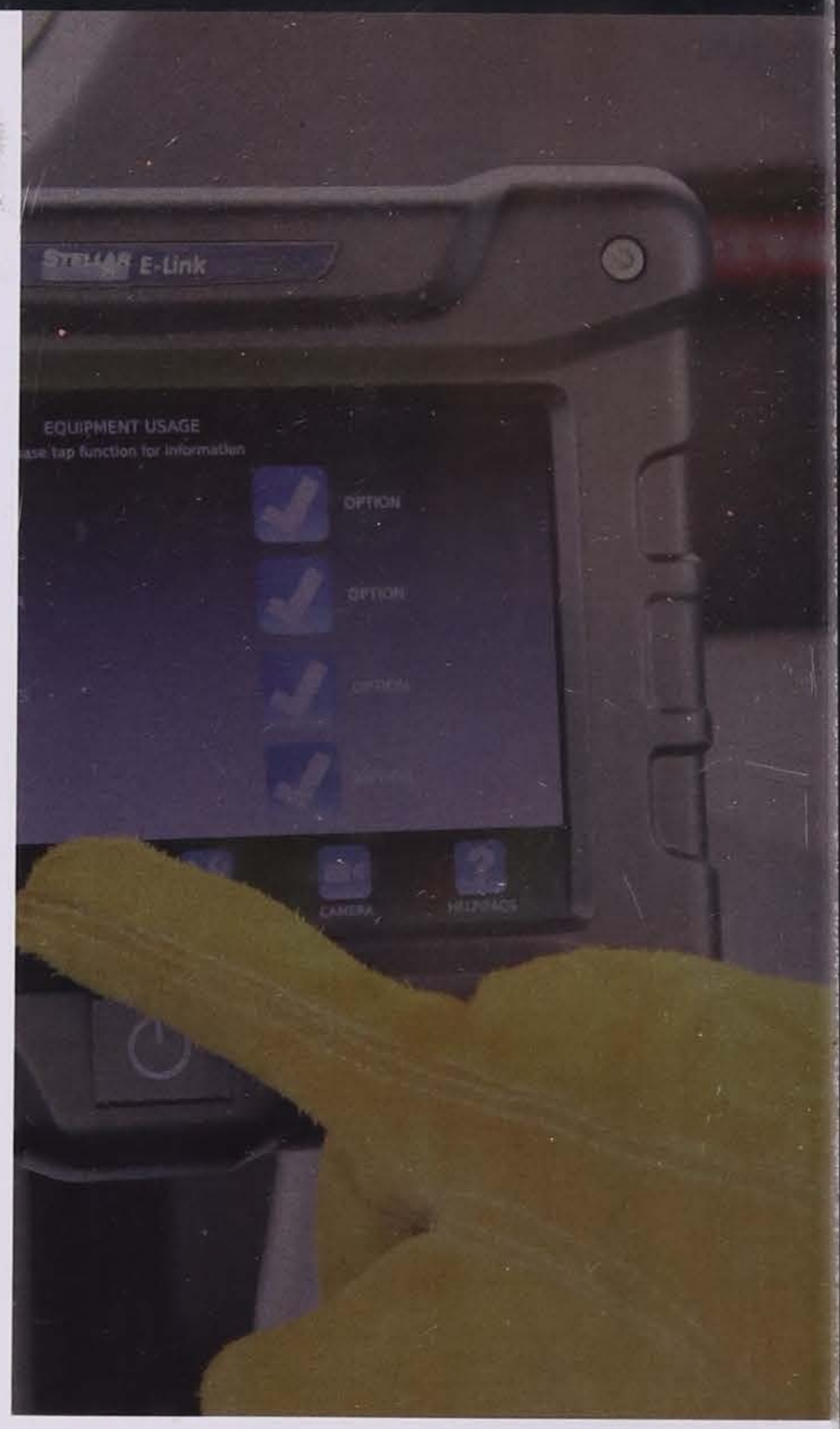
my dad work out in our shop. Throughout high school, I took as many industrial arts classes as I could," Dodd said. "Those experiences really piqued my interests in manufacturing and are why I chose to study advanced manufacturing in college."

Dodd attended North Iowa Area Community College for two years and graduated with an associate degree in industrial technology. Then he transferred to the University of Northern Iowa and graduated in 2013 with a bachelor's degree in manufacturing technology management.

"I interned with Stellar in 2013, and during my time then, I learned the flow of Stellar's manufacturing process, as well as calculated process times and determined what equipment and or fixtures would be needed to manufacture a product," Dodd said.

He said what he likes most about manufacturing is the ability to take raw materials and turn them into a complete product with the use of both manufacturing equipment and hands-on people.

Stellar has two locations in Iowa – Garner and Mason City. ■



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SOLAR ON THE RISE IN IOWA, ADDING JOBS

With a small geographic footprint, solar energy has become an economic option for many applications, consumers and situations in Iowa. Solar now powers farms, businesses, universities, utilities, communities, other large consumers, vehicles and homes.

"Beyond providing useful energy, solar offers many other benefits: job creation, consumer savings, cleaner air and water, innovation and technology investment, and improved grid stability," said Nathaniel Baer, energy program director at the Iowa Environmental Council. "Solar offers significant economic benefits to Iowa."

In fact, adding 300 megawatts (MW) of solar photovoltaic (solar PV) capacity in Iowa over a five-year period would create an average of 2,500 jobs for each of those five years. Solar PV can reduce the dollars spent importing fossil fuels and help provide Iowans with cleaner air and water. According to the Solar Foundation, Iowa had 210 solar jobs in 2012, 680 in 2013 and 900 in 2014.

"We're a national leader in wind energy, and we can become one in solar too," Baer said. "Solar can be a practical way to meet sustainability goals."

Baer said commercial arrays are becoming more popular on farms.

"Solar is appealing to farms with buildings facing the south and those who use a lot of energy," he said. "There are so many volatile inputs with farming, and this is one way to reduce costs."

Although rural counties have the highest usage so far – clustering in southeast Iowa -- Baer said he's beginning to see urban areas take advantage of solar power too, since overall costs have come down.

"Equipment costs have decreased, as more firms are installing them, which means more competition," he said. "Plus, install time is quicker, which also reduces costs."

The cost of installing solar power has decreased significantly in recent years. Prices fell on average 5 to 7 percent each year from 1998 to 2011. Cost reductions from 2008 to 2012 were even greater. While the cost to install a watt of solar PV capacity averaged $7.50 in 2008, the cost had come down to about $4 per watt in 2012. Costs are expected to continue to decline in the future.

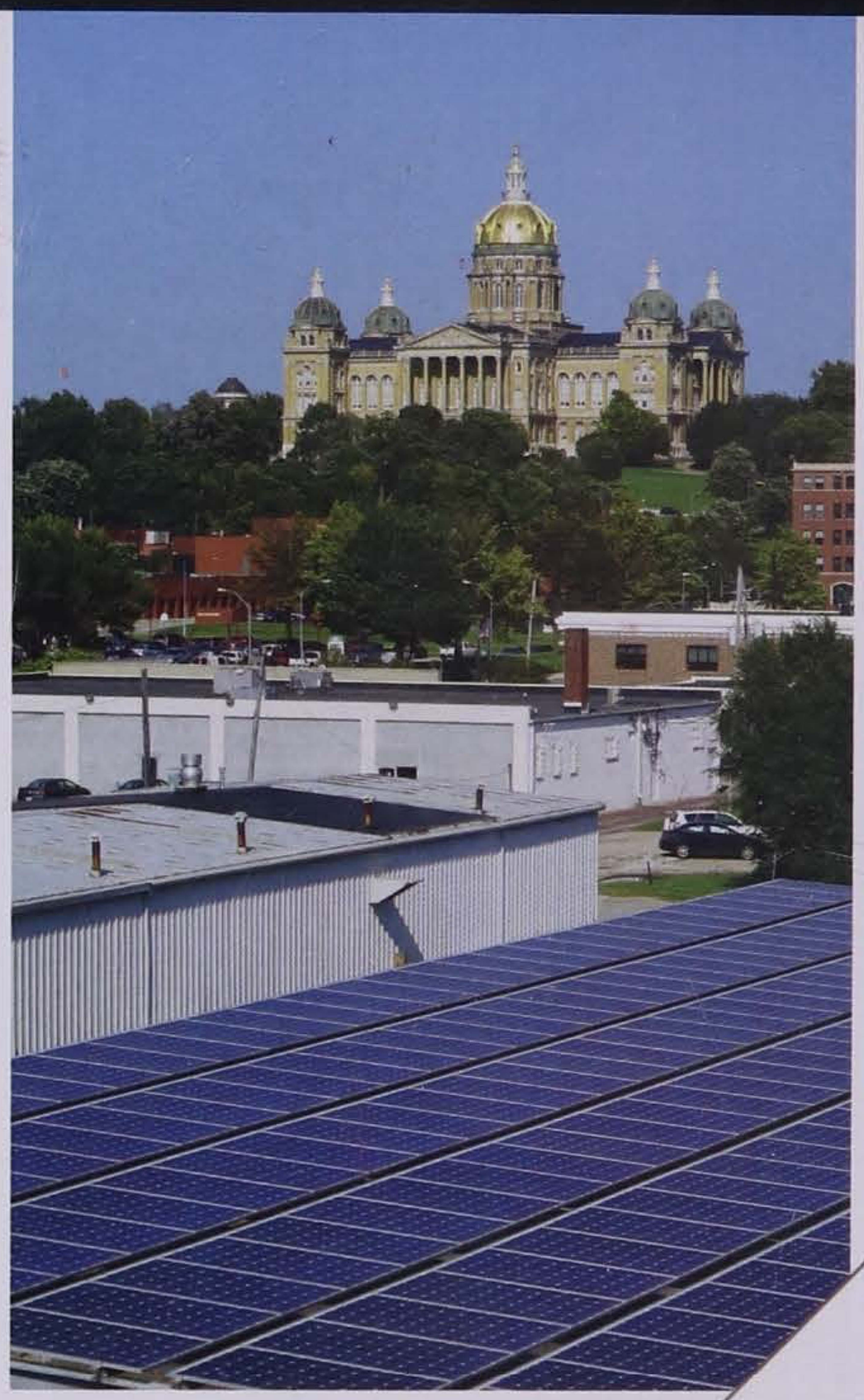
Solar array - Heartland Power Cooperative

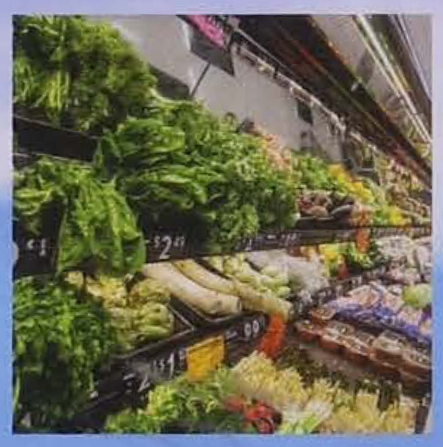
In September 2014, Heartland Power Cooperative started offering output of its community solar generation array to its member-owners. The array is built on 4½ acres of ground along Highway 218 just east of St. Ansgar. Heartland Power is responsible for operating, maintaining and insuring the array for the 20-year life of the project, meaning there's no equipment installed on members' homes.

"Community solar allows members to invest in renewable energy without the individual research, construction, maintenance and insurance requirements of a stand-alone system," says Jon Leerar, Heartland Power general manager and CEO. "In addition, large-scale utility projects allow members to invest in solar energy at a competitive cost."

Each panel is expected to generate 8,500 kilowatt-hours over the 20-year life of the project. The units are being sold to members for $700 per unit, which comes out to 8.2 cents per kilowatt-hour, lower than the current residential rate. Members receive a monthly bill credit for their portion of the array's generation, which is used to offset the energy charge on their monthly electric bill.

The cooperative serves 5,200 accounts, and there are currently 134 members who have purchased 1,744 units, subscribing nearly two-thirds of the array. Some members have purchased a single unit, while others have purchased enough units to cover their total annual usage. ■





From the farm to the table

A guide to 2016 business and farm rebates

ALLIANT ENERGY

Refrigeration (Cont.)	Rebate
Sensor for refrigerated case lights	$30
Vending machine controller	$50
Vending machine	$75
Refrigeration tuneup (non-self contained)	$20/ton
Refrigeration tuneup (self-contained)	$50

Food service equipment	Rebate
Dishwasher	$125 - $250
Pre-rinse sprayer	$40
Clothes washer	$200
Refrigerator, solid door	$25 - $200
Refrigerator, glass door	$15 - $325
Freezer, solid door	$75 - $300
Freezer, glass door	$65 - $375
Steam cooker	$800
Fryer	$500
Convection oven	$200
Natural gas conveyor oven	$1,000
Upright broiler	$100
Griddle	$600
Rotisserie oven	$1,350
Rotating rack oven	$1,500
Charbroiler	$1,100
Salamander broiler	$525

Computer equipment	Rebate
Server	$10
Thin client	$5
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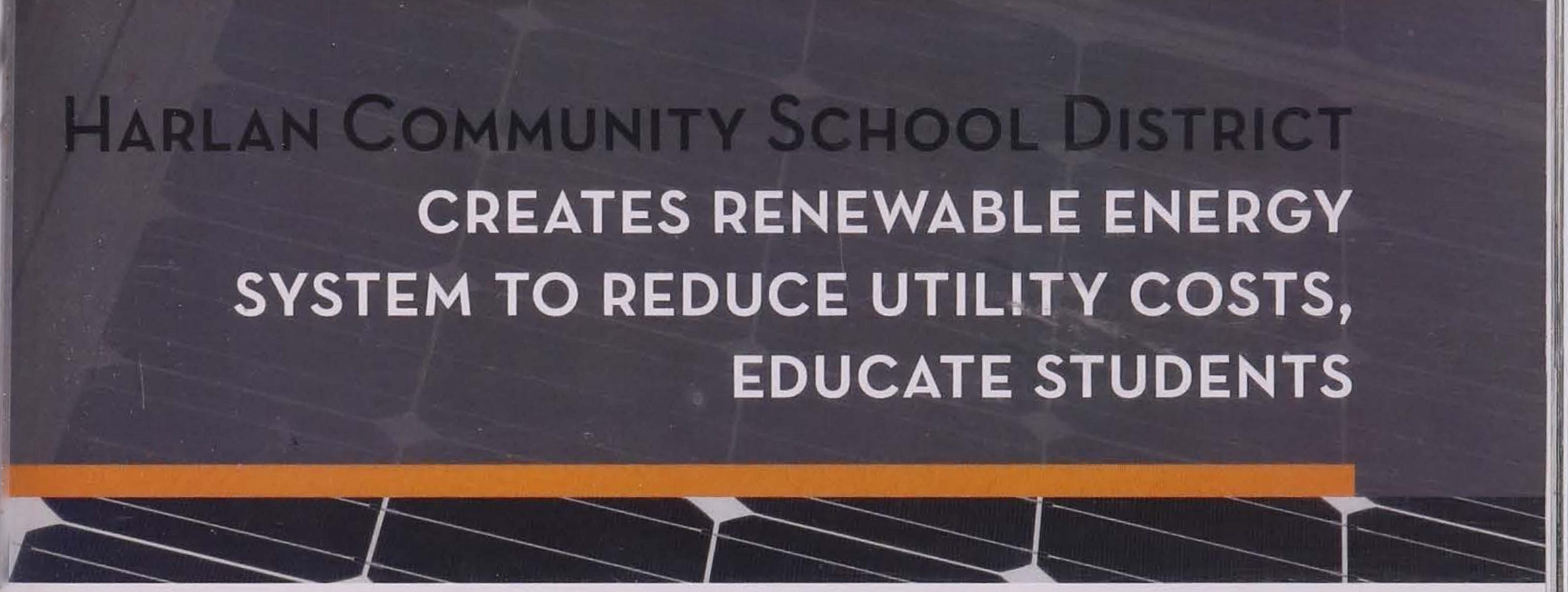
HARLAN COMMUNITY SCHOOL DISTRICT CREATES RENEWABLE ENERGY SYSTEM TO REDUCE UTILITY COSTS, EDUCATE STUDENTS



When the Harlan Municipal Utilities CEO and the Harlan Community School District superintendent started talking about a renewable energy system, they quickly learned that such a system would reduce the school's utility costs and provide invaluable learning opportunities for students.

After their meeting, Superintendent Justin Wagner approached high school science, technology, engineering and mathematics (STEM) teacher Jason Weis and asked if his engineering principles class would like to pursue it. Weis and his five students started investigating different possibilities.

"The project began with very little direction; the school district wanted a renewable energy system to reduce utility costs," Weis said. "We basically built an entire class around that problem statement."

Weis and his class started researching different renewable energy sources (solar, wind and solar hydrolysis), weighed the pros and cons of each, and researched the feasibility of each source in their area.

"Wind is a major energy producer in our area, but solar seemed to be more adaptable to the school's situation," Weis said. "Then, we analyzed the entire school district to determine our electrical needs, which included working with the utility company and maintenance people at the school to calculate usage information."

Solar proved to have some major advantages over the other sources. For example, it can be placed almost anywhere: rooftops, open fields, parking lots, etc. And the technology has become much more efficient and affordable in recent years.

With that information, Weis and his students looked at system sizing and conducted a site analysis to determine where they could place solar panels to tie into the utility grid. They reached out to several different vendors to discuss possibilities for implementing solar at Harlan. "This really made the project feel realistic and not something that just happens inside the classroom," Weis said. "I think this made the students feel like their work would actually get to be applied to something real."

Weis said their first idea was to place solar panels on the roof of the high school and middle school buildings. "These

buildings have flat roofs with lots of open space and direct access to sunlight, which made us think solar would work well in that location," he said. "However, we found that the additional load of the panels would likely be too much for what the roof was originally designed to support. This meant we had to look elsewhere."

The first major milestone was presenting the idea to Iowa Gov. Terry Branstad at the school. The project was still in the researching stages at the time, but the students had a very clear proposal for what they wanted to do, and the governor gave them support and motivation to continue.

Partnerships formed

Students in their second year of the STEM program at Harlan along with Weis have been the major contributors to this project. The group included four juniors and one sophomore in the 2015 spring semester. Weis facilitated most of the work inside of the classroom and the collaborations between Harlan Municipal Utilities, local businesses and the various vendors.

The group has had tremendous support and direction.

"Ken Webber, CEO of Harlan Municipal Utilities, has visited the classroom on a regular basis to help manage the project and provide direction and advice," Weis said. "Superintendent Wagner has been a big motivator for this project and has helped the class find opportunities for financial support, while Shelby County State Bank spoke with students about various financial aspects of the project."

The Iowa Energy Center also worked with the school on preparing a grant to write a renewable energy curriculum for high school students to earn credit through Iowa Area Education Agency (AEA) online with similar projects. The application for this grant is currently with the Iowa Energy Center.

