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Iowa State University Center for Industrial Research and Service

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## A recipe for success

By Tim Sullivan, CIRAS

Here's a great recipe from Rockwell Collins: Start with a company that's a worldwide leader in the design, production, and support of communication and aviation electronics. Add 30 to 40 engineering students. Sprinkle in several exciting, real-world projects. Gradually bring to a rolling boil over the summer, and voila, you've got something great called the Summer Engineering Project Program—or SEPP for short.

Initiated in 1995 as a recruiting opportunity for the company and a growth opportunity for students, SEPP gives college juniors, seniors, and graduate-level students a chance to work side-by-side with experienced engineers on projects that have direct impact on business.

This year, the program will engage 40–45 students from Iowa State University, the University of Iowa, North Carolina A&T, Purdue University, Rose-Hulman Institute of Technology, the University of Illinois, the Georgia Institute of Technology, the University of California–Irvine, and the University of Texas–Dallas. They will work on 19 different projects at Rockwell facilities in Cedar Rapids and Coralville, Iowa; Richardson, Texas; Tustin and Irvine, California; and Melbourne, Florida.

Katie Lehmann, a senior engineering student at the University of Iowa, benefited in several ways from her 2006 SEPP experience.

“You can specialize in one thing. That's all I did. I learned so much about one particular thing and became an expert on it,” says Lehmann, who is now working as an intern at the Rockwell Collins Coralville facility. “You work as a team, experience ups and downs, and learn a lot of teamwork.”

Lehmann's team developed a database for a microchip-soldering machine. The database enables employees at all Rockwell Collins' facilities to access 1,000 microchip profiles. Previously, employees had to develop a new profile every time they created a new part.



Katie Lehmann with the SEPP team project for Rockwell.

“Before, it would take four hours to develop a new profile. Now they can go to the database, download it, and be ready in 15 minutes,” says Lehmann. “I'm interning in Coralville right now, and one of the guys here said he uses the database all the time. It's a good feeling to know you did something useful.”

At the end of each summer session, students present their projects via poster boards and other audiovisual media, discussing the scope and results of their projects with their peers and members of a Rockwell Collins leadership team.

Lehmann will participate in SEPP again this summer and is looking forward to beginning a new project.

### Call for projects

Each year, Rockwell Collins business units that want to take advantage of the program identify specific projects, departments, managers, and mentors willing to assist students through the process. They also identify the specific skill sets needed to ensure that the project is completed.

“We really try to fit the student to the project,” says Amy Eglseder, recruiting specialist for Rockwell Collins' university relations. “We

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### CIRAS Mission Statement

The mission of CIRAS is to improve the quality of life in Iowa by enhancing the performance of industry through research, education, and technology-based services.

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The Center for Industrial Research and Service (CIRAS) provides education, research, and technical assistance to Iowa industry through partnerships with Iowa's universities and community colleges, government agencies, and professional associations. Assistance is supported in part by the DoC/NIST Manufacturing Extension Partnership, the DoD Procurement Technical Assistance Program, and the DoC/EDA University Center Program.

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# Engineering faculty create win-win-win project

By Joseph Papp, CIRAS

John Castings, corporate manufacturing engineering director at Vermeer Manufacturing, had a pressing issue. For assistance, he called CIRAS, and the area account manager there, in turn, introduced him to Jim Heise, a member of Iowa State's mechanical engineering faculty. Heise provided the assistance Castings needed and in the process created a win-win-win project.

## The winners

The immediate winner of the Vermeer project was the company itself. The project resulted in the purchase of equipment needed to balance demand on initial operations and provided a valuable cost savings. Winner number two was Heise. This type of assignment enables Heise to stay current with real-world engineering challenges and provides the contacts needed to bring case studies and industry problems into his classroom. The third and possibly the biggest winners were Iowa State's mechanical engineering students, who were able to use the project to make a connection between theory and application.

Following is a description of that project and its benefits.

## Defining the project: Quick response

Castings needed assistance to help meet critical deadlines on a number of projects. He called CIRAS account manager Joe Papp, and two days later they met at Vermeer where Castings provided background on the company and the project he had in mind.