Taking the school district off the grid

"The goal of the project is to take Harlan Community School District 'off the grid' in terms of its electrical usage," Weis said, "That can end up saving the school millions of dollars over the life span of the solar panels."

Weis knows that it may take some time to obtain enough funding for the entire project, so in the short term, he's hoping to offset smaller portions of the district's electrical usage.

"The first phase of our plan, which we hope to have completed in the next year, is to generate enough energy from solar to offset the electricity used by our bus barn, football field, concession stand and outdoor lighting," he said. "This would get the ball rolling, and hopefully get other people on board with what we are doing. Once we have the groundwork started, adding on would be simple."

The second and third phases of the project would offset the entire elementary building and the high school/middle school buildings, respectively. These phases would take place later as funding becomes available, Weis said.

In addition to a financial impact, having solar onsite has educational potential for STEM classes at Harlan. Once a system is in place, Weis said, they'd like students to do most of the monitoring and maintenance of the system.

With proper funding, this project has opportunity to have a major impact on the Harlan community, Weis said. Harlan

Municipal Utilities has expressed interest in creating a community solar farm to generate electricity for local residents pending feedback from the school district's project. The goal there is to make the community more energy independent and make Harlan a more attractive place for people and businesses.

Next steps

One of the next steps is to form an independent power producer or create a limited liability company to benefit from tax incentives and pass those savings on to the school. "Unfortunately, this plan ran into summer and everyone became busy with their own schedules," Weis said. "We're hoping to be able to continue with this in some way this school year, but everyone's classes have changed and finding time may prove to be difficult with all of the activities our students are involved in."

The other crucial component is funding. "The school district alone doesn't have adequate funding to pay the upfront cost of solar," Weis said. "The students researched tax incentives for renewable energy, but many of them aren't available for nonprofit organizations, like schools. We investigated different ways of funding the project, including loans, grants and donations, which led us to our presentations with local businesses and organizations."

He said the district would like to generate enough funding to complete the initial phase of its project, which would be around $300,000. "We're seeking out donations from businesses and community members, plus looking into additional grants with the Iowa Energy Center and other renewable energy partners for financial support," Weis said. ■

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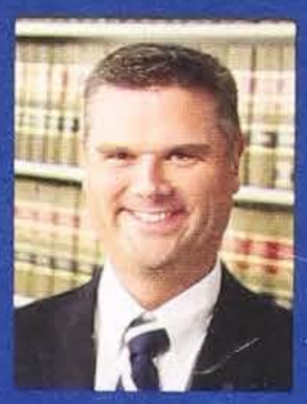

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NET ZERO ON THE HORIZON FOR CITY OF BLOOMFIELD

"The bottom line is that if our businesses are more profitable, they will invest more in our community."

CHRIS BALL

For about eight years, the city of Bloomfield has been working on a downtown redevelopment plan. And about two years ago, it started reviewing the streetscape portion and decided to try incorporating district geothermal in to the design.

"Adding this feature to our streetscape project required us to bring in some outside design teams," said Chris Ball, Bloomfield's energy efficiency director. "The design team we selected increased our network. People from Iowa Economic Development Authority (IEDA) began to make regular visits to Bloomfield, and before we knew it, the Iowa Association of Utilities (IAMU) commissioned a study of two communities in Iowa to see if they could be energy-independent. Bloomfield was one of those towns."

He said the study demonstrated to the Bloomfield City Council the possibility for the community to become energy-independent.

Around that same time, the city submitted two project applications: one to the Rocky Mountain Institute for the 2015 eLab Accelerator boot camp and the other application to Operation AmeriCorps.

"Both applications were accepted," Ball said. "Things fell into place, and the council decided that now was the right time to pursue energy independence."

He said the RMI eLab Accelerator boot camp allowed the group to make some connections to people they continue to collaborate with. "For example, Dr. Howard Chong of Cornell University has dedicated time each month to help us analyze our usage data and recommend rollout strategies for our residential energy efficiency efforts," Ball said.

There's been strong interest and support in the community, especially from business customers. And most people are proud to be part of it.

"Several businesses have upgraded lighting, so we're looking at additional ways to assist them," Ball said. "The bottom line is that if our businesses are more profitable, they will invest more in our community. While commercial energy efficiency programs do cost the city, the amount of money saved by the businesses participating is often several times the cost to the city."

For the first year, Ball said, the city will continue to work on a community energy program and hope to implement its residential energy efficiency program – creating a residential on-bill financing program for energy efficiency measures. It also plans to a request a proposal for a significant solar project.

These plans can have a massive impact on the whole city. Ball said they believe they can reduce the cost of utility services. "Every dollar our customers save is another dollar they can use to feed, house, educate and entertain," he said. "Additionally, we plan to have a significant impact on the comfort of most homes within the city. Homes that are less drafty are more energy efficient and simply feel better to live in."

The city's vision is to create a community that is self-reliant when it comes to energy, Ball said.

"But, it's about much more than energy," he said. "Through this process, we are relearning that even in places like Bloomfield, we can be creative, we can be leaders, and we can matter. Knowing and experiencing a belief in our people and our community is the best byproduct of our quest for energy independence."

State's first net-zero commercial building in Des Moines

Not only is the Market One project's 57,000-square-foot building Leadership in Energy and Environmental Design certified; it's the state's first net-zero commercial building, meaning that it generates as much energy as it consumes.

Modus Engineering, which has made the building its corporate headquarters, specializes in the design and installation of high-performance building systems. The firm's employees are all LEED accredited.

"Modus is driven by sustainable development and design and also loves to repurpose historic buildings for reuse, seeing that as a continuation of their sustainability principles," says Rita Conner economic development coordinator for the city of Des Moines. "They wanted to take on the challenge of developing the first net zero commercial building in the state of Iowa, and thought that their corporate headquarters was the place to do so."

The building includes several sustainable features such as extensive natural light, a geothermal heating, ventilation and air conditioning system, LED lighting, the largest photovoltaic structure in Iowa and a solar canopy.

Beyond these sustainable items, perhaps the largest is the reuse of the 103-year-old Advance Rumely Building, which was the first steam tractor manufacturing site in the nation. The original brick and limestone remain today.

"The global conversation on sustainable development, better use of resources and better ways to reduce the costs of energy for homes and businesses has reached a level where it is time to take bold action toward meaningful change," Conner said. "With the technology available but not regularly attempted, especially in the reuse of a 103-year-old building, the elements came together to make now the perfect time for this project."

Along with cost savings for Modus, the tenant, the city of Des Moines benefits too.

"The project provides an educational model for the business community, developers and citizens, with tours of the systems and its components being offered regularly," Conner said. "This will hopefully lead to the application of these building strategies on future buildings, providing energy cost savings and better workplace health and air quality for employees."

Blackbird Investments is the investor on the project, and it's also working on the historic Fort Des Moines redevelopment near Blank Park Zoo. ■

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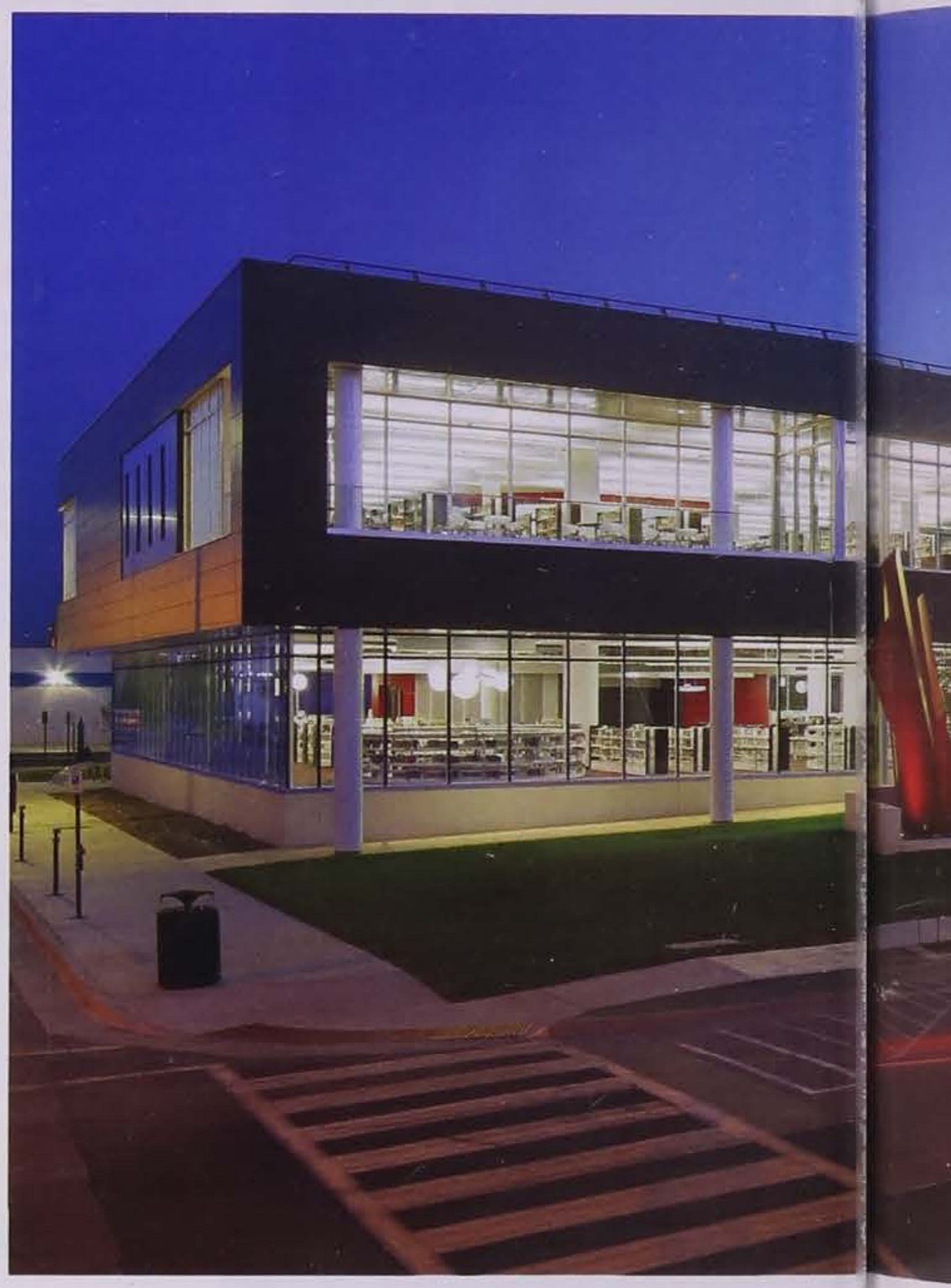
CEDAR RAPIDS MONITORING PUBLIC BUILDINGS TO SAVE ENERGY



To help cut energy consumption around the state, the Iowa Economic Development Authority developed the Iowa Benchmarking Program for all public buildings. Using a Web-based application, the program aims to identify buildings that are the best candidates for energy audit investigations and cost-effective improvements, and to manage energy consumption over time.

Currently, the program partners with local utilities and serves more than 2,000 public buildings in Iowa cities, counties, public schools, community colleges, higher education institutions and state agencies.

The city of Cedar Rapids is making this program a top priority.

"The city of Cedar Rapids puts a high priority on sustainability and adopting sustainable practices," said Maria Johnson, communications division manager for the city manager's office. "Part of that goal is to look for opportunities to make improvements and save energy."

She said the city compiles data on more than 400 electric accounts, and more than 200 of those are street lights and traffic lights.

LIBRARY

CEDAR RAPIDS CITY SERVICES CENTER

"Although we compile the data from all of our city accounts, we look more closely at our top 15 accounts," Johnson said. "With the flooding and construction of new buildings, we're still working on the initial benchmarking of this program. For example, the library and City Services Center are still relatively new, and with the opening of the City Services Center, other buildings are no longer being used."

The Iowa B3 Benchmarking System enables users to manage their buildings' energy consumption with simple reports using their monthly utility billing information and some basic building data to identify which sites are consuming more or less energy than expected (benchmark), consuming more or less energy than prior years (baseline) and consuming more or less energy as compared with Iowa-based peer buildings.

"We compile data from our energy bills, electric and gas," Johnson said. "We have an energy management specialist in our utilities division who works with our utility providers to get this data. We also have an energy management system where we can see real-time data for more than 30 buildings."

For an owner or manager of a public building, participation is free. Once the account is set up, the user is responsible for entering buildings, meters and energy consumption information.

For now, Johnson said, Cedar Rapids plans to compile this data every year to see trends.

"We're constantly striving to make improvements and save energy," she said. "If a building is using more energy, we want to know why. At that point, we'd work with one of our energy providers to do an energy audit of the facility."

Johnson said the city also wants to know its return on investment.

"We also want to know how energy conservation measures are working, so when we make an improvement at a facility, we can track energy use to see the payback period," she said.

Some of the cities in Iowa consuming less energy than expected over time include Maquoketa, Osage, Independence, Cedar Falls and Algona. ■

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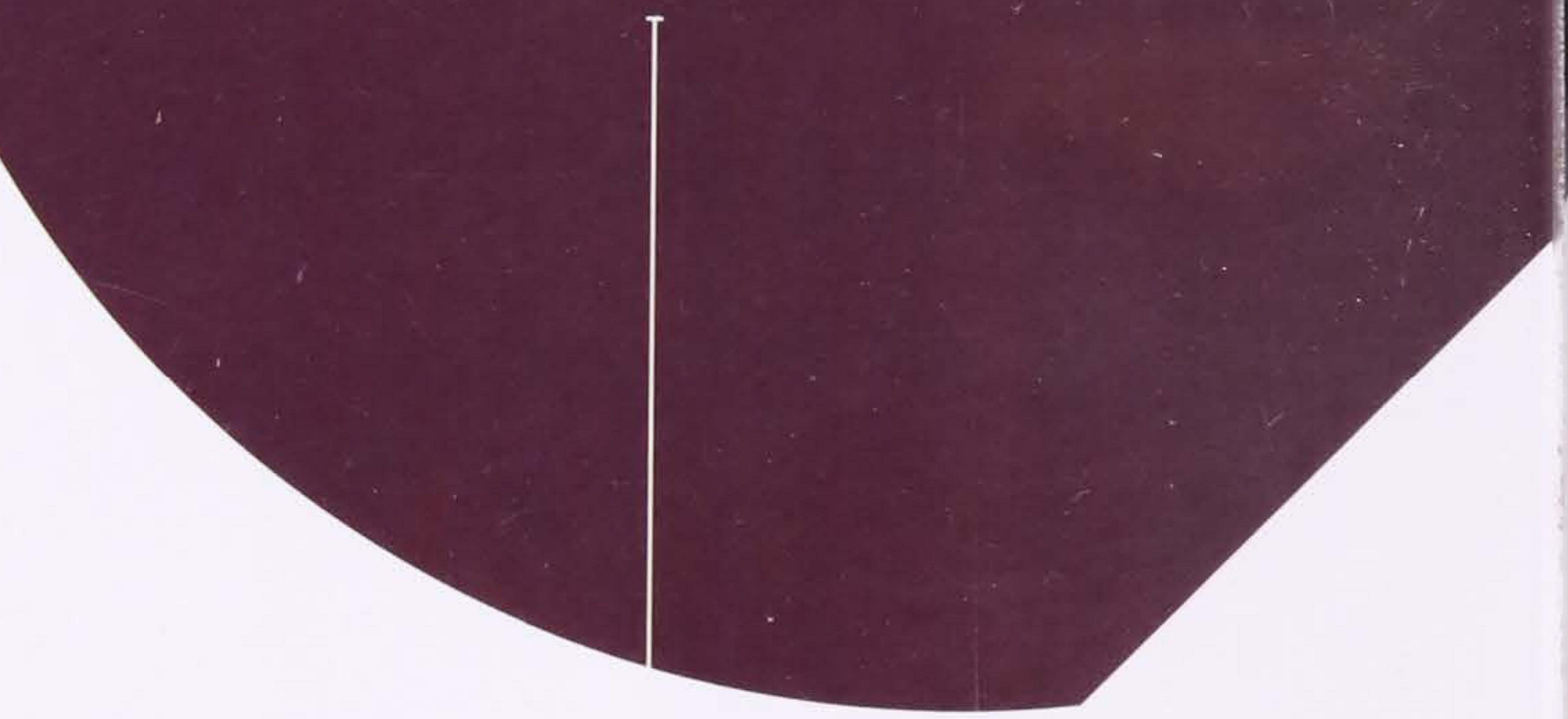
ROCKET MANUFACTURING

TAKING OFF



Located in the far northwestern corner of the state, the Rock Valley community contains 18 non-union manufacturing plants, which employ more than 1,600 workers. So when the community looked to partner with the local school district, pursuing advanced manufacturing was ideal.

With a population of about 3,500 in the community, the junior-senior school includes about 385 students. Available to juniors and seniors with prerequisites, the Rocket Manufacturing business program has about 15 students enrolled. The $7 million facility is attached to the school, and students receive credit for taking the class.

The class is two periods long, or 42 minutes, and is offered at the end of the school day. To be included in the program, students must apply and then interview with the principal and a local business owner.

"This program is about as real-world as it can be," said Superintendent Chad Janzen. "We have a student accountant starting this year and envision adding secretary and marketing roles later."

2008:

Concept presented to Rock Valley Community School Board

2013:

Instructors, superintendent and principal visited Eleva-Strum in Wisconsin, a similar concept

Spring 2015:

Rocket Manufacturing classes began

Fall 2015:

First full school year running Rocket Manufacturing

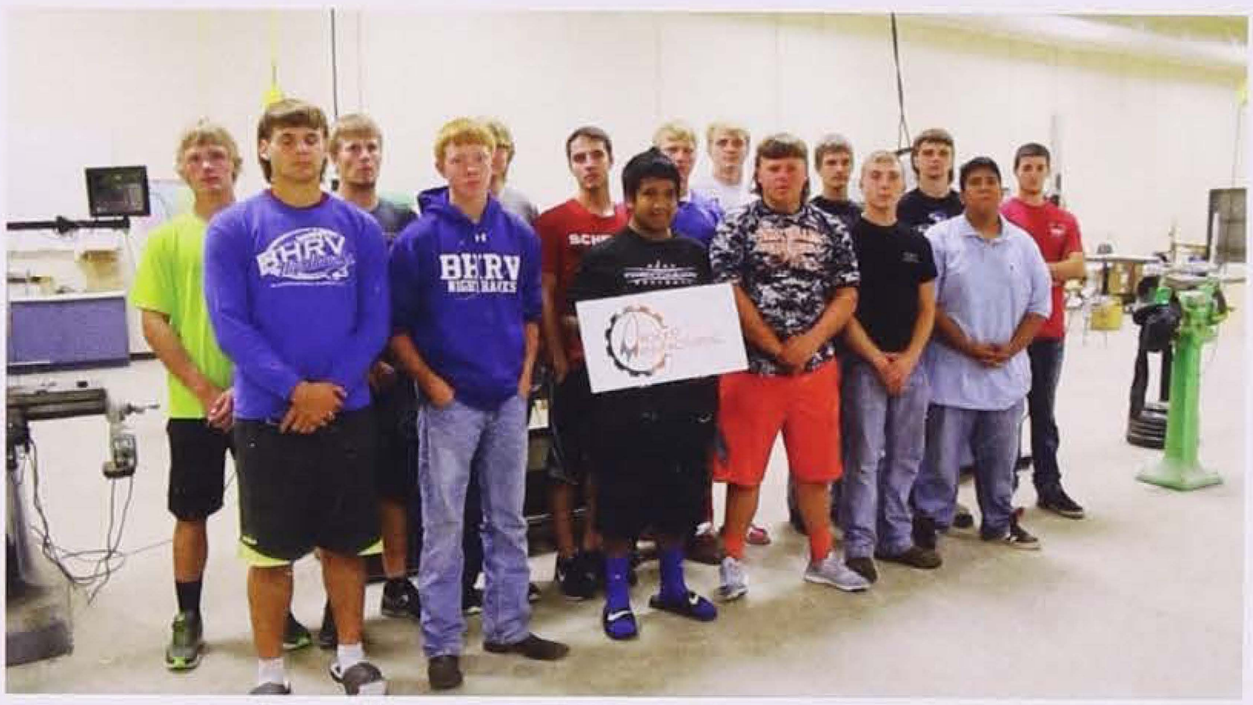
Fall 2016:

Manufacture parts on a small scale with the help of local businesses

Fall 2018:

Rocket Manufacturing to run with minimal to no help from local businesses

Run Rocket Manufacturing on their own



Rocket Manufacturing's mission is "to create a self-sustaining program that will provide opportunities for our students to obtain hands-on, real-world learning experiences."

"We've seen tremendous interest and support in our community," Janzen said. "Several businesses volunteer after-hours to help our students, and give or sell us equipment at a fraction of the price."

The enterprise relies on local requests for sales, and it's starting small. To get started, students built benches, and now they put together livestock gates and metal stands. They've manufactured about 30 custom farm gates so far.

"It's cost-effective for us to make small quantities, as compared to some of the larger manufacturers," Janzen said. "We sell within a three- to four-hour drive radius."

Moving forward, he said the five-year plan is to make Rocket Manufacturing self-sustaining. "By fall 2018, Rocket Manufacturing should be running on its own," Janzen said. ■

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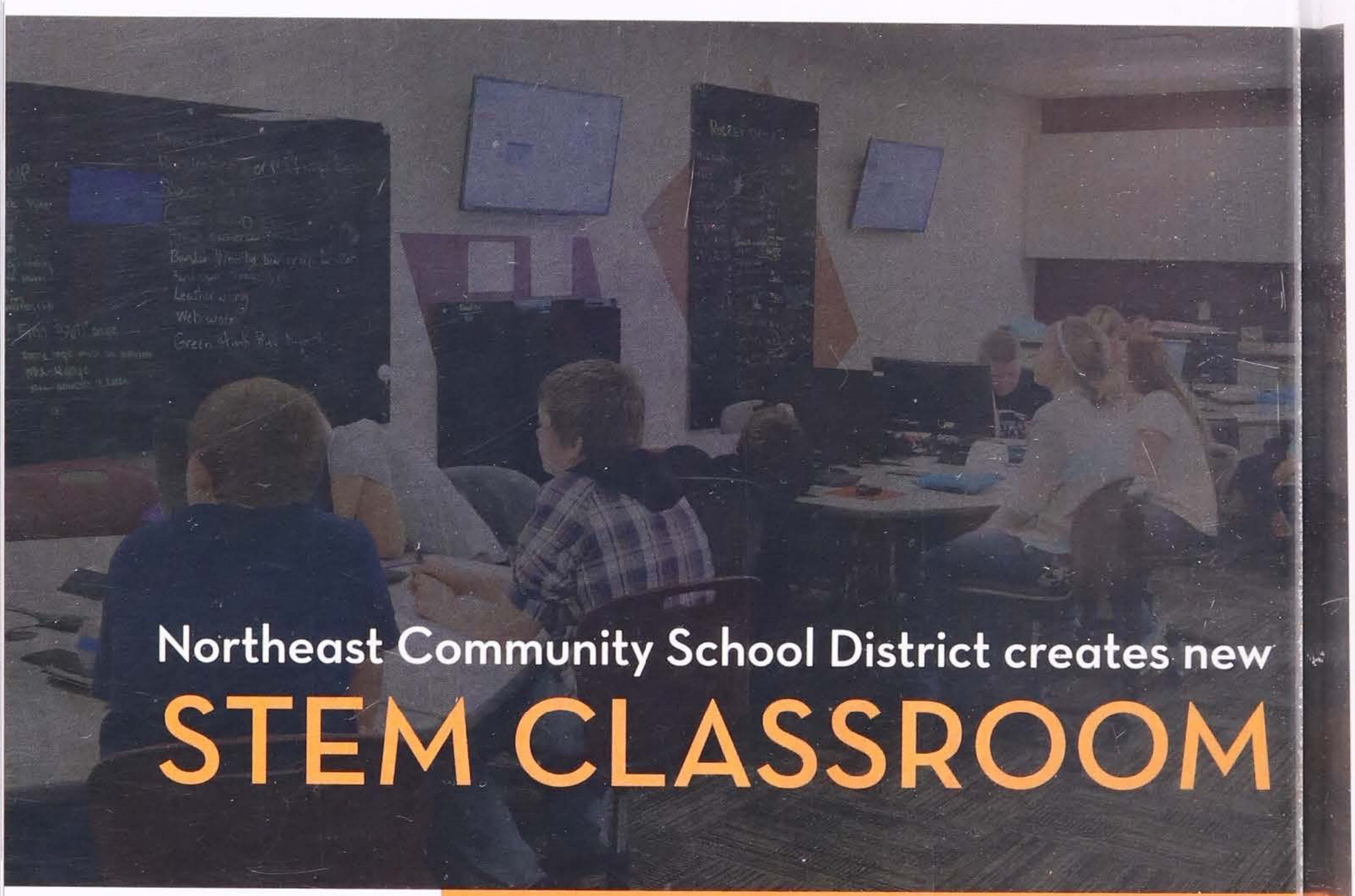


Northeast Community School District creates new STEM CLASSROOM

The Northeast Community School District was one of the five districts awarded STEM BEST (Businesses Engaging Students and Teachers) by the Iowa Governor's STEM Advisory Council.

In April 2014, the Northeast Community School District in Goose Lake opened a new building to support its science, technology, engineering and mathematics (STEM) program. The space integrates state-of-the-art technology with a collaborative environment for students.

"With this setup, students can come up with different ways to accomplish a task together, said Alicia Christiansen, principal of Northeast Community Middle and High School. "With glass boards on the walls and screens that feed to students' desktops, it's a new way to learn."

The Northeast Community School District was one of the five districts awarded STEM BEST (Businesses Engaging Students and Teachers) by the Iowa Governor's STEM Advisory Council. The innovation grants help grow a series of community collaborations involving school and business partnerships. Working side by side, teachers and industry professionals will craft curriculum and projects that prepare students for career pathways in STEM fields.

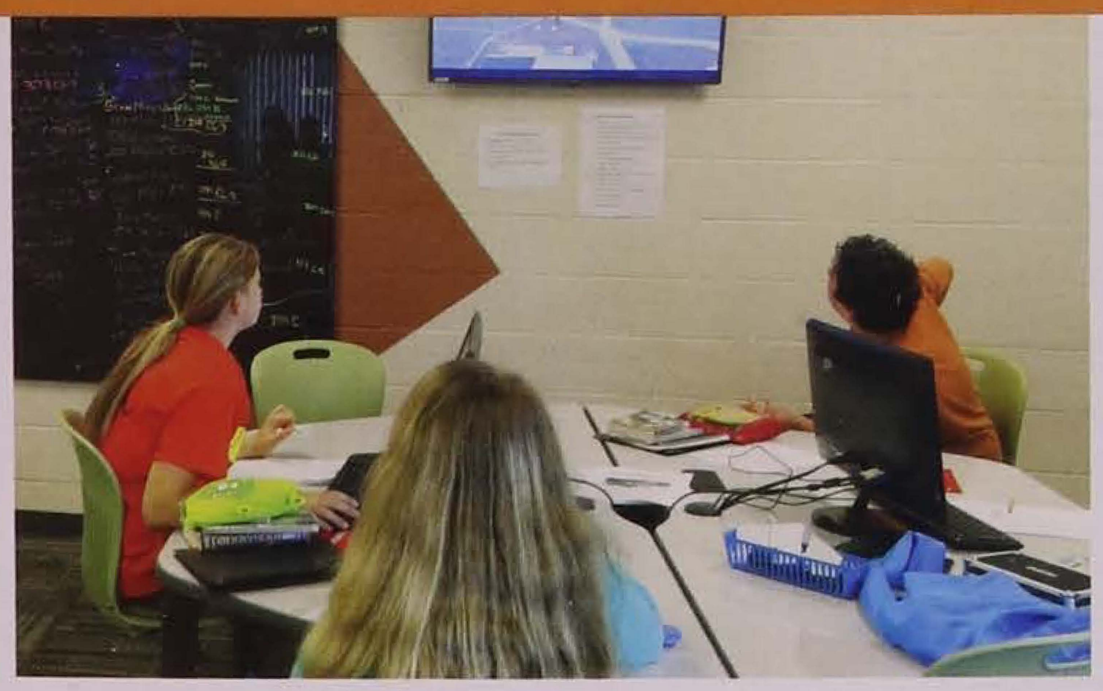
The mission of the Northeast STEM program is to provide students with an innovative, problem solving and discovery-based environment that focuses on real-world applications. The program will engage students in authentic, real-world problems through the infusion of technology and curriculum.

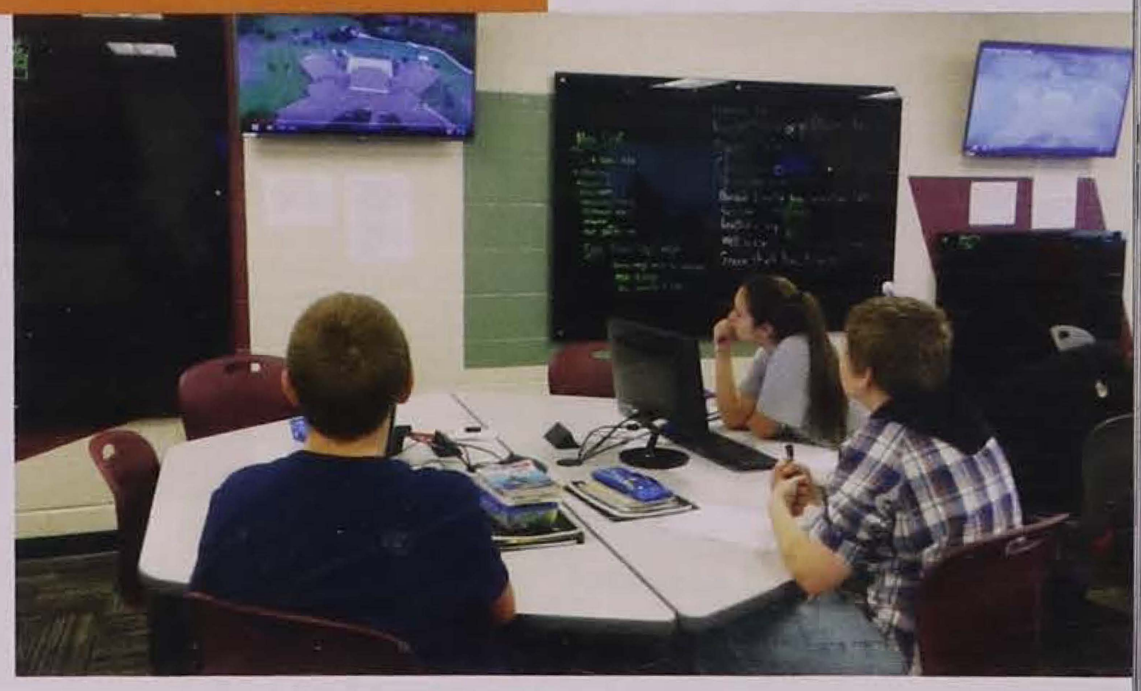
Teachers will be working a little differently in the classroom too, Christiansen said.

"Instead of just instructing at the front of the classroom, they'll need to help students troubleshoot," she said. "They'll also have to think through the process and learn along with the students."

Christiansen said the district is developing the curriculum with local business partners, including mechanical and chemical engineers. Eighty-five of the 850 students in the district are being expose to the program now, with the goal of doubling that next semester.

"We really want to see every student exposed to STEM," she said. "There's a lot of excitement from both teachers and students." ■