## Project objectives and key issues

Castings wanted an assessment of options for initial metal fabrication activities and related workflow issues, including punching, laser cutting, flame cutting, and related support (material handling, scrap, etc). He had a direction in mind but wanted "outside eyes" to review the options, thus ensuring that all critical aspects of the activities had been considered. The options included:

- Continue current approach—provide initial fabrication activities at each profit center/facility
- Centralize initial fabrication at one facility within the current Pella manufacturing complex
- Centralize initial fabrication at one facility not within the current Pella manufacturing complex
- Subcontract operations off-site

## Project scope

The project addressed initial material processing at each of Vermeer's seven manufacturing facilities. Each facility independently controls fabrication and assembly of product families, including initial fabrication equipment. On occasion, when capacity is inadequate for immediate demand, plants share the equipment. Kanban-type techniques control the movement of material. The facilities are all dedicated to lean manufacturing principles. Although there is consistent overall demand by product family, the demand on equipment can be highly variable due to differences within product families.



Vermeer's new ultra high performance, laser-processing machine

## Proposal and action

A proposal was developed and approved. Deliverables included a written report and availability for on-site meetings. Stipulated in the proposal was completion of the project by a date that was less than six weeks from Castings' initial inquiry. The schedule was inarguably aggressive, but, in the end, it was met.

## Project implementation

Heise not only agreed to participate in the project, he provided a spreadsheet that allowed Castings to consider various "what if" scenarios. Heise's spreadsheet compared alternatives by allowing Castings to change many of the variables controlled by Vermeer. Some of the many factors considered in the spreadsheet analysis were unit demand by product line, material-handling requirements (for raw material and finished goods), labor content (both direct and indirect), overtime, facility options, capacity utilizations, and maintenance cost.

## Results

The spreadsheet analysis and final report led to the purchase of a high-performance, laser-processing machine that is now being installed at Vermeer. Features include high-speed controllers that read ahead of motion. The enabling software is based on a new read-ahead theory, a unique feature of the machine manufacturer, Yamazaki Mazak. Cutting speed and acceleration for each cutting point are automatically calculated from the programmed contour, predicting the optimum speed and power to go to the next cutting point. This provides the basis for high-speed processing and high-precision cutting. The machine also has automated functions that enable less-experienced operators to achieve high productivity and quality. In addition, it can handle a variety of materials from thin to thick worksheets as well as painted galvanized sheet plates.

Heise's work will result in an estimated annual savings to Vermeer of \$350,000. Shop operations are also making greater use of technology, which, in turn, is expected to

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# Manufacturers' survey: Business priorities

By Steven Winter, CIRAS, and Liesl Eathington, Department of Economics

In our previous article, “Manufacturers’ survey: Participants profile,” we presented a summary of the contributors and their top responses to our survey questions on manufacturing in Iowa. These different views provided by manufacturers on the state of their business were important in helping us determine how various issues ranging from regulatory compliance to employee training are affecting Iowa’s manufacturing industries. A copy of this article can be viewed on the CIRAS website at <http://www.ciras.iastate.edu/publications/CIRASNews/2007Winter.pdf>

In this article we’ll examine in more depth the survey subjects manufacturers find most challenging: *Improving Quality* and *Changing Corporate Strategy*. We’ll also review the only survey topic that produced a distinctive difference in responses across any of our participant grouping categories used to analyze trends: *Innovation/Product Development*.

As we discuss these three issues in the next sections, we’ll explain why each was identified as important relative to the many other topics surveyed. Then we’ll present the interrelated priorities that participants identified as closely related to the specific issue. These relationships will also be shown visually as a flowchart connecting the main subject to other priorities manufacturers constantly chose in their answers. Each section will close with a comment regarding the material to be presented in our final article on the programs and services CIRAS and other state organizations are developing and offering to manufacturers to meet the challenges identified in the survey.

We would like to note for the reader’s consideration that as we present the topics of this article we identify them as being important to all Iowa manufacturers because our survey results were very consistent across the different groupings of facility size, location and industry subsectors used to analyze the responses. A clear outcome from those responses was that the challenges facing a small manufacturing facility in a rural county are similar to those facing a large manufacturer in a metro area. However, depending on the size of a facility, the way a manufacturer plans to meet those challenges will not be the same.