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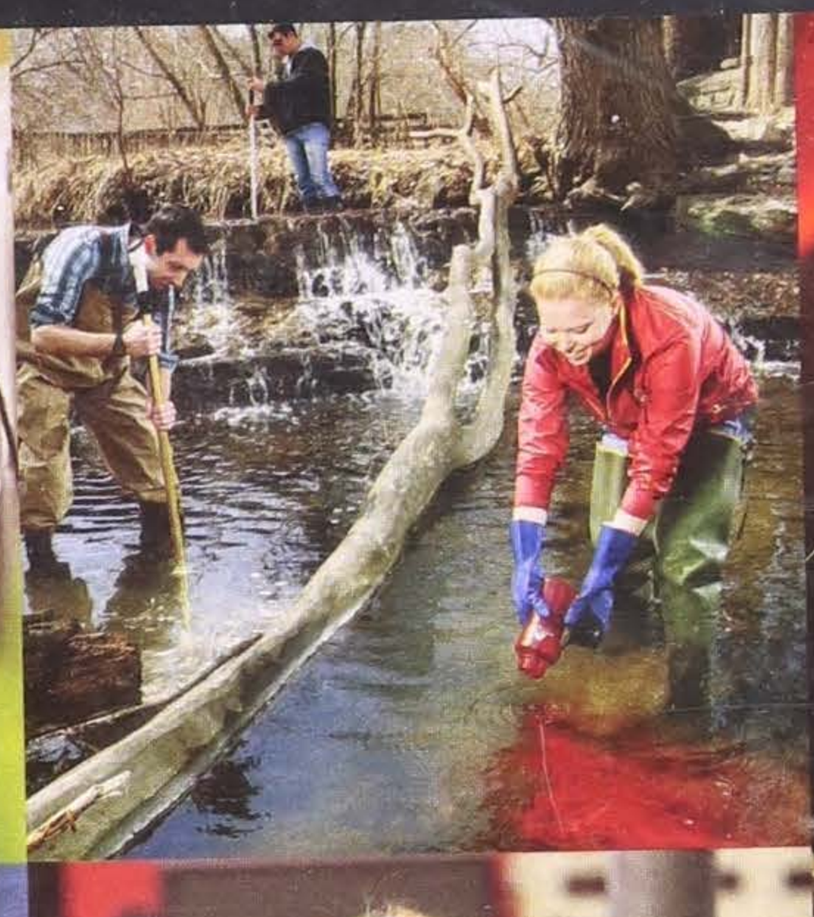
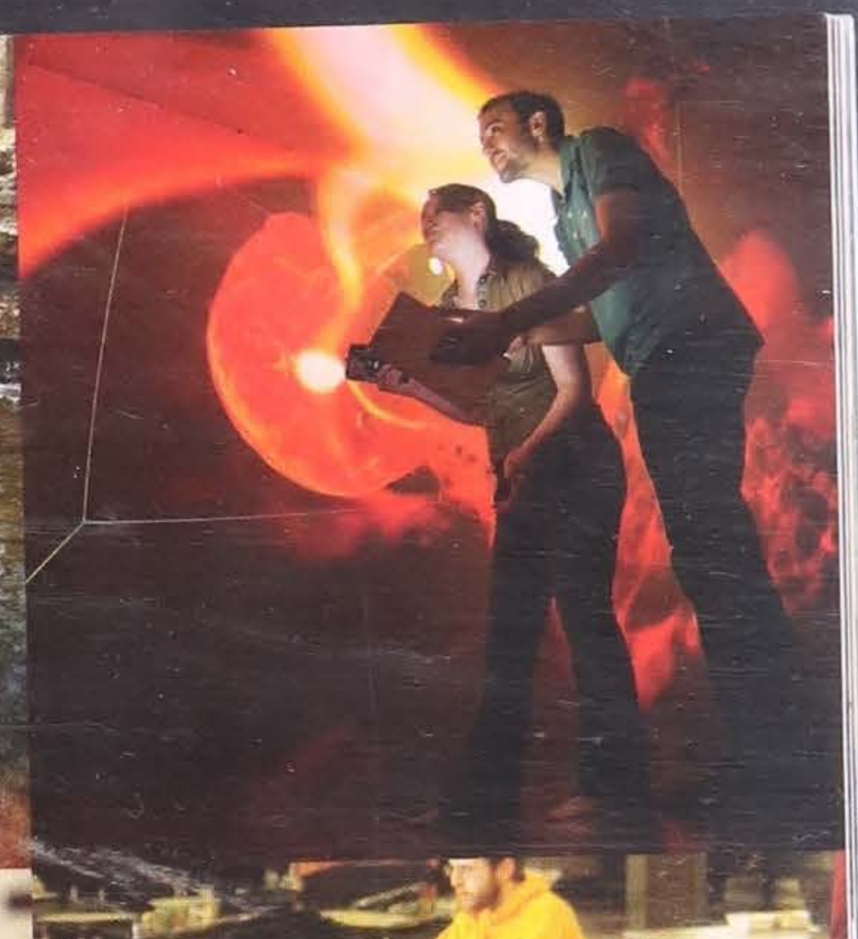
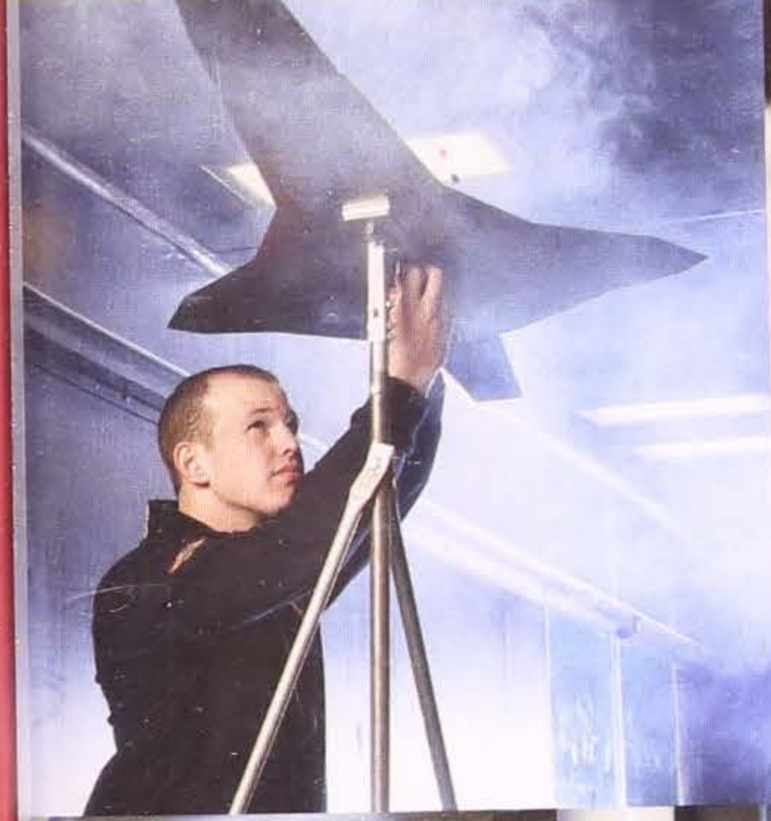
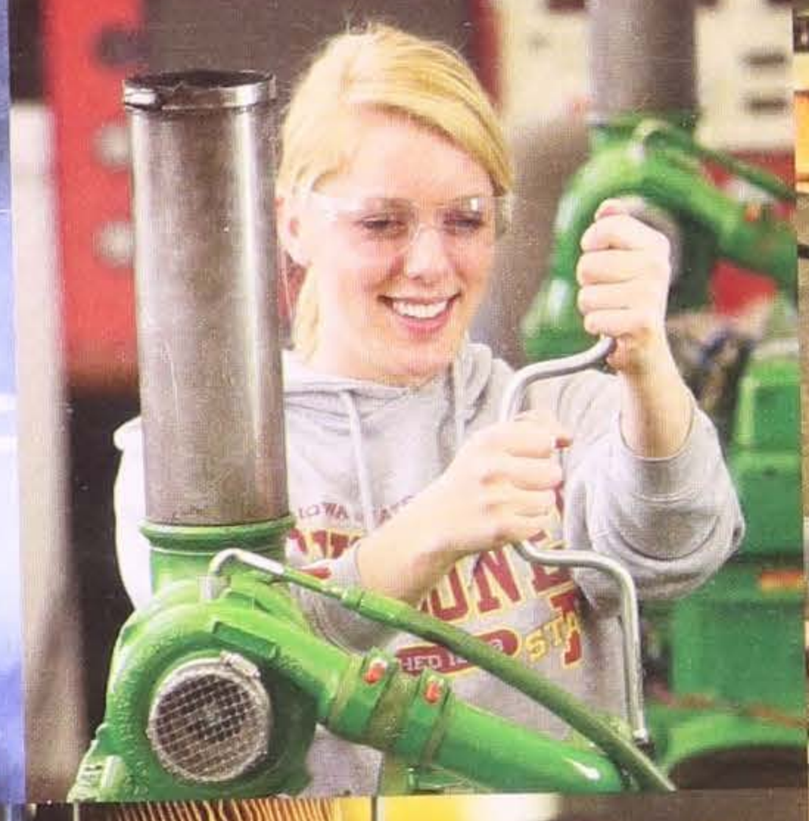
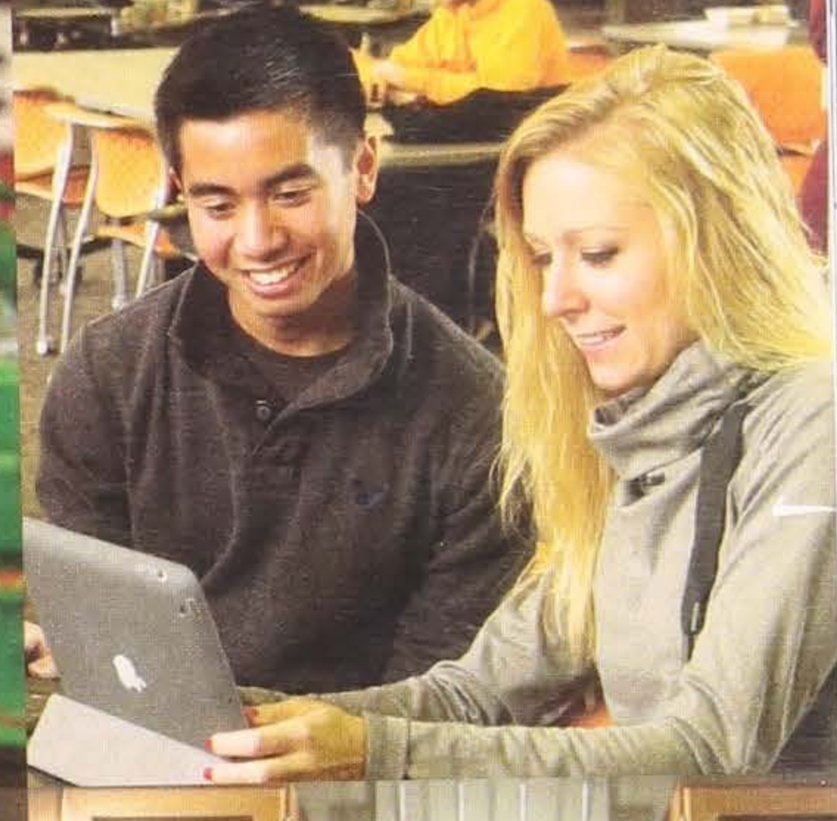
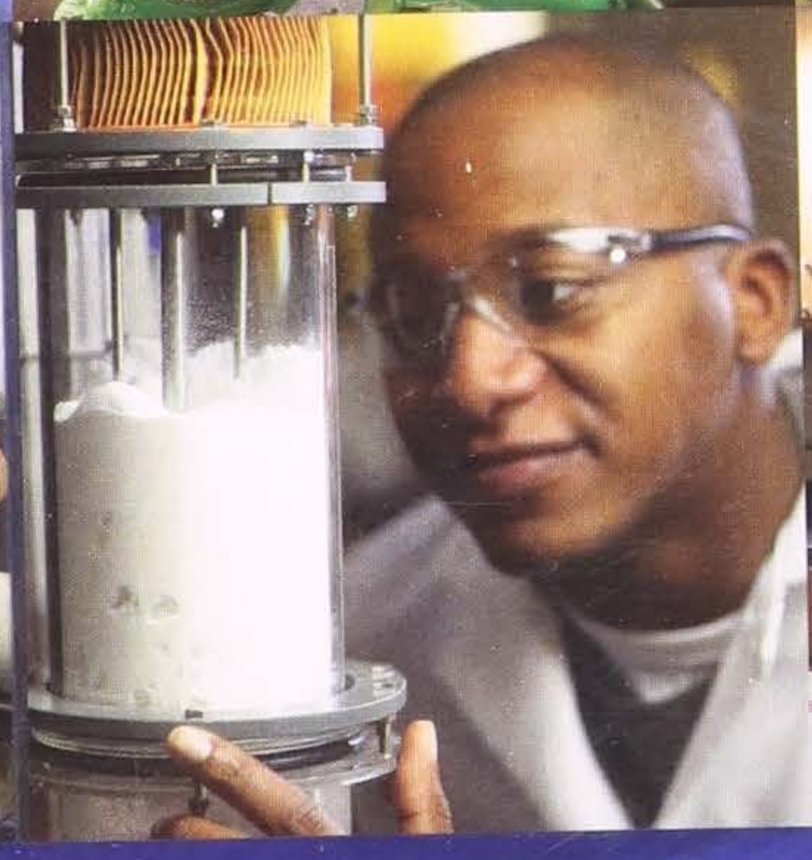












Iowa BIG solving real-world problems in the classroom

Since May 2014, Iowa BIG's students have helped numerous Iowa organizations and companies solve real-world problems, resulting in real-world outcomes and core class credit.

At the request of the Cedar Rapids Gazette, Iowa BIG was the result of 60 community leaders who went back to school for a day to identify what modern education should look like. Traditional academic rigor, as well as concepts such as the use of time and space, were put to the test.

"When compared to the way the real world operates, they found the 1800s concept of academic rigor wanted the 21st century," said Troy Miller, director of strategic partnerships.

Now, six participating high schools in the Cedar Rapids area are in the program, with about 120 students enrolled. Most students are part time at their traditional high school and part time with BIG.

Iowa BIG education centers on the following views:

The student must choose and love the project. Iowa BIG uses a project pool that's custom generated by the business community. These projects come from the real needs of businesses, nonprofits and government agencies. Students are then free to choose the projects they find the most interesting. Students and faculty may also pitch projects.

The project must be interdisciplinary. All projects at Iowa BIG require understanding of content from multiple traditionally defined courses. This ensures the efficiency of its model and that its projects never become solely "problems from the back of the book."

The project must have a participatory third-party audience. If they can't identify an audience outside the school's walls who's willing to participate, assess and mentor the project, they don't do it.

IOWA BIG CORE DESIGN PRINCIPLES:

Using student passion to drive deep learning and deliver core academic credits.

Engaging students in authentic community projects, problems and opportunities.

Connecting them more deeply to the people and resources of Iowa's Creative Corridor.

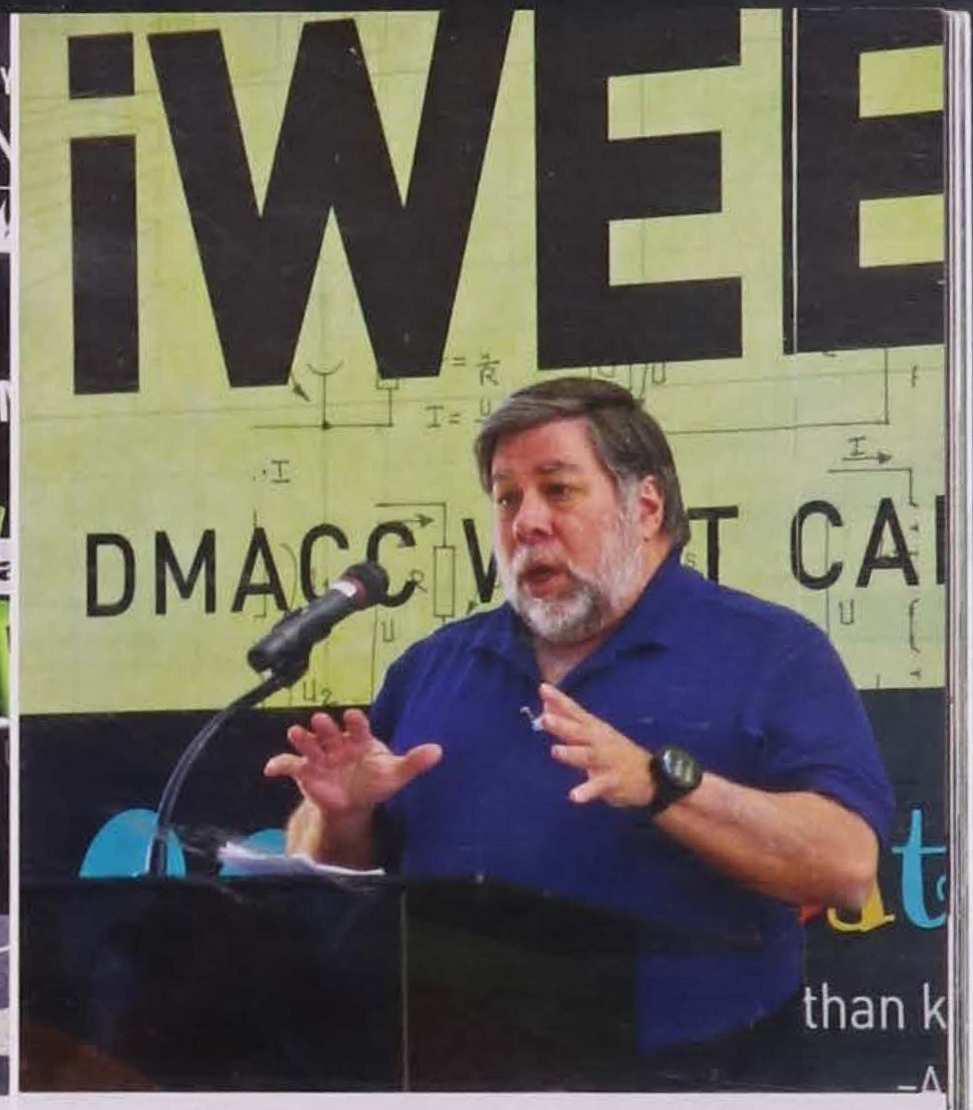
"If it exists in the real world, it can exist at Iowa BIG," Miller said. "Students are involved in aquaponics, aquadrones, aerial drones, Wi-Fi recycling bins and nonprofit organizations. They've also incorporated for-profit organizations, created a newsroom for blogging, videos and podcast production, engaged in college campus design, and conducted speeches for government officials."

Miller said Iowa BIG has established time and space rules that reflect the real world to reinvent high school education.

"We have no bells, no tiered content delivery schedules and no assigned seats," he said. "Instructors meet with students either at a co-work space or at a business partner's location."

He said the results have been interesting so far. "Some of our highest-performing students in Iowa BIG have a 2.0 GPA or lower, while students with higher GPAs have mixed results when dealing with real-world challenges," Miller said. ■

ACTOR AND DIRECTOR LEVAR BURTON OF *STAR TREK* FAME SPEAKS WITH DR. TONY PAUSTIAN DURING CIWEEK 6.



STEVE WOZNIAK, CO-FOUNDER OF APPLE, SPEAKS DURING CIWEEK 3.

If you can dream it, you can do it.
WALT DISNEY

ciWeek (Celebrate! Innovation™ Week) provides Central Iowans an opportunity to engage with people (some famous, all inspired) who dream, create and accomplish. It's a thought-provoking and interactive week hosted each year at DMACC's West Des Moines Campus, where people of all ages listen, absorb and engage. It's a local cross between TED Talks and the famous SXSW event held each year in Austin, Texas.

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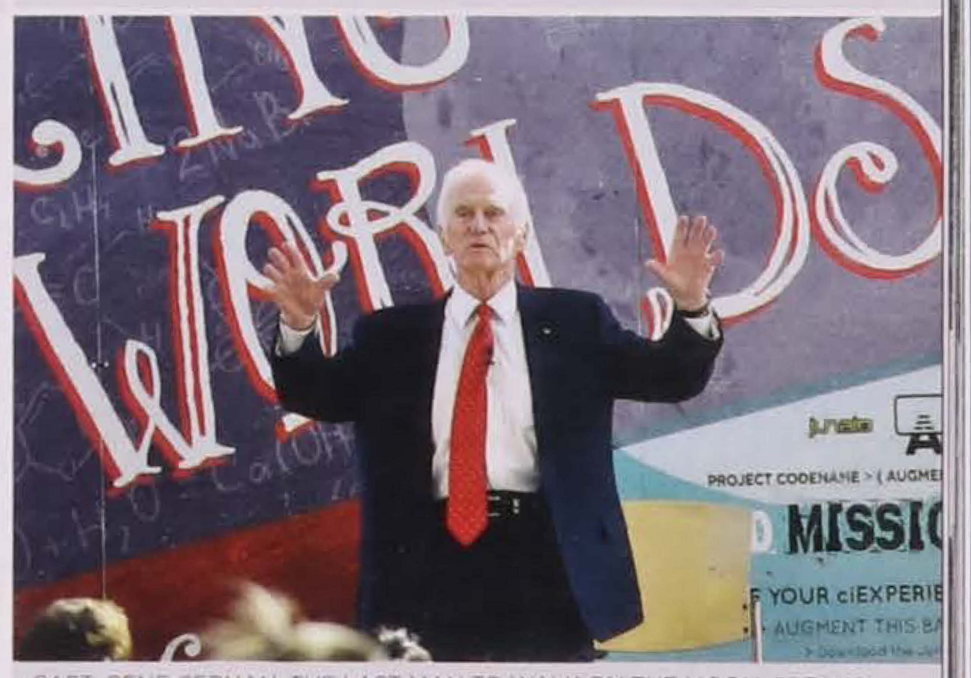

CAPT. GENE CERNAN, THE LAST MAN TO WALK ON THE MOON, SPEAKS AT CIWEEK 5.

DAYMOND JOHN, SHARK ON ABC'S *SHARK TANK*, SPEAKS AT CIWEEK 4.

celebrate! innovation magazine

Twice annually, as part of the Celebrate! Innovation Exhibition, the West Campus publishes *ciMagazine*. The magazine provides insightful pieces written by a variety of people who are involved in activities that make the world a better place. Whether it's a piece written by one of our ciWeek speakers or a local thought leader, *ciMagazine* will provide readers with an inspiring view of the world.

To begin receiving the magazine or to view back issues please visit www.dmacc.edu/ci.

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STEM Innovator cours
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To blend public- and private-sector expertise with traditional coursework in science, technology, engineering and mathematics (STEM), a new STEM Innovator Business Innovation course was developed at the new Kirkwood Regional Center of the University of Iowa, which opened in the fall of 2015.

The University of Iowa, Kirkwood Community College, seven partner school districts and 40 leaders representing 25 STEM businesses were awarded an Iowa Governor's STEM Advisory Council STEM BEST grant to jointly design the program.

The team used a one-time $24,948 grant to develop a course where students work with industry and academic leaders in STEM to solve problems. The course serves partnership students in grades 11 and 12 as a stand-alone course or as a companion to one of the STEM career academies.

The grant was awarded to the University of Iowa's College of Education, and Leslie Flynn, an assistant professor in the College of Education, and Dawn Bowlus, director of the UI Jacobson Institute for Youth Entrepreneurship, are the project directors. STEM Innovator is a collaboration between the College of Education and the University of Iowa's Jacobson Institute for Youth Entrepreneurship in the John Pappajohn Entrepreneurial Center.

The school districts involved with the STEM Innovator course include Clear Creek Amana, College Community, Iowa City, Solon, Tipton, West Branch and Regina. The STEM Innovator program also provides teachers across Iowa with professional development institutes so they can facilitate a similar course in their district. To date, 100 teachers have been trained in the state so far, with 33 school districts participating; this impacts more than 16,000 students.

The Kirkwood Regional Center, located at the Iowa Research Park, provides approximately 500 high school students with career experiences while earning transferrable college credit at no cost to families. Students earn high school and Kirkwood Community College credit that articulates to the University of Iowa. In addition, the university will award each student a certificate recognizing successful completion that they can submit to any college of their choice.

"Students work with STEM industry partners through innovation and entrepreneurship while developing solutions to problems of student and community interest," Flynn said. "The curriculum is developed and implemented with more than 40 community partners to meet industry standards."

The University of Iowa's Belin-Blank Center hosted a two-week pilot class.

Steve Davis, one of the instructors during the pilot, is a program partner. Based in Coralville, his company, Bio::Neos Inc., is a software consulting company that provides customized software solutions and bioinformatics data analysis to life science researchers.

"In this program, students learn how to collaborate," he said. "We focus primarily on the process, not the outcome." He noted that one group is still working on a project from a year ago.

Flynn said the program is looking for businesses to partner with. "Our program helps prepare the workforce and create a stronger state economy," she said.

Beth Hochstedler, director of education, training and outreach at State Hygienic Laboratory, who serves on the Iowa Governor's STEM Advisory Council, said the program helps students connect with projects in which they're truly interested.

"It's a win-win," she said. "Students become more aware of the careers they want to pursue with fulfilling work, while businesses gain a new perspective on a project."

Davis said the program challenges teachers too.

"The program allows teachers to instruct in a hands-on way," he said. "They help students solve problems, work in teams, be more innovative and make them more successful and marketable."

Students can enroll in the program through their academic adviser. The class of about 15 students is currently working on a few projects, including ATV safety, a mobile app related to textbooks and with the State Hygienic Laboratory to make air quality information more accessible for those with compromised immune systems.

"These projects give students access to work with partners on real projects," said Bowlus, "We need a student's perspective. It's a benefit to the students and the business."

Michael Abdo, a student at Iowa City West High who took Davis' class as a sophomore, said after the two-week class, his curiosity about STEM, specifically technology with the idea of entrepreneurship, sky-rocketed.

"On the second day of the class, each student gave an elevator pitch of his product idea, and their peers voted on which ones they wanted to continue to work on," he said. "My idea, a simple yet elegant mobile daily calendar, was one that was chosen. Because of this, I assumed the role of team leader of a group of four other students."

At the end of the class, Davis distributed his contact information and told the group to let him know if they were interested in internships.

So, over the winter of Abdo's junior year, he worked with Davis on an app that displays the properties of an amino acid depending on what nucleotides are provided. Abdo also worked on an app that displays information from *PubMed*, a popular source for scientific paper research, in a mobile-friendly version. "This was a great experience and I'm truly indebted to Steve," he said.

As for Abdo's future, he said he'll continue to pursue STEM, specifically in computer engineering and computer science.

"A deep desire of mine is to continue in entrepreneurship and using my base knowledge of computers to be able produce useful, desired products," Abdo said. "Whether this means going to college or simply teaching myself and joining the community off-the-bat, I'm not sure. I'm ready for whatever opportunities present themselves." ■

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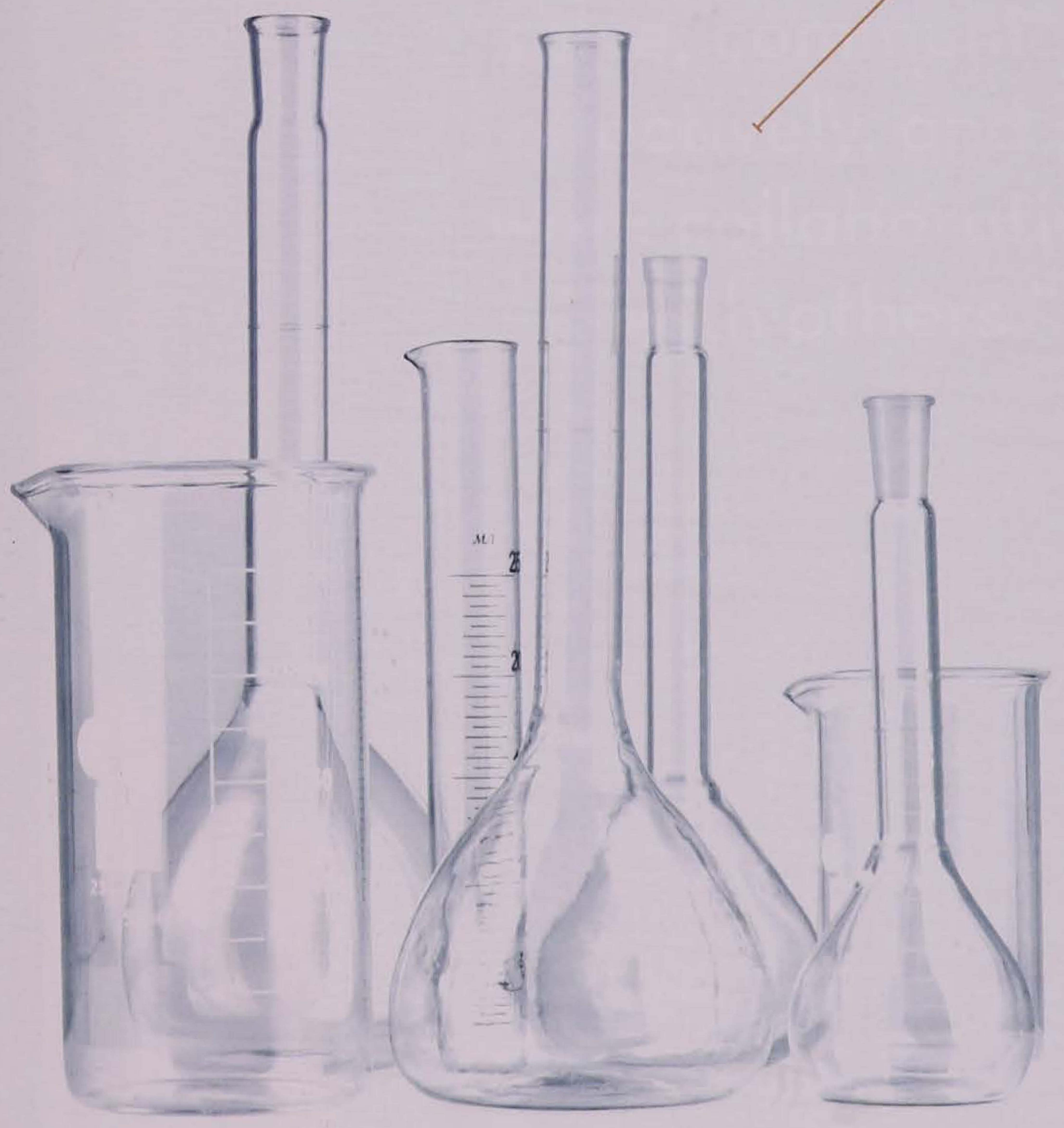
IOWA STEM TEACHER EXTERNSHIPS PARTNER

EDUCATION AND BUSINESS



In 2009, the Iowa Governor's STEM Advisory Council began a statewide externship program to create and strengthen business-education partnerships across the state and introduce teachers to today's workforce needs. The program is funded in part by a National Science Foundation grant and a cost-share between the STEM Council and business hosts, and teachers are paid to participate.

"These partnerships specifically allow Iowa teachers to witness how the skills they teach their students in the classroom apply to today's workforce and help teachers make students more aware of the STEM careers that exist within the communities they live in," said Jeff Weld, executive director of the Iowa Governor's STEM Advisory Council.

Over the last seven years, the program has partnered with more than 100 business hosts during the summer months. From advanced manufacturing to the Iowa Department of Natural Resources, teacher externs — no matter which STEM discipline they teach — can work in a local business or industry setting that directly matches their interests and the needs of the business.

Teachers interested in the program can apply online. Once a teacher applies, the operations team of the Iowa Governor's STEM Advisory Council finds a business host match for that teacher based on location, the needs of the businesses in their area and the interests of the teacher applying. Typically, teachers who haven't previously participated in a teacher externship receive first priority, Weld said.

Since 2009, nearly 300 teachers have participated in the externship program.

Bret Woodward, who teaches high school mathematics in the Muscatine Community School District, participated in the program in the summer of 2015. He said he applied based on a recommendation from one of the lead teachers at his school, who had participated in the program before.

"I applied for two reasons," Woodward said. "First, I was hoping to make some contacts to use with my students and class. Secondly, I was hoping to gain some regional experience relevant to my students. I think that any connection a teacher can make with students by bringing in local experts or business people adds credibility to what we are teaching."

Woodward was selected to work with Monsanto Co. in Muscatine. He spent 30 days there, spanning from the middle of June through the middle of August, working in the company's central laboratory.

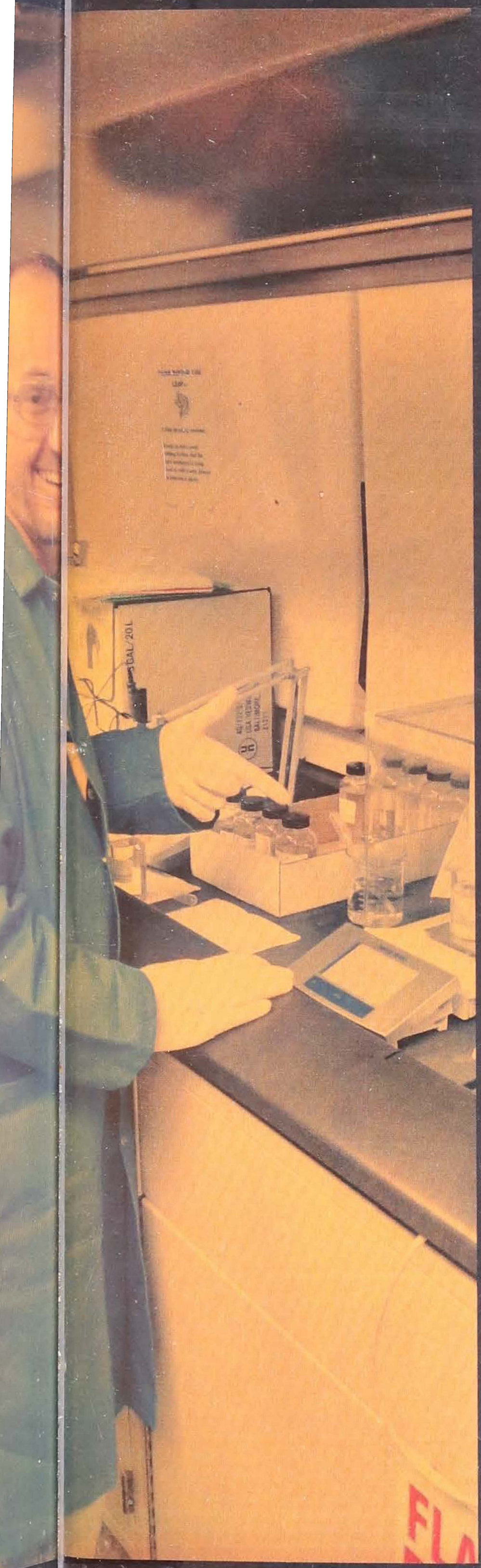
Woodward participated in the new employee training and orientation program, and then spent several days training with lab technicians in two separate disciplines: liquid chromatography and gas chromatography.

After spending a week in each laboratory, he performed statistical analysis tests on pH meters and probe combinations used in Monsanto's liquid chromatography lab.

"They were looking for ways to reduce the cycle time and yet maintain the reliability of the test," Woodward said. "After the testing was completed, I organized the data and entered the results into statistical software and then presented my recommendations to the engineering managers. That project took about three weeks."

He said it was quite rewarding to have his work considered and be asked for his recommendation. He spent his final week performing similar statistical analysis on a state-of-the-art distillation machine. Similarly to the pH testing, he presented his findings to the engineering manager responsible for that area.

"The biggest thing I learned was that companies like Monsanto are looking for people who can problem solve, communicate effectively, and can work collaboratively with others," Woodward



"The biggest thing I learned was that companies like Monsanto are looking for people who can problem solve, communicate effectively, and can work collaboratively with others."

BRET WOODWARD

ANNUAL PROGRAM EVALUATION BY THE UNIVERSITY OF NORTHERN IOWA'S CENTER FOR SOCIAL AND BEHAVIORAL RESEARCH:

96%

of business hosts agree or strongly agree that the "teacher extern provided significant contributions." The monetized value of an extern, according to business hosts, equates to tens of thousands of dollars and, in a few instances, into six figures in terms of value added or savings realized.

90%

of business hosts agree or strongly agree that the "teacher extern provided beneficial outside viewpoints."

97%

of business hosts report being somewhat or very likely to host a teacher extern again.

88%

of teachers agreed or strongly agreed that the externship was relevant to the courses they teach.

90%

of teacher externs agreed or strongly agreed that the externship impacted teaching and 86 percent agreed or strongly agreed that the externship impacted understanding of the 21st-century skills of the Iowa Core.

84%

of teacher externs' students express greater interest in STEM jobs, significantly for girls.

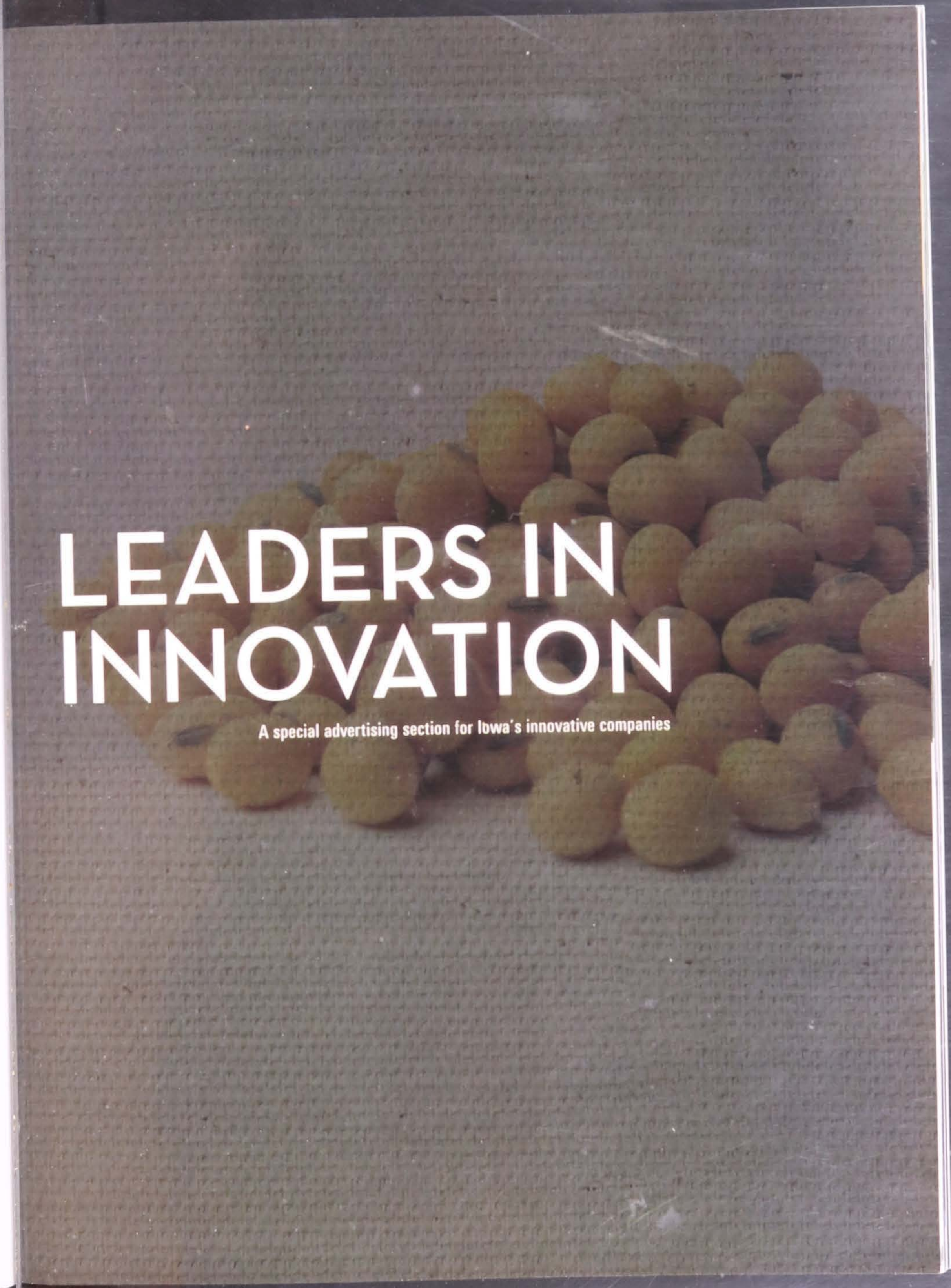
said. "These are all things that have been emphasized in my class even more since the externship."

Although the testing at Monsanto hasn't been directly applied to his daily class instruction in mathematics, Woodward said the concepts are used with the statistical unit in his Algebra 2 class. In addition, he makes it a priority for students to identify not only the process used to solve problems but the place within the process that errors were made.

"With communication being so crucial in the workplace, my students are presented numerous opportunities to discuss the concepts and skills we're exploring with me as well as each other," he said. "My classroom is arranged so it's easy for students to collaborate. Depending on the task, they are challenged with dividing responsibility to complete it."

Hosting the externship has proved rewarding for the company as well. Shawn Schrader, plant manager at the Monsanto facility in Muscatine, said the facility hosted two externs, including Woodward, in the summer of 2015.

"We're a strong supporter of the program," he said. "The program helps teachers with their soft skills and to learn what employers value from their students. It's a win for us too, as we can get an outside perspective on assigned projects." ■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A special advertising section for Iowa's innovative companies

Agribusiness Association of Iowa

Joel Brinkmeyer, *CEO*

Agriculture continues to be a major source of innovation in Iowa. But innovation doesn't happen by itself. It takes an entire business ecosystem to make an innovation economy run.

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The three-fold mission of AAI – to advocate, communicate, and educate – is the key to creating a sustainable agricultural economy in Iowa. AAI advocates on behalf of our membership and the agriculture industry to move agriculture forward and protect our member organizations and their employees.

As the face of agribusiness in Iowa, AAI continues to support innovation and science-based solutions for a strong, healthy, and productive Iowa.