## Improving Quality

“Quality in a product or service is not what the supplier puts in; it is what the customer gets out and is willing to pay for. A product is not quality because it is hard to make and costs a lot of money, as manufacturers typically believe ... Customers pay only for what is of use to them and gives them value. Nothing else constitutes quality.” Peter F. Drucker, founder Leader to Leader Institute, author, Presidential Medal of Freedom recipient.

The challenge to improve the quality of their products and the services they provide to their customers is the primary concern of Iowa manufacturers responding to our survey. This single issue dominated every other business area we questioned including the commonly targeted needs of conducting better marketing research, improving employee training, defining competitive positioning and

implementing lean manufacturing. Figure 1 displays an example of a top quality objective identified by participants and the resulting trend in the selection of other business priorities associated with the quality objective.

Our analysis of responses shows that the term “quality” can be interpreted in different ways. For instance, some responders’ comments defined “quality” as producing a superiorly manufactured product meeting specific market requirements. Some focused on the customer’s perception of the product’s value. Still other comments considered quality as an indication of the overall impression of the manufacturer in the marketplace. While it’s clear that the potential exists for manufacturers to have differing goals, the selection of “High Quality” as a top marketing strategy illustrates how the importance of this specific quality objective compares to other often selected business priorities.

The following is a summary explanation of Figure 1, where the quality objective is located in the far left box of the figure and bulleted comments below discuss the association with the business priorities located in the immediate boxes to the right.

- Companies choosing a “High Quality” market strategy responded that their top three corporate-wide innovation activities in the two years prior to the survey were, in priority order: 1) reducing the time to respond to customer needs; 2) increasing the capacity of production or service offerings; and 3) improving the quality of products or services.
- These companies also reported that their near-term (two-year) focus on operational-related innovation activities would be prioritized towards improving production capabilities.
- In general, companies choosing “High Quality” rated many of the training related questions significantly higher than companies choosing a “Low Cost” marketing strategy. This rating trend was noticeable in the following areas: 1) Regarding major changes in business practices over the past two years, companies choosing “High Quality” also indicated a high occurrence of conducting “Internal or external training of personnel in innovative or new initiatives” in addition to the top selected practice of adopting a change to “Corporate Strategies.” 2) Companies indicated there should be increased legislative initiatives to “Increase the capacity for community college worker training programs.” There were high ratings for near-term employee training in the areas of 3) “Advanced technical skills such as Quality Control and Preventative Maintenance” and 4) specific quality related training regarding the “Cost of Poor Quality.”
- Regarding overall business performance, over the two years prior to the survey companies that chose a “High Quality” marketing strategy reported a greater percent increase in annual sales revenue and job growth over the average of all companies surveyed. However, there was not a noticeably greater percent increase in annual return on sales.