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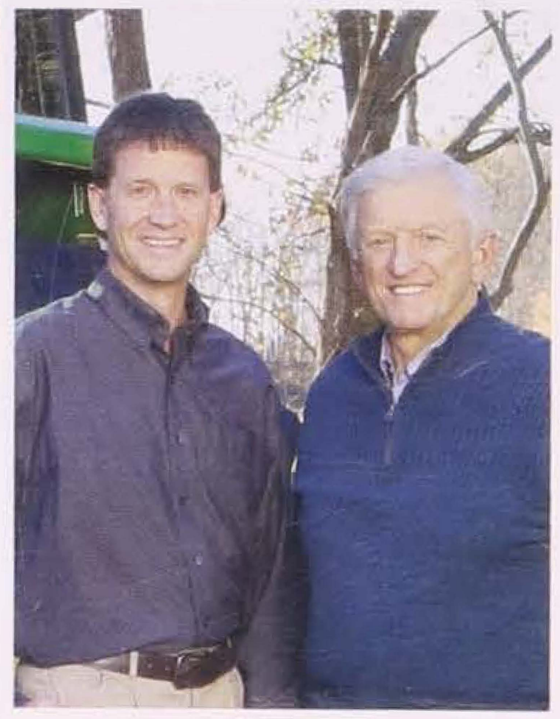

Scott Beck, president of Beck's and Sonny Beck, CEO of Beck's

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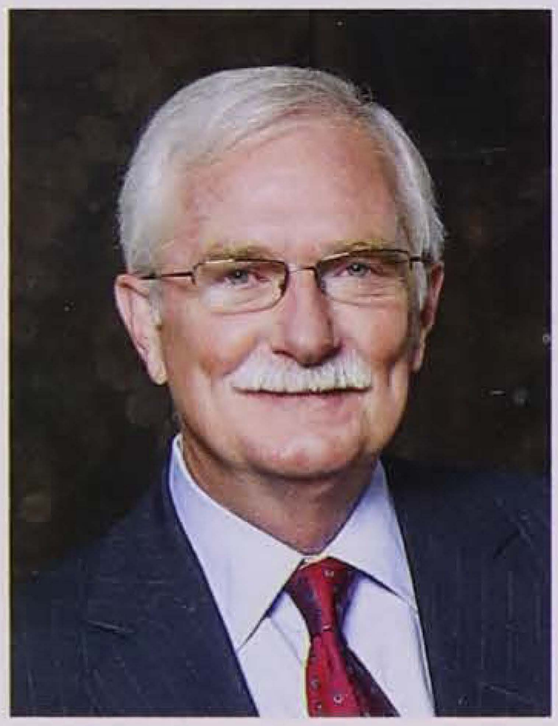

Ron Keller

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Better together. And together we are Aureon.

Headquartered in West Des Moines, and formed from dynamic, accomplished and Iowa-born companies who united with a shared vision, Aureon™ is the new kid on the block — in name only. Aureon (formerly the INS Family of Companies comprised of Iowa Network Services (INS), Alliance Technologies, Alliance Connect, Merit Resources and Caleris) has over 25 years of experience delivering diverse offerings and has established roots that run deep in the communities they serve.

What is new is the breadth and scope of business support solutions that Aureon is able to offer. With a focus on technology, HR and contact center services, Aureon is in the business of keeping their clients productive and connected by allowing them to focus on what they do best.

"The unique thing about Aureon is that we are able to offer a full suite of business support solutions under one roof," says Ron Keller, CEO of Aureon. "Whether it's technology, HR or contact center services, we have the talent, technology and tools that help our clients become more productive. There is a tremendous amount of excitement and opportunity in knowing that no one out there can really match the breadth and scope of our offerings."

"Necessity is the mother of invention."

It all started in the 80s with the divestiture of the Bell System and competition of long distance companies. The game changed and consumers now had a choice of long distance providers – however, not everything was equal. So a group of visionaries came together and formed a company to build a communications network and hub that would provide one central location for all the long distance carriers and independent telecommunication companies to connect. This innovative idea was the birth of Iowa Network Services and the creation of the first Centralized Equal Access (CEA) network in the United States.

The INS network delivery model has not only survived, but thrived, all in the midst of industry regulation and change. And change, the industry did. As the calendar continued to turn,

ABOVE: We work behind the scenes for our clients allowing them to focus on what they do best.

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technologies and the way people communicate began to expand exponentially and the needs of both the independent telecommunication companies and the end user began to change.

The old way of doing business was no longer necessarily the best way of doing business. Once again, there was a driving force to reinvent. INS chose to leverage their historic connectivity to small- and mid-sized businesses to ensure the success of the company moving forward. To do so meant to continue to diversify beyond the realm of telecommunications and find new ways to help clients enhance revenues, simplify their operations and keep people connected.

A common theme fueled the diversification strategy: unify business support solutions to help clients unbridle the complexities of doing business, so they can focus on their core purpose and passion.

Writing a New Chapter

With that purpose, Aureon was born – with one unified workforce; focused on collaboration, common processes and technologies.

"By aligning our own synergies, we're better equipped to find efficiencies for the clients we serve," says Keller. "We can offer scalable and customizable solutions to organizations both small and large, covering a variety of business support areas. We've come together to sharpen our focus so that our clients can keep theirs. The story of Aureon is just beginning, but for us, this is just the next exciting chapter."

THE **INS** FAMILY OF COMPANIES

Iowa Biotechnology Association

IOWA BIO.org

Joe Hrdlicka and Melissa Moyer of the Iowa Biotechnology Association; Dr. John Swart, of Exemplar Genetics; Tom Swegle, of MedCara Pharmaceuticals and Rachel Hurley, of Monsanto.

Proud to Represent Iowa at its Best: Since 1994, the Iowa Biotechnology Association (IowaBio) has provided benefits and services to promote the interests and growth of the life sciences industries in Iowa. The IBA is a non-profit, membership-based organization with a diversified membership including industry companies from all segments of biotechnology, universities and colleges, state and federal associations, as well as numerous service and support companies. The Association has worked steadily to establish a strong identity for the industry and speak with one voice for our diverse membership.

Educational Outreach: IowaBio understands how important education is on all levels. From kindergarten to Capitol Hill, IowaBio utilizes its resources to enlighten our children, peers and leaders on the benefits of STEM education, as well as biotechnology and the many ways it will help meet our growing world's needs.

Advocacy: IowaBio has worked steadily to establish a strong identity for the industry and speak with one voice for our diverse membership, seeking to influence policies on both the state and federal levels that will enable more efficient growth for Iowa and the United States. IowaBio is focused on fostering a stronger business and research climate while working with leaders across the state to attract and retain bioscience talent, companies and funding.

Business Development: IowaBio staff and board members have diversified business and industry backgrounds, enabling them to provide sound business development advice and significant networking opportunities.

Purchasing Consortium: IowaBio is proud to participate in a purchasing consortium that includes industry members, educational institutions and state agencies. The contracts initiated by this consortium allow IowaBio members of any size to receive significant savings through competitively-bid pricing, shipping and servicing benefits.

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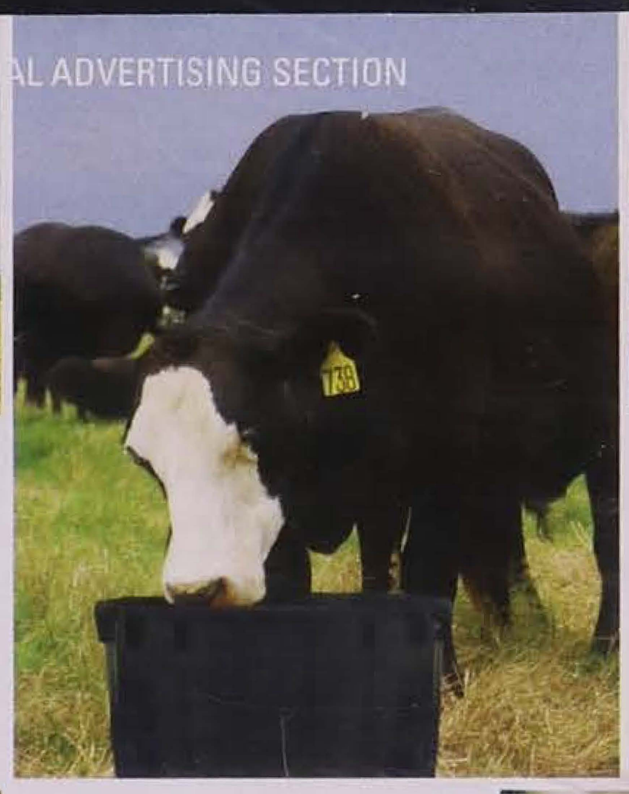

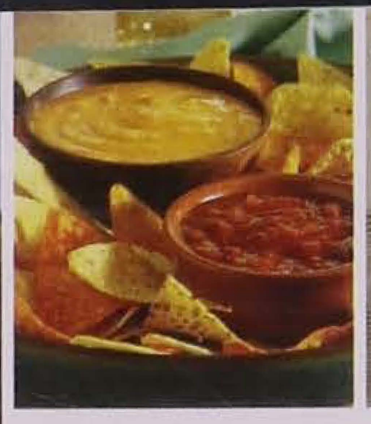

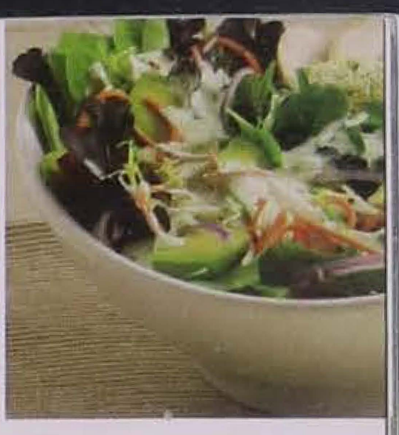

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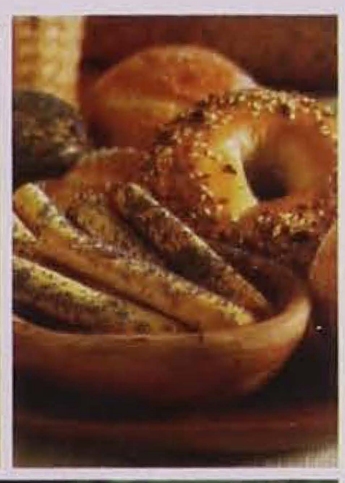

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Kent Nutrition Group manufacturing animal feed and nutrition products for commercial animals, equine and lifestyle farmers under the Kent Feeds and Blue Seal brands.

Kent Pet Group who manufactures and markets products for dogs and cats around the globe.

Kent Precision Foods Group who is a dry-blending and packaging food company with expanding products in personal nutrition and hydration.

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LEADERS IN INNOVATION

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Erik Skovgard, *CEO & President*

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LEADERS IN INNOVATION

Science Center of Iowa

Since 1970, the Science Center of Iowa & Blank IMAX Dome Theater (SCI) has worked to bring learning to life through interactive exploration, highlighting important areas of STEM education and providing science learning to the community in new ways.

SCI's mission – to engage and inspire Iowans along their journey of lifelong science learning – is demonstrated in its wide variety of programming for audiences of all ages. Through programs like Pint Size Science and the fully-accredited SCI Preschool, early learners are invited to ask questions and discover the world around them. SCI cultivates the next generation of STEM leaders with school visits and an outreach program that brings the excitement of SCI to schools and libraries across the state. And programs like Mixology Night (SCI's monthly 21+ event) and Café Scientifique (an informal lecture series featuring local scientists) engage lifelong learners to develop citizens who are educated and informed.

Innovation is a core value of SCI, and the concept is brought to life with the Make@SCI initiative. This summer-long initiative, now in its third year, introduces visitors to the "Maker mindset" and encourages children and adults alike to use creativity, problem-solving, collaboration and self-expression as they "learn with their hands." Each summer culminates with the Des Moines Mini Maker Faire, hosted at SCI on Labor Day.

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Workiva

Matt Rizai, *Chairman & CEO*

workiva

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www.workiva.com

Workiva is a software company in Ames, Iowa that created Wdesk, a cloud-based productivity platform for enterprises to collect, link, report and analyze business data with control and accountability. In just five years, Workiva achieved a rare milestone: earning more than $100 million in annual revenue.*

Workiva is an accepting environment, where employees can freely share ideas and opinions. Workiva follows a Human Asset Management approach to employee relations. It is different from traditional HR models because it focuses first on improving employees' quality of life.

Creating an extra level of care for employees has been a founding principle of the company's culture from day one. Workiva believes this is essential to the level of care that is passed on to its customers and why its customer satisfaction scores are among the highest in any industry.

Workiva customer success managers become an extension of their customers' teams as they work together through all the processes and controls necessary for high-stakes reporting and decision making.

Data-linking pioneers

What makes Wdesk different is all of the data inside its proprietary platform – in spreadsheets, word documents and presentation decks – is linked together. Wdesk records every change by every user, providing a full audit trail.

With a powerful data-collection tool, Wdesk users can gather data from any format and link it inside a centralized platform; no more emailing around rolling versions. Data is entered just once and then available to be referenced or distributed wherever it's needed.

Wdesk brings the consumer experience to the workplace. The technology features

OPPOSITE: Atrium in Ames headquarters.

ABOVE: Employees collaborate in one of many open workspaces.

RIGHT: Workiva fun run for Story County United Way.

people have come to expect in their personal lives – speed, access, sharing, linking – are now available at work with Wdesk.

Thousands of organizations, including over 65% of the Fortune 500, use Wdesk for risk, compliance, audit or financial reporting. Wdesk helps mitigate enterprise risk, improve productivity and give users confidence to make decisions with real-time data.

*Fewer than 250 of the more than 550,000 new firms created each year earn more than $100 million annually within a reasonable time frame. (Ewing Marion Kauffman Foundation, May 2013.)

“Workiva invented something so new that in just five years it’s being used by more than 65% of the Fortune 500.”

Matt Rizai, Chairman and CEO

5 TECHNOLOGY

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SOCIETY OF WOMEN ENGINEERS HELPS CLEAR MISCONCEPTIONS

Although the number of female engineers has increased since the early 1980s, when only 5.8 percent of engineers in the U.S. were women, it's still low. Currently, only 14 percent of engineers are women, according to the Congressional Joint Economic Committee.

"In the U.S., about 18 percent to 20 percent of engineering students are now women, an improvement over the abysmal numbers of 25 years ago," says Joanne McGrath Cohoon, an associate professor in the department of science, technology and society at the University of Virginia, where 31 percent of undergraduate engineering students are female.

Organizations are helping bridge that gap. Founded in 1950, the Society of Women Engineers (SWE) gives female engineers a unique place and voice within the engineering profession. The nonprofit organization has approximately 27,000 individual members, 55 percent of whom are students.

Glenna Lovig, a senior majoring in civil engineering at Iowa State University, is president-elect of the student chapter.

"I was first exposed to the Society of Women Engineers January of my senior year of high school," she said. "I attended what is now SWE University and fell in love. The girls I met at that 'getaway' were fun and welcoming, and I made a couple friends who I am still friends with today."

Lovig said she had always been interested in mathematics and science, but she didn't know what engineering was. "My parents kept telling me that I should look into engineering because I would be good at it, but it didn't click with me until I traveled to Asia the summer after my senior year of high school," she said. "I was in Kuala Lumpur, Malaysia, with my mom when I saw a big signature bridge. It was then that I realized I wanted to design bridges, and then that I knew engineering was right for me."

She wants to be a structural engineer and design bridges or modern buildings, and she said there's a variety of problems to solve in the engineering profession.

"There are no 'typical' days in engineering, because there are always new and different issues arising, and that is what excites me about my future – staying on my toes and not fall into the same routine day after day," Lovig said.

Alissa Nelson, a chemical engineering major at Iowa State and the chapter treasurer, said she also enjoys the variety.

"I like this field because of how diverse the applications are," she said. "You must take on responsibility and ownership in this industry. When you manage large projects, it is important to complete your work with high standards because many other people's work or livelihood depends upon your work."

Megan Peters, a chemical engineering major at Iowa State, is the co-director of outreach for the chapter and helps engage kids in engineering. Peters, along with many others, helps clear up misconceptions about females in engineering.

"Whenever I tell people that I'm an engineer, people say, 'Wow, good for you. I could never do that,' " she said. "This motivates and discourages me. I think there is a big misconception that engineers have to be the smartest people to cross this Earth. And having that as the norm makes it really difficult for 'ordinary' people, especially women, to feel inclined to pursue an engineering career path. For me, to be an engineer, you just need to be passionate and motivated."

Lovig said she finds that people simply don't realize there are female engineers.

"When you look at any college student on this campus, you can't tell what their major is simply by looking at them," she said. "As a woman in this field, you get used to being the minority."

She also said another misconception is that many people think she's trying to compete with men.

"Men and women are both capable of anything as long as they enjoy what they are doing, and engineering isn't any different," she said. "As an organization, we need men to continue to advocate for us and help us gain ground in the engineering world. And we need to continue to support men. It's a give-and-take relationship that works both ways, and is in no way a competition." ■

10 IMPORTANT THINGS YOU DON'T KNOW ABOUT DMACC ...BUT SHOULD

DMACC HAS A STRONG PARTNERSHIP WITH BUSINESS AND INDUSTRY. DMACC campuses partner with more than 650 business and industry representatives serving on nearly 70 different Academic Advisory committees. These groups guide and strengthen college programs, services and instructor excellence. To serve on a DMACC committee contact the academic program chairperson for more information.

BUILD CUSTOM TRAINING SOLUTIONS. Have an entire group of employees to train? No problem! DMACC can custom-build training solutions to meet the needs of your company. Topics range from Industrial Painting, Welding, Industrial Maintenance, Forklift and Construction to more office-centered skill building such as leadership, Microsoft Office, Project Management, and Real Colors™ Personality Profile. Learn more at www.dmacctraining.com

HIRE SKILLED EMPLOYEES. Through its ten campuses and centers, DMACC serves approximately 37,000 credit and 23,000 non-credit students each year, making it the largest community college in Iowa. Its 153+ academic programs and certificates are centered on preparing students for immediate employment. Contact Sara Moore in the DMACC Career Center at 515-964-6215 or snmoore@dmacc.edu for more information.

Additionally, the DMACC Workforce Training Academy (WTA) produces committed, trained, and work-ready employees for your business for the following industries: Business & Information Technology, Advanced Manufacturing, Healthcare, and Transportation & Logistics. Learn more at https://www.dmacc.edu/careertraining/

FREE ONLINE RECRUITING TOOL. DMACC offers access to a system for business partners to advertise job/internship information and search a resume database of students and alumni. Employers using this system also receive invitations to career fairs and hosted events. Learn more at http://www.collegecentral.com/dmacc.

ADMINISTERING FUNDS FOR EMPLOYEE TRAINING. Every year, DMACC manages two highly successful training programs for Iowa employers: Iowa New Jobs Training Program (260E) and Iowa Jobs Training Program (260F). These state programs help fund employee training both for current staff and for growing companies to train new employees. DMACC makes it easy for businesses to participate by managing the funds on behalf of participants and assisting with reporting requirements. Learn more at www.dmacctraining.com.

DMACC IS NOW ON DEMAND! Online classes offer students more choice, convenience, and offer affordability with the same quality instruction and nationally accredited classes. For employees with full-time jobs, this might be the perfect route to learn new skills and take advantage of that tuition reimbursement benefit. Courses last between five-15 weeks ranging from DMACC Degrees and Certificates in areas such as Business and Communications. Learn more at https://go.dmacc.edu/online/pages/ondemand.aspx.