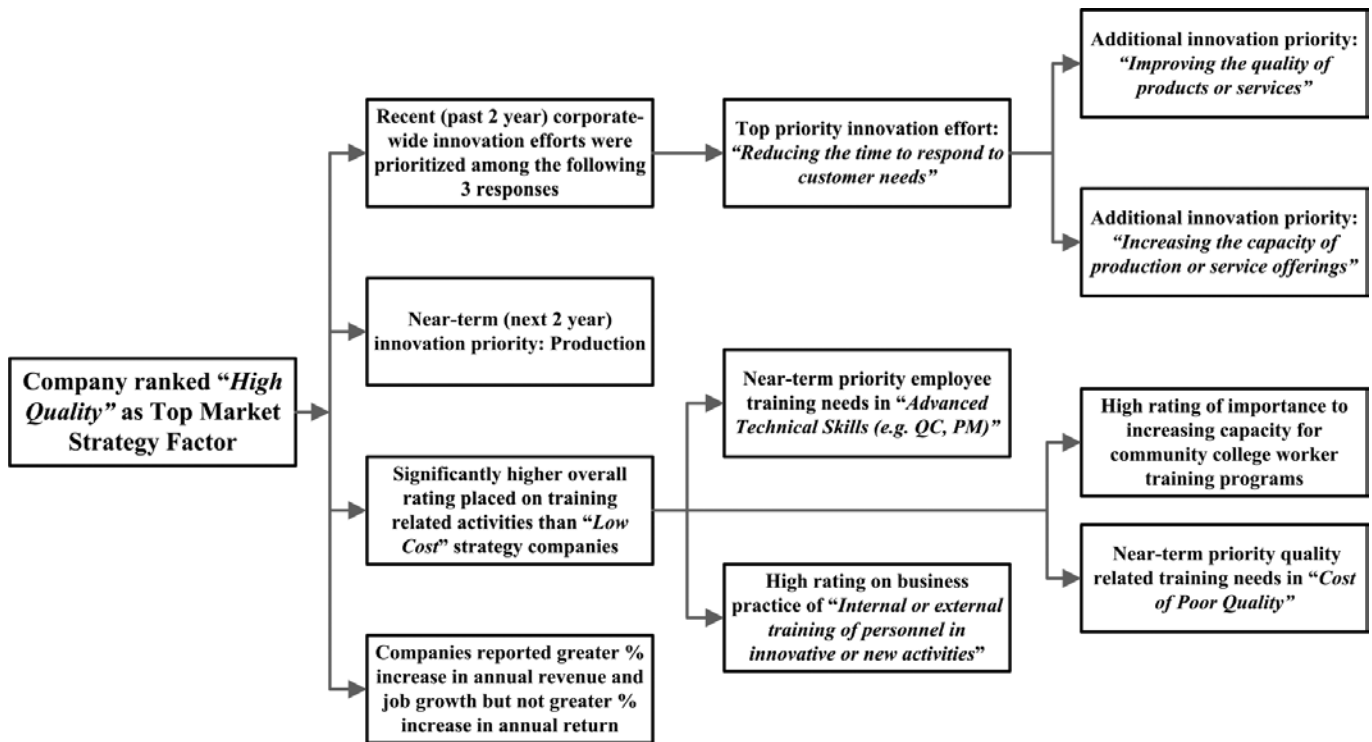


Figure 1: Common business priority trends for companies choosing “High Quality” as their top market strategy factor.

For state organizations there are several immediate takeaways from the high priority manufacturers placed on the subject of quality. Manufacturers need support in their efforts to obtain and sustain a high quality driven organization. Whether their goals are related to improving a product/service offering or creating a new organizational culture, the offerings from CIRAS and others must be diverse enough to include the entire set of needs identified in our survey results. It’s no secret to anyone in business today that the minimum expectations customers have about the level of quality for the products and services they purchase are constantly increasing. Because of this, the challenge for organizations providing service within the state will be to support the efforts of a manufacturer to implement sustainable corporate-wide quality initiatives that produce results that meet their customer’s expectations.

### Changing Corporate Strategy

“Profit in business comes from repeat customers, customers that boast about your product or service and that bring friends with them.” ... *W. Edward Deming, statistician, professor, author, consultant, native of Sioux City, Iowa*

To understand how companies are adapting to the constantly changing business environment, we asked manufacturers about significant changes they had recently undergone in their business practices. There were a number of high rated responses to this question, and many companies indicated they had implemented multiple changes. However, the primary practice that companies changed to better compete was implementing new corporate strategies. These included such initiatives as expanding into new markets or industries, changing competitive approaches, and implementing new corporate planning methods. While the topic of implementing a “New Corporate Strategy” did not dominate the entire span of our survey questioning as did the pursuit of “High Quality,” companies that committed themselves to change

did consistently choose other priorities that reached throughout their organizations. Figure 2 displays how undergoing a change in corporate strategy related in the selection of other business priorities for participants.

Along with improving quality, a change in corporate strategy was also chosen as a top priority by manufacturers, affecting survey participants of all sizes, subsectors, and locations throughout the state. With almost 40% of all participants indicating they altered their corporate strategy, it was an action that impacted all sectors. Compounding these actions that allowed them to enter new markets and adjust their business approaches, almost all of these companies implemented additional changes at their facilities. They made changes in organizational structure, the partnerships they formed, their management techniques and marketing research methods. To illustrate the extent of seeming unrest in business operations experienced in the two years prior to our survey, 10% of the responders acknowledged that their manufacturing facility was under new ownership.

The following is a summary explanation of Figure 2, where the corporate strategy change is located in the far left box of the figure and bulleted comments below discuss the association with the business priorities located in the immediate boxes to the right.

- In selecting a corresponding strategic marketing factor, most companies that changed their corporate strategy chose “High Quality” over “Low Price” to meet their customers’ requirements. Further evaluation of the selection of initiative topics related to quality, customer satisfaction, capital investment, and service provisions could be an indication that many firms are choosing to compete on a value-based or premium price product strategy over strictly lowest selling price.
- Similar to the results from the previous section, the choice of a new corporate strategy prompted companies

- to indicate they have placed a high priority on the need for a variety of employee training over the next two years.
- A change in corporate strategy prompted companies to higher than average rates of investment in new capital. This higher investment also related to innovation efforts in operational areas. Their recent efforts over the two-year period prior to the survey were directed at increasing production capacity or service offerings, and their anticipated priority for the next two years will also be directed to production.
  - Regarding overall business performance, a trend similar to the previous section was noted. Companies changing their corporate strategy reported a greater percent increase in annual sales revenue and job growth over the average of all companies surveyed. However, there was not a noticeably greater percent increase in annual return on sales.
  - The effort invested in product development was balanced, regardless of other factors like size, industry sector or location. For the most part, this activity was done on-site, according to survey results.

Major changes in business strategy will have both immediate and long-term implications for a company. The “now” benefits include an increase in sales revenue and employment from entering new markets or launching new products. Respondents realize that sustaining these benefits requires a commitment to the factors that lead to success: capital investment, employee training, market growth and innovation development. An initial finding from the information presented in this section shows that many of the needs of manufacturers to improve quality are similar to their needs to sustain improvements resulting from new corporate strategies. These overlapping

priorities are an indication to CIRAS and other groups that manufacturers are making the organizational changes necessary to pursue their improved quality objectives and that support to manufacturers for either of these critical initiatives can provide wide-ranging benefits.

**Innovation/Product Development**

“Low cost, high quality and rapid product deployment no longer create market advantages for companies. Rather, they represent the baseline requirements just to enter the game. Prosperity in this global economy is tied to the ability to innovate – to translate knowledge into new products, processes, and services.” ... *U.S. Council on Competitiveness.*

In the sections above, the priorities for improved quality and new corporate strategies were common across all corporations, regardless of demographics such as size, industry subsector, and location. A goal for conducting a survey of this nature is to find topics that are important to all manufactures within the state. Common needs identified by participants can present state organizations with an opportunity to provide focused programs with far-reaching benefits throughout the entire state. Another goal is to find topics that generate a distinct divide between the approaches the participants use to compete in the marketplace. For this survey, that topic of divide was the priorities manufacturers placed on future innovation efforts and how those efforts might impact their future product offerings.

In our previous article we noted several facts regarding the profile of our participants. Facilities with fewer than 20 employees represented a slight majority (35%) of responders, approximately one-third of responders have 20 to 99 employees at their facility; the remainder