SCHOLARSHIP PROGRAMS RECRUIT AND FILL THE GAP. Offering a needs-based scholar program is a great way to both give the gift of education and help ensure a continuous supply of employees who have the skills your business needs. For more information contact Kim Didier at 515-256-4917 or Karen Stiles at 515-964-6484.

COMMUNICATION WITH FUTURE EMPLOYEES. DMACC offers a number of opportunities for active participation from businesses. Some faculty and student groups are willing to have employers come speak about career opportunities, industry trends, and other career-related topics. DMACC also helps you distribute company information and job postings, coordinate information tables, on-campus interviews, or other on-campus recruiting events. For more information contact Sara Moore at 515-964-6215 or snmoore@dmacc.edu for more information about on-campus recruiting opportunities.

ESTABLISH CONNECTIONS FOR INTERNS. Internships are great partnerships between DMACC, the associated business, and the student. These working arrangements can provide companies with other resources to help accomplish a number of workplace tasks. For the student, internships allow for hands-on learning opportunities, allowing students to collaborate and strengthening ties between DMACC and the community. For more information contact Karen Stiles at 515-964-6484 or kastiles@dmacc.edu.

WE CAN HELP YOU GET LEAN! DMACC offers Lean Consultants to improve quality and process improvements that can translate into bottom-line results. Consultants will assess your systems and procedures to identify a baseline and develop recommendations for Lean training. Learn more at http://www.workplacelean.org/.

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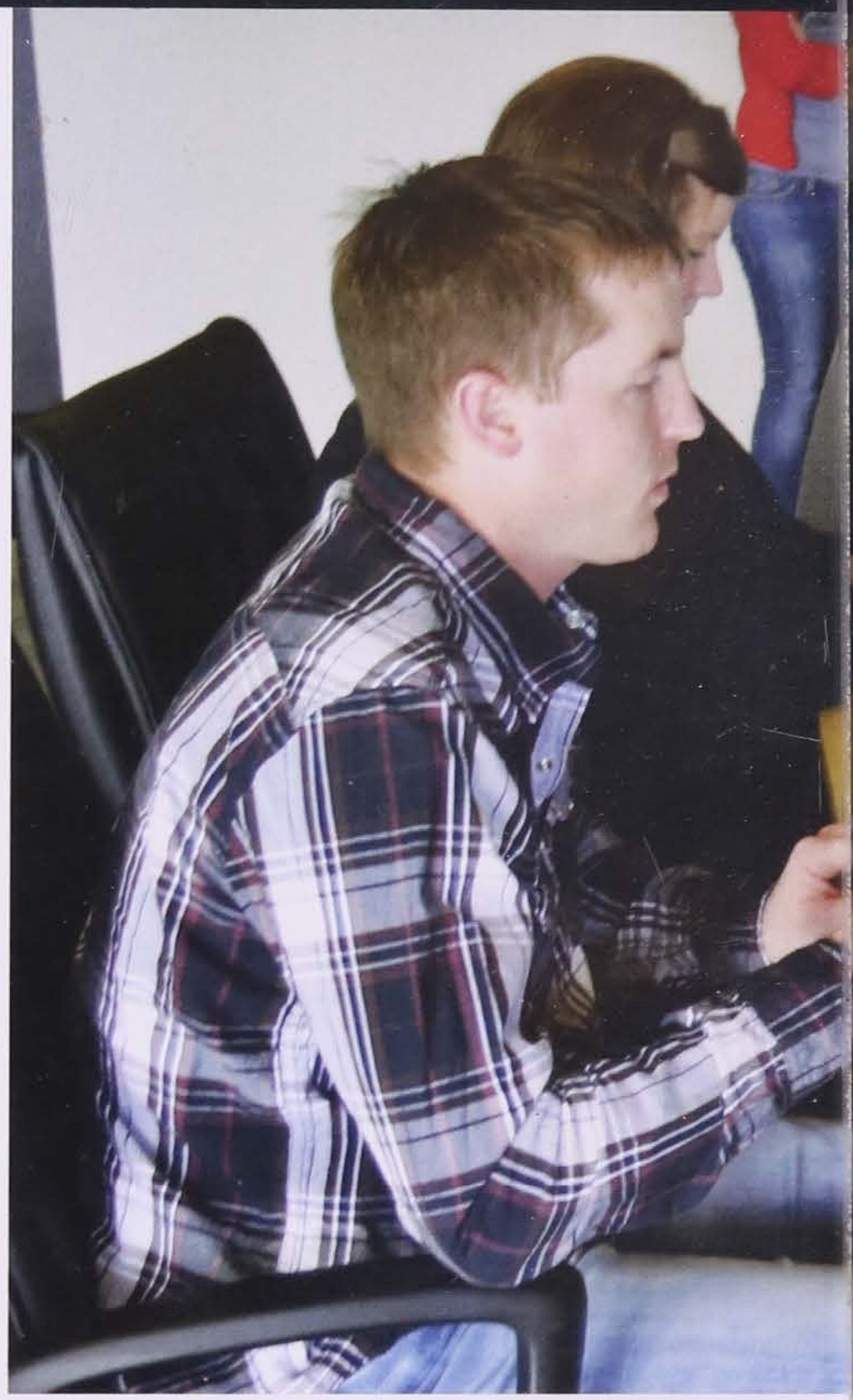
StartupCity Spencer connects aspiring entrepreneurs with mentors, resources

With 35 startup companies launched in 2014 alone, Iowa has come a long way since just 10 were launched in 2009. StartupCity, under the Startup America umbrella, is a White House initiative launched in 2011 to celebrate, inspire and accelerate high-growth entrepreneurship in the United States.

StartupCity provides a collaborative co-working and conference space; an extremely knowledgeable mentor advisory board (with experience from legal to business development to advocacy); and all of the day-to-day amenities for an extremely linked office space. It serves as a catalyst for early-stage firms, helping them overcome barriers to growth and success.

"We looked at what similar organizations were doing across Iowa and the United States, and what was making them successful with connecting with early-stage companies and the community," said Lacy Brunnette, StartupCity Spencer manager and advisory board member. "Three keys to our success and engaging with the Northwest Iowa community have been



Leaders in the private sector launched the Startup America Partnership, an independent alliance of entrepreneurs, corporations, universities, foundations and other leaders joining together to fuel innovative, high-growth U.S. startups. The Startup America Partnership is now operating around the world as UP Global, which has committed to support and train 500,000 entrepreneurs in 1,000 cities over the next three years.

The Obama administration is taking action to improve the environment for high-growth entrepreneurship across the country in five key areas:

1. Unlocking access to capital to fuel startup growth.
2. Connecting mentors and education to entrepreneurs.
3. Reducing barriers and making government work for entrepreneurs.
4. Accelerating innovation from "lab to market" for breakthrough technologies.
5. Unleashing market opportunities in industries like health care, clean energy and education.

(1) co-working, (2) events that help build community and (3) an advisory board and mentors with diverse backgrounds."

Currently, StartupCity Spencer – located right in Spencer – has three full-time companies that operate out of the space, plus three other resident companies that co-work part time.

"StartupCity folks are working on website and e-commerce building, communications solutions, 3-D printing, and ag-focused app development," Brunnette said.

They've also grown the grass-roots support, community, and participation from area creatives and entrepreneurs with monthly networking events and workshops.

StartupCity Spencer doesn't show signs of slowing down. In fact, the board is working on an entrepreneurship academy with Spencer High School, as well as exploring other ways to develop innovation, creativity and leadership by engaging with high school students.

"Our goal is to connect these young people to the culture, space and resources found within StartupCity, so that down the road, they know they have the support and relationships here that will help them build their ideas locally," Brunnette said. ■

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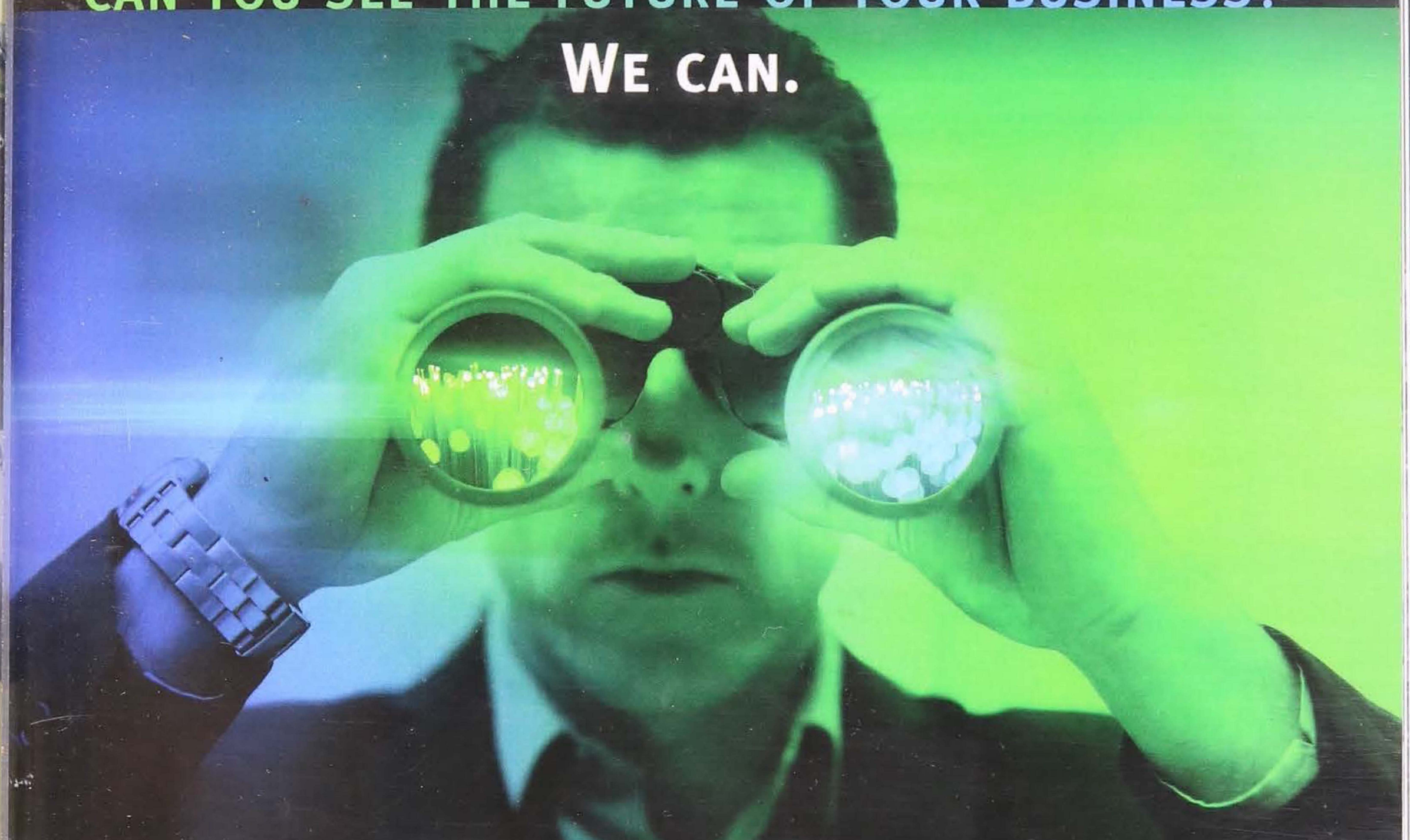

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#AVESOME

Mini Maker Faire brings together inventors and tech creators

For the second year, the Mini Maker Faire at the Science Center of Iowa brought together inventors, creators, crafters and other local and national "makers."

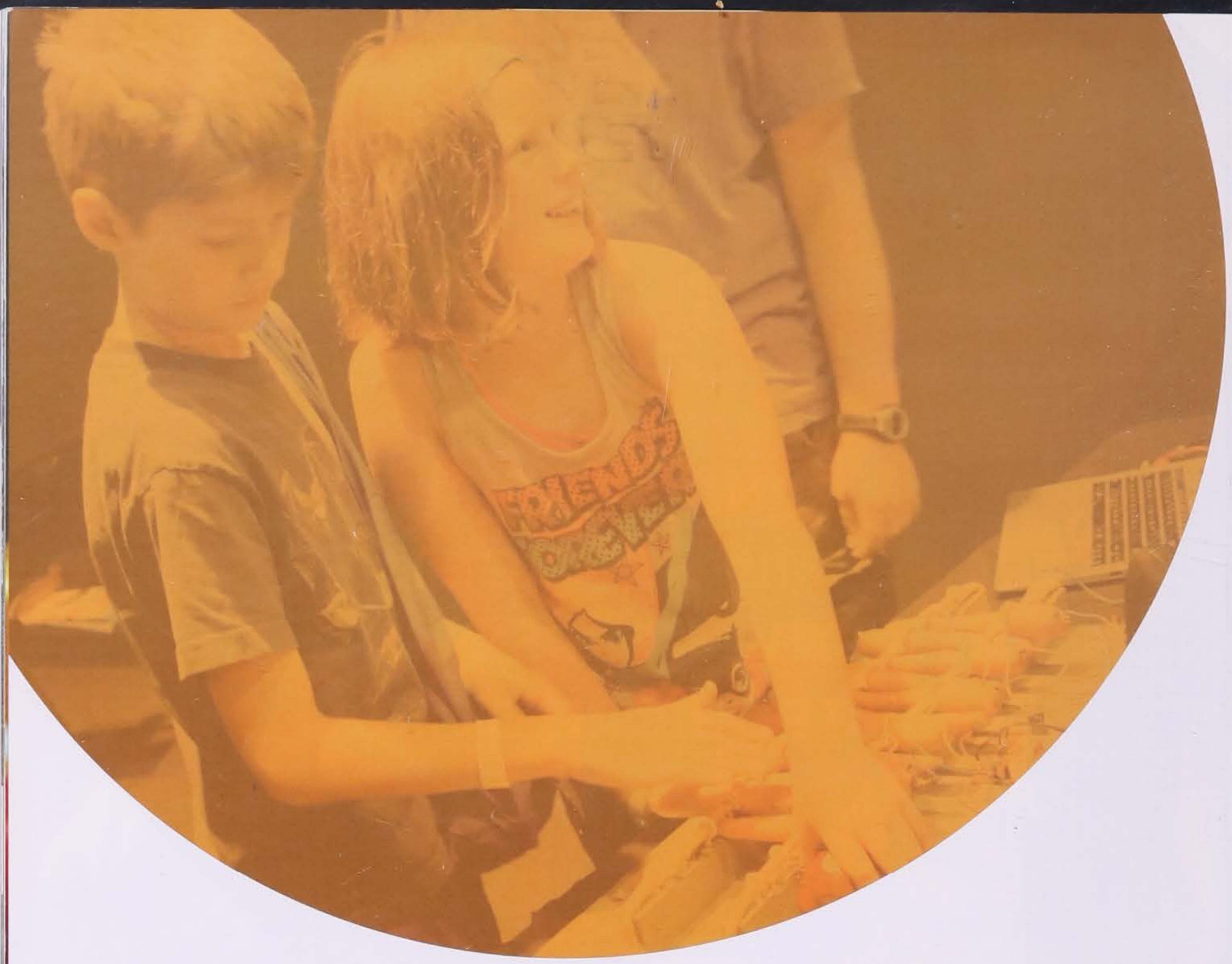
Described as "part food truck festival, part live concert, part interactive workshop and part do-it-yourself extravaganza all in one family-friendly event," more than 30 exhibitors showed off their creative projects at the September 2015 event.

"This event creates community among Iowa makers, giving them an engaging space to share ideas, solve problems and inspire the next generation of STEM professionals," said Taylor Soule, the event's communications coordinator. "The Maker Faire provides a glimpse of the myriad careers and disciplines available in STEM fields, while providing hands-on learning opportunities for makers of all ages."

Maker Faire started 10 years ago in San Mateo, California, and such events have spread worldwide. In fact, Cedar Rapids held its fourth annual Mini Maker Faire in May.

"Iowa's status as a national leader in manufacturing and agriculture inspired the Science Center of Iowa to get involved," Soule said. "Our state increasingly requires more STEM and manufacturing professionals, and the maker mindset encourages the skills that are necessary to meet growing demand in these fields."

The event included fashion designs, laser light sabers, 3-D printers, mechanical



innovations and more. Attendees met the makers and asked questions about their work. Interactive workshops and demonstrations also gave attendees a chance to explore several applications of making, including robotics, drone technology, Lego design and experimental music.

Soule said more than 3,000 people attended the Des Moines Mini Maker Faire, an increase of about 500 people from the previous year.

One of the exhibits this year included a sophisticated "lightsaber" that Troy Powers, 26, from Ames, made to replicate the hand-to-hand weapon from the "Star Wars" films. He made his first lightsaber more than 10 years ago – one he purchased from the store and took apart. This newest version includes high-powered lasers and a homemade handle.

"This event is open to everyone," Soule said. "We believe everyone is a maker!"

Groups or individuals interested in presenting a project, activity or performance can apply online. The event is seeking makers of projects such as green technology, robotics, do-it-yourself science, radio, rocketry, unusual tools or techniques, whimsical creations and more. ■

CREATING A *NEW MOVEMENT* FOR ENTREPRENEURSHIP IN IOWA

YOUNG ENTREPRENEUR CONVENTION

Coming to Des Moines, Iowa on April 22nd and 23rd of 2016, is Young Entrepreneur Convention (YEC). Brandon T. Adams had the vision to create an entrepreneurial movement for Iowa. Other motivated and passionate entrepreneurs heard about Brandon's vision and joined the team to help launch YEC. The YEC team took to Indiegogo in November, in order to crowdfund what they needed to for hosting a large event and bringing value to anyone with an entrepreneurial spirit. The Indiegogo campaign was able to raise over 150% of its original goal, while catching the attention of entrepreneurs and media throughout the US. YEC is shaping up to be a wonderful event to boost the entrepreneurial ecosystem in Iowa.

With big name speakers such as John Lee Dumas of Entrepreneur on Fire, and Jeff Hoffman, cofounder of Priceline.com, the event is well positioned to make an impact on entrepreneurship in the heart of the Midwest. A list of current speakers can be found at YoungEntrepreneurConvention.com, where you can also submit your entry to be a speaker.

YEC will have exhibitor space as well, for anyone wanting to showcase their product or service. Numerous businesses and startups from multiple industries already have space reserved. Sponsorship opportunities are still available, and there are great ticket rates for bringing larger groups to YEC. To top off the event, YEC will host one of the US' largest 1-day elevator pitch competitions.

Be sure to Follow YEC on Facebook by searching for Young Entrepreneur Convention, and on Twitter @YECDM. For further information, look to YoungEntrepreneurConvention.com, or contact Brandon T. Adams at Brandon@YoungEntrepreneur Convention.com.

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Although Nancy Williams, chief information officer of the Boys & Girls Clubs of the Midlands, majored in horticultural science in college, she quickly learned that her passion for efficiency paired well with technology.