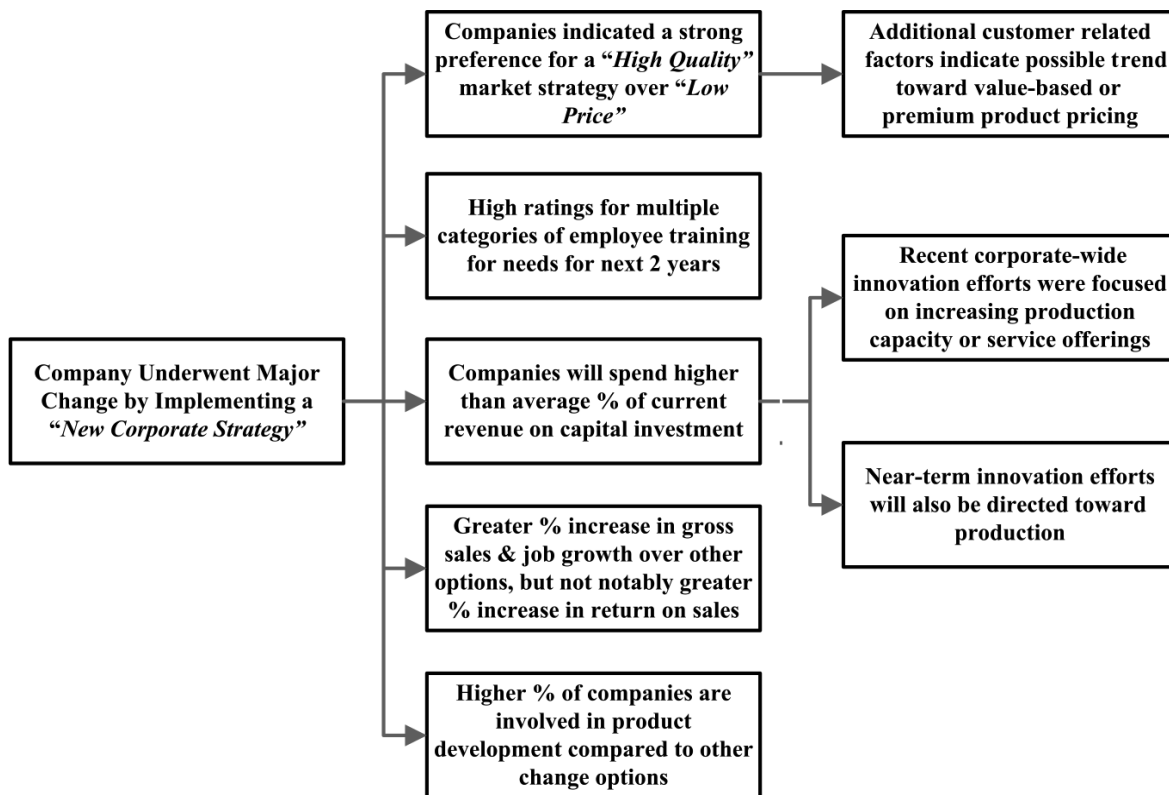


Figure 2: Common business priority trends for companies ranking “New Corporate Strategy” as their top area of change in business practice.

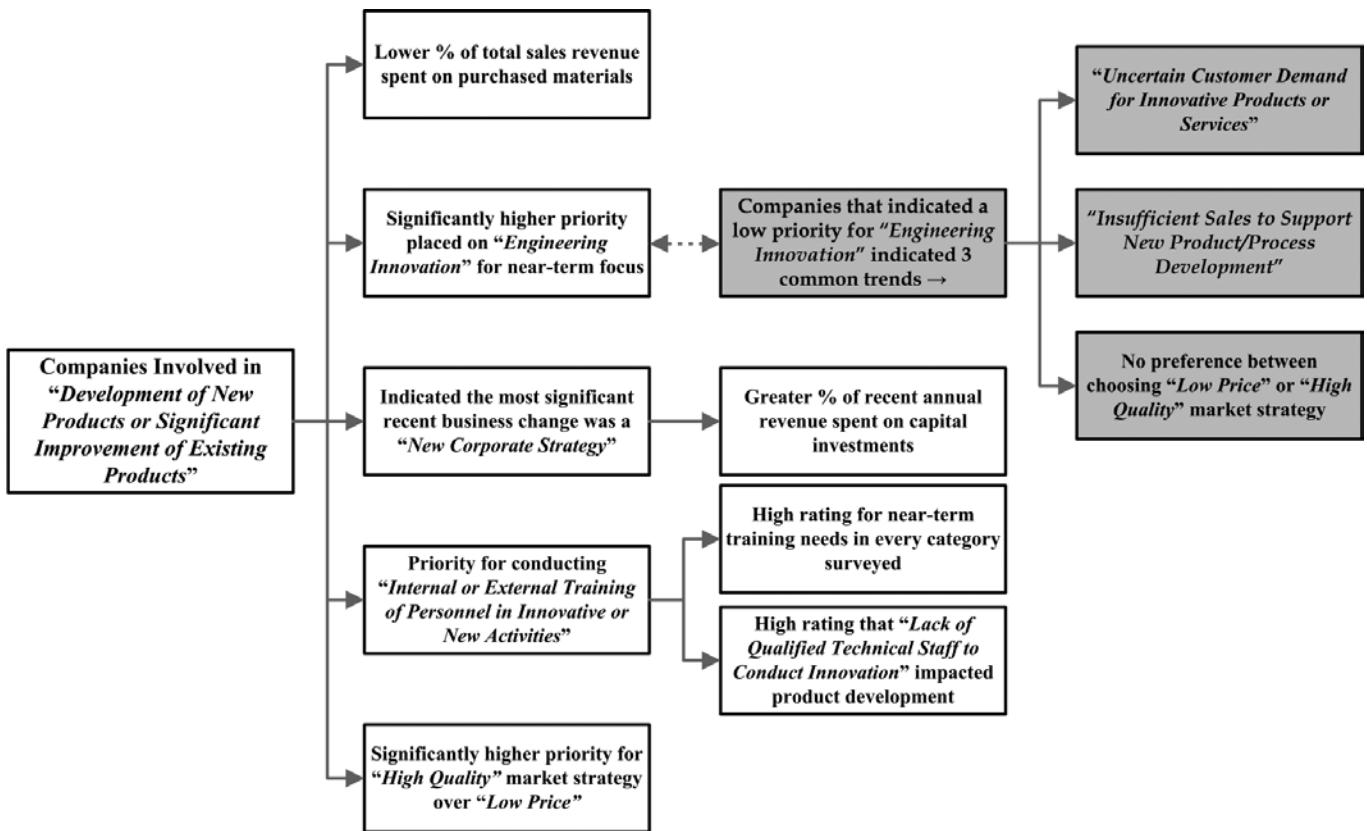


Figure 3: Common business priority trends for companies conducting on-site product development.

employ more than 100. In addition, when asked whether a company participated in the development of their products at the facility being surveyed there were no distinctive patterns in the analysis of responses. Regardless of grouping based on size of workforce, location of facility, age of operations or even industry sub-sector, the likelihood of a company developing its own products was well matched with the profile distribution of all participants.

However, when given a list of 10 common functional areas and asked to prioritize where a company will place its innovation efforts over the next two years, there was a distinct difference in responses based on the number of employees located at a facility.

For companies with fewer than 100 employees, top priorities for innovation will be focused in the following areas:

- 1) Production
- 2) Customer relations
- 3) Purchasing
- 4) Shipping and logistics

Their lowest-rated area for innovation from the list of options was “Engineering.” These results were similar across industry sub-sectors and location of the facility within the state, and whether or not a facility participated in product development.

In contrast, companies with 100 or more employees indicated their top priorities for innovation will be focused on the following areas:

- 1) Production
- 2) Customer relations
- 3) Engineering
- 4) Shipping and logistics

“Administration” was the lowest rated of the 10 functional areas.

The primary finding from this comparison of innovation priorities is, regardless of facility location or industry sub-sector, the only significant difference between companies with less than 100 employees and those with 100 or more is the importance assigned to engineering innovation.

Figure 3 displays the resulting trend in the participation of a facility in their product development and the selection of other business priorities associated with this activity. It also displays several related factors associated with companies indicating a low priority for engineering.

Approximately 80% of companies reported that they conducted product development on-site. A limitation associated with this survey was the inability to gather detailed information on the level of product development. Comments indicated that these responsibilities ranged from minor modifications for production to complete life-cycle control. However, it was clear that all companies are primarily concerned with how they produce those products and how their customers perceive their value.

The following is a summary explanation of Figure 3, where the far left box indicates that a reporting facility conducts on-site product development; the bulleted comments below discuss the association with the business priorities located in the immediate boxes to the right; the highlighted boxes to the far right of the figure represent common factors that inhibit product innovation for companies with a lower-than-average priority for engineering innovation.