"As a student, I was assigned to an office typing manuscripts and using microcomputers with applications like WordPerfect," she said. "So I took a microcomputer class in the '80s and did really well. My instructor helped me choose my first computer with a monochrome screen and dot matrix printer."

She learned even more about technology and applications in graduate school.

"At my first job, I became the default tech resource on our corporate sales team as we began to use more personal computers and software applications," Williams said. "I had an aptitude and interest, so I transitioned to technology training after working in the agriculture industry. I learned most of what I know on the job with mentors, classes, workshops and self-paced study. I now see technology as an interdisciplinary tool that can be leveraged for many audiences."

Williams' career choices have helped her build on her strengths and interests with little risk. She said her success can be attributed to supervisor support, exceeding expectations, making connections and maximizing opportunities.

"My experiences as a woman and an African-American woman have been that of spotting opportunities, finding advocates and mentors, doing the work, proving to others, then myself, that I can do the work and excel at it."

"My experiences as a woman and an African-American woman have been that of spotting opportunities, finding advocates and mentors, doing the work, proving to others, then myself, that I can do the work and excel at it," she said. "I had to prove myself with customers, with the team and with supervisors before I got autonomy to do what I thought best without much pushback, but I got it."

TECHNOLOGY ENABLING EFFICIENCY

CIO Role

In her current role as chief information officer for the Boys & Girls Clubs of the Midlands, Williams manages the technology services budget, supervises staff, provides information technology strategic planning, contributes to the management team, supports staff through training and direct service, engages in STEM planning and delivery, connects with community organizations and provides network, application, end-user and connected device support when needed.

When she started in 2001, the organization had three servers in three locations and about 35 desktop computers. However, many of the desktops were faster than the three servers. The Midlands region she manages includes the Carter Lake Boys & Girls Club and the Boys & Girls Club of Council Bluffs.

"We were in a break-fix cycle of operating," Williams recalled. "We received grants to get more and newer computers but were still fighting the server and network issues."

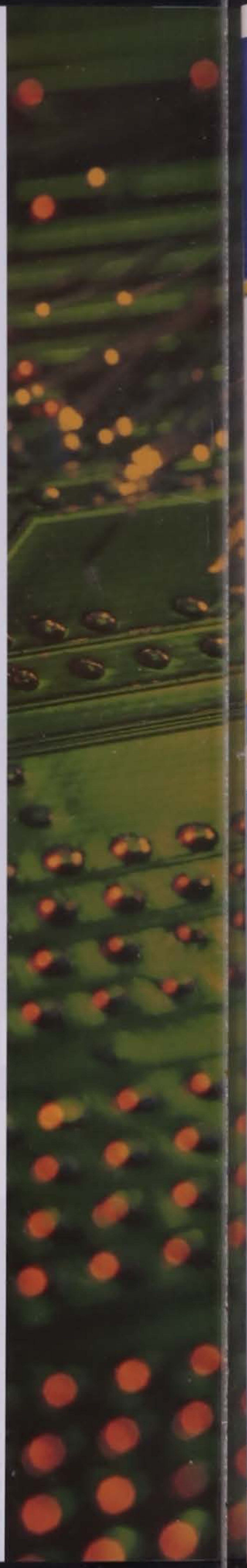
After looking at expenses, she convinced the senior leadership and the board that if they allocated the same amount of funding to a line-item budget, they could be more proactive and get much more for the same amount of money.

It worked, and within five years of the change, the organization reduced its contracted services spending by 90 percent. The nonprofit group now has 11 sites; 11 physical servers; two networks (staff and youth separately); unified communications, virtualized servers and virtual desktops for staff members who need to work anywhere on any device; and hundreds of desktop, mobile and hand-held devices.

"With better tools and more consistent network connectivity with enabled technology, our staff and our youths can do more and need much less support from the technology services team," Williams said.

The Boys & Girls Clubs of the Midlands is working on STEM projects, including eight years of Lego robotics along with a recent collaborative nationwide pilot program targeting underserved youths.

"We've implemented organization-wide solutions for our staff and youths we serve that include the same tools as our corporate partners," Williams said. "As they use the tools, they're developing transferable skills for their next educational endeavor and/or career. I love figuring out how we can make the seemingly impossible happen with lesser resources than expected. We leverage partnerships and funding opportunities to make it happen." ■



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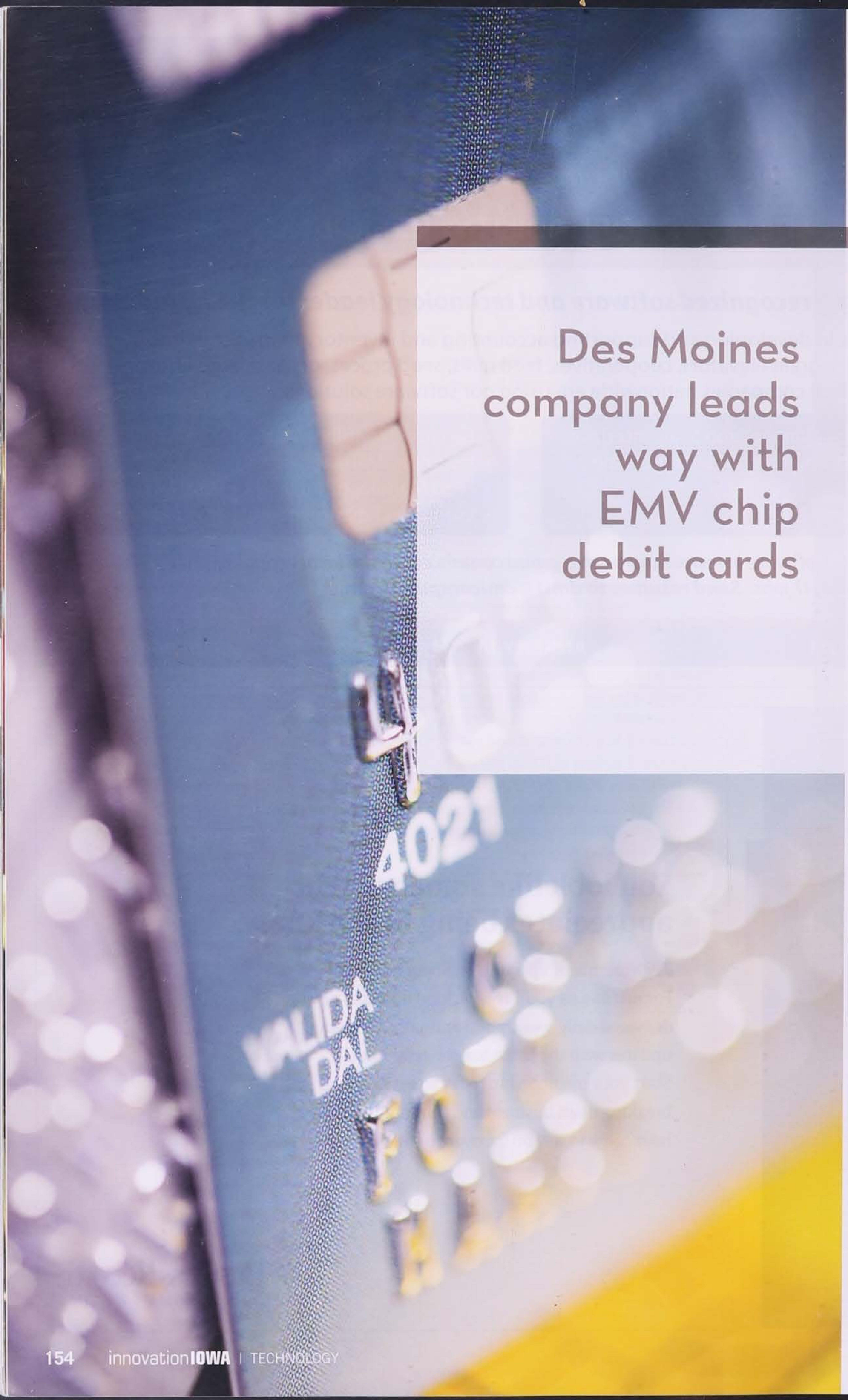
Des Moines company leads way with EMV chip debit cards



To combat a growing fraud issue, Oct. 1, 2015, was set as the deadline for banks to replace 1.2 billion credit and debit cards in circulation in the United States with new cards that contain fraud-resistant computer, or EMV, chips. In addition, retailers nationwide upgraded 10 million card readers.

If a retailer didn't have payment terminals that read computer chips by the deadline, the retailer became liable for any fraud in a point-of-sale transaction. If a retailer has chip payment terminals but a consumer is using a card that the issuer hasn't replaced with a chip card, the issuer is responsible for any fraud.

How one uses credit and debit cards has changed too. Instead of swiping the card, the consumer will stick it in the bottom of the payment terminal, much like an automated teller machine. However, the terminal won't completely take in the card like an ATM generally does; part of the card will hang out during the transaction.

The technology isn't new; it was created in the 1980s by a partnership involving Europay, MasterCard and Visa – thus the nickname EMV. Today, EMV standards are managed by six entities: Visa, MasterCard, American Express, Discover, China UnionPay and the JCB credit card in Japan.

Brian Day, director of digital strategy at The Members Group, said the upgrade is costly to merchants and card issuers, which is why this new technology is just now rolling out in the United States.

"With this new chip, merchants have a 'hard' upgrade, with costs for a new terminal," Day said, "and banks and credit unions need to issue new cards, which increases their costs too."

The U.S. Secret Service cybercrime investigations team has arrested more than 4,900 suspects associated with $1.37 billion in fraud losses in the last four years, making the United States responsible for half of the world's fraud.

The Members Group led the way in 2015 to help its client credit unions and community-based financial institutions with the upcoming change.

Based in Clive, The Members Group creates customized, technology-driven card processing and payment solutions. The payment processor now services seven of the 13 largest credit unions in the United States. In 2014, U.S. and Canadian consumers relied on TMG to process 256 million card transactions totaling $11.1 billion in spending, a 13 percent year-over-year increase.

The Members Group was among the first service providers in the U.S. to issue and complete live testing with EMV chip debit cards.

Shazia Manus, the company's CEO, said migrating to EMV chip cards is an intense and complicated process for financial institutions, particularly on the debit side, as the U.S. has a complex debit routing infrastructure unlike any other country in the world.

"As more issuers transition to chip cards to support EMV in the U.S., The Members Group has developed a streamlined process to make portfolio migration simple and cost-effective," she said. "We were instrumental in the nation's first-ever EMV credit card rollout by a credit union in 2010. Today, 98 percent of our issuer clients have completed or initiated EMV migration with our help."

Fraud prevention is another major technology strength of the company, Manus said. The Members Group uses a combination of high-tech and human solutions to mitigate credit and debit card fraud. In 2014, which was dubbed "the Year of the Data Breach," the company's fraud team saved financial institutions more than $40 million in potential fraud losses.

As for the future, Day said online and digital is where things are heading.

"It's just like other industries like music and books – moving from physical to digital," he said. "Consumers still want a blend of convenience and security."

The Members Group is helping clients "tokenize" their card portfolios. Tokenization replaces vulnerable account information with valueless tokens, taking away the incentive for fraudsters to steal information. Whereas EMV chip cards are designed to prevent in-store fraud, tokenization is designed to prevent e-commerce fraud.

"Tokenization is the first step for financial institutions to take to allow their credit and debit cards to be enrolled in emerging mobile wallet solutions, such as Apple Pay, Samsung Pay and Android Pay," Day said. ■

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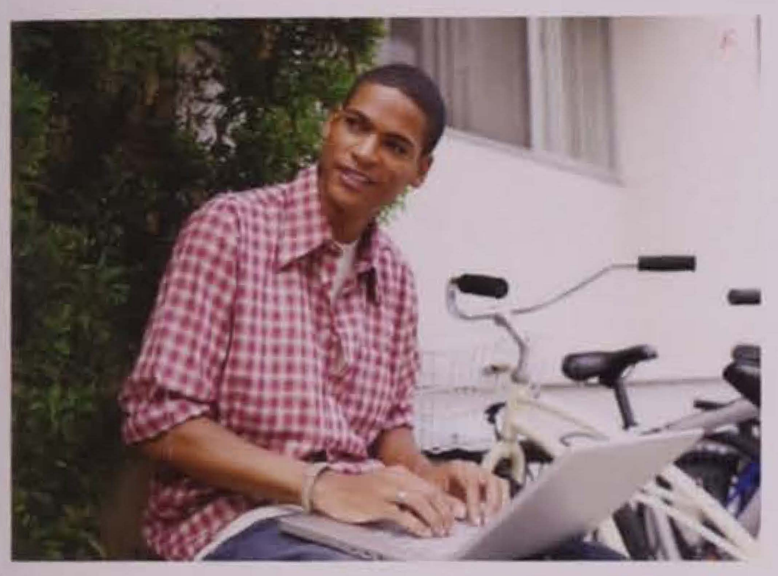
Investing in Iowa

WELLS FARGO



In 2014, Wells Fargo served its Iowa customers and communities through:

Philanthropic investing

- $3.4 million to 407 nonprofits and schools through corporate and foundation giving, including:
  - $200,000 in Priority Markets affordable housing grants to Habitat for Humanity in Cedar Rapids and Des Moines
- An additional $1.1 million to match team member gifts to more than 500 accredited educational institutions and foundations
- More than $5 million in team member contributions through the annual Community Support and United Way Campaign

Team member volunteers

- Nearly 128,000 volunteer hours contributed by team members, including:
  - Teaching financial education classes to more than 3,000 students statewide for the Teach Children to Save and Get Smart About Credit campaigns
  - Reading to 5,900 elementary students in 328 classrooms statewide and donating 3,280 books as part of the Reading First Program

Loans and investments

- $1.1 billion in 7,868 home mortgage loans, including those for low- and moderate-income families and individuals
- 3,042 small business loans, extending $189.9 million in credit to Iowa businesses
- 647 small farm loans, extending $87.3 million in credit
- $21.7 million in Community Reinvestment Act-qualified community development loans and investments for affordable housing, community services and economic development

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Des Moines

Regional leadership
Don Pearson, Lead Region President
Mike Heid, President, Home Mortgage
Terry Johnson, Wealth Management
Grant Friesth, Commercial Banking
Shane Zimmerman, Business Banking
Marta Codina, Retail Banking, West
Brett Smith, Retail Banking, East

Community Banking stores	72
Wells Fargo Home Mortgage stores	4
Retail Brokerage stores	14
Regional Commercial Banking offices	11
ATMs	102
Team members	15,000
Communities served	41

Community Leader
- Greater Des Moines Partnership 2015 Inclusion Award (large company category)
- Character Counts in Iowa, 2014 Partner of the Year
- Special Olympics Iowa Corporate Volunteer Award, 2014
- 2014 Best Bank, Best Company Workforce, Best Large Company with a Bright Future, Best Commercial Lender (Des Moines Business Record)
- United Way of Central Iowa Live United Awards: 2013 Volunteer Award

EQUAL HOUSING LENDER

All data is for 2014 unless otherwise noted. Updated 05/15.
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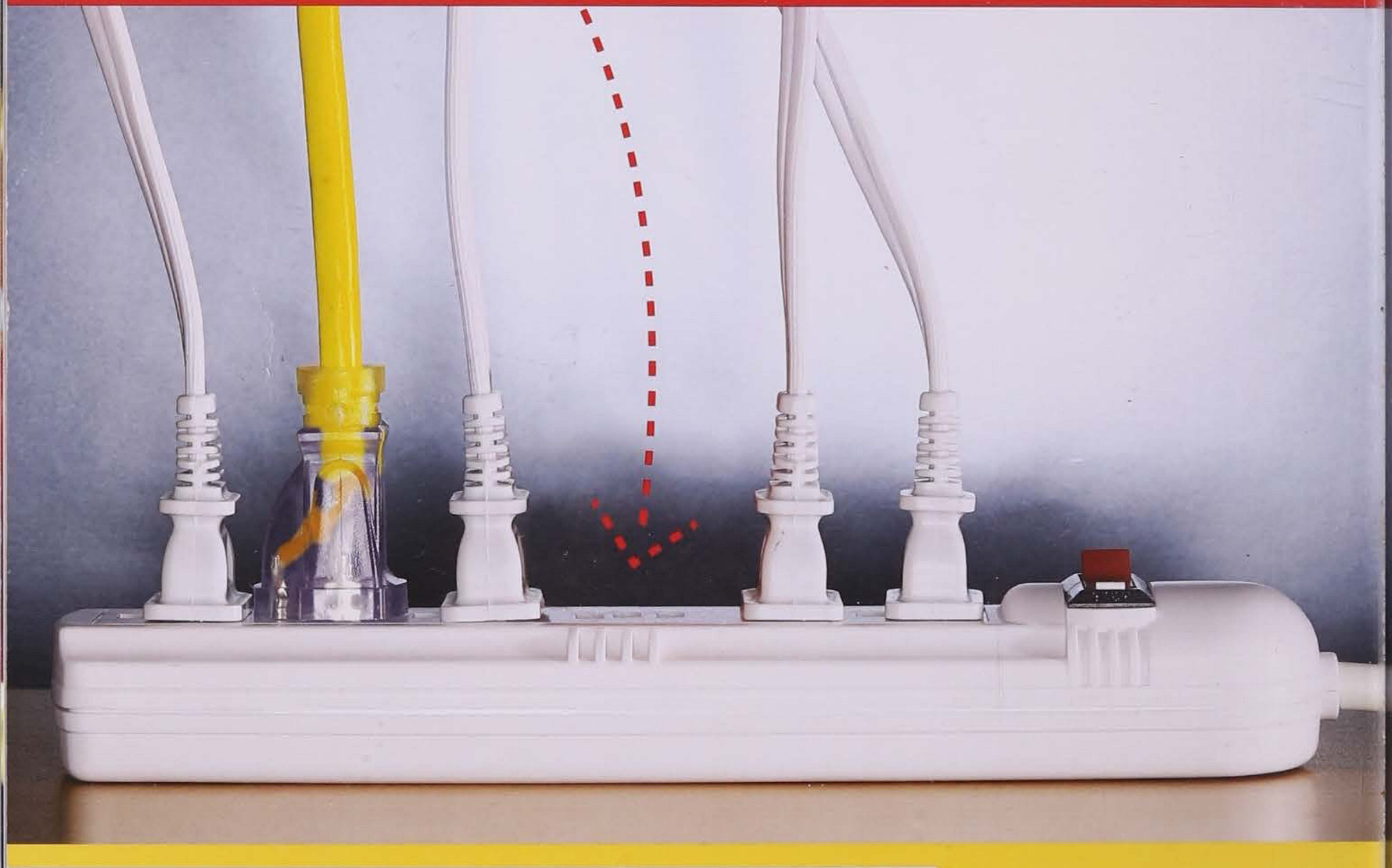

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