- Compared to companies not performing on-site product development, many companies anticipate spending a lower percentage of total sales for the current fiscal year on purchased goods used to manufacture their products.
- A significantly higher priority was placed on engineering innovation compared to facilities that did not conduct product development. However, there were some notable trends among facilities that were engaged in product development but also rated engineering innovation low. These companies rated several common inhibitors to their innovation efforts: “*Uncertainty of Customer Demand for Innovative Products or Services*” and “*Insufficient Sales to Support New Product/Process Development Costs*” highly impacted their business decision. Also, there was no distinction in these responses between companies that chose a “*Low Cost*” or “*High Quality*” marketing strategy.
- For facilities involved in product development, the most significant change in recent business practices was a “*New Corporate Strategy*,” although the reverse was as definitive. As noted in the previous section, this group also recently invested a higher percentage of recent revenues into capital improvement.
- There was also a noticeable relationship between on-site product development and changing business practices to include more “*Training of Personnel in Innovative or New Activities*.” Additional trends indicate that these companies placed higher priorities on every category of training needs questioned for the next two years, and also noted that a “*Lack of Qualified Technical Staff to Conduct Innovation Activities*” had a high impact on their product development efforts over the past two years.
- Similar to responses in the previous sections, companies performing product development tended to pursue a market strategy of “*High Quality*” over “*Low Price*”.

The global marketplace has increased the competition for manufacturers in Iowa and discerning customers

continually drive companies to produce innovative products. To support Iowa manufacturers, CIRAS and other business outreach organizations need to continue to understand the challenges facing companies in their efforts to become more innovative.

As we evaluated the trends and relationships for this survey, we did so with two primary goals. First, we worked to identify the common needs for all manufacturers. Several examples of these needs have been expressed in the discussions on quality and corporate strategy. Secondly, we wanted to investigate the dependencies between different business practices. For example, we found that companies not understanding their customers’ needs and the potential for new sales are issues impacting the priority they place on engineering innovation. This type of input can be used to by state organizations to improve their programs to support manufacturers in the development and implementation of innovative practices.

### **Service Initiatives**

This article, as well as the previous one in this series, has presented information on the current state of manufacturing in Iowa, using survey responses to generate a comprehensive baseline of activities, performance and initiatives. In the next and final article, we will present strategies that CIRAS and other state organizations are using to allocate resources to the issues that Iowa’s manufacturers have said are vital to them. We will discuss current programs to help companies build a competitive advantage as well as proposed programs to support an enterprise-wide commitment to sustaining that advantage.

*For more information on the Manufacturer’s Survey please contact Steven Winter at (641) 613-3297; [sjwinter@iastate.edu](mailto:sjwinter@iastate.edu).* ■

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### **Win-win-win project**

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enhance productivity and throughput. Heise was a winner, as well. He was able to take a real-world project into his classroom and create a solution that may lead to further research and publication. In addition, he satisfied a professional and accreditation requirement through his industrial outreach activities. Heise’s students benefited by exposure to a real-world project that facilitated discussions on engineering issues and prepared them for jobs in industry.

Allen Tewes, a senior mechanical engineering student from Hartley, Iowa, found the classroom examples used by Heise valuable. “By bringing real-life situations into the classroom, teachers are able to get students to think in real terms,” Tewes said. “It can be easy to just focus on the formulas and theories of engineering, but these are less useful to students if they don’t know how to apply them to problems once they’re working in the real world.”

### **Conclusion**

Heise is certainly not the first faculty member to lead successful industry projects through CIRAS. Others have preceded him, and there will be more success stories in the future. Iowa industry and Iowa State faculty and students will continue to benefit from this type of activity. It is a winning opportunity for everyone.

“What CIRAS provides is an efficient use of university resources as an investment for both the state and industry. Providing this kind of support will help insure industrial success and growth, as well as provide the state with economic growth and increasing revenues,” says Jim Heise.

*For more information, please contact Joseph Papp at 515-231-1452; [jpapp@iastate.edu](mailto:jpapp@iastate.edu).* ■

# Iowa company plugs into Iowa State

By Robert Mills, Communications Specialist, IPRT

Van Beek Natural Science, LLC, is a small company with large ambitions. A producer of all-natural animal health care products, the Orange City, Iowa, company is selling its products worldwide. Its ambitions for new products and improved quality are one step closer to becoming reality, thanks to help from Iowa State University's Institute for Physical Research and Technology as well as CIRAS.

"When you say Iowa State, people—prospects and customers—take a real interest," says Brett Mulder, director of operations. "As an Iowa-based company, we are proud of this fact and are happy to brag about the cutting-edge work done at Iowa State University." Mulder adds that research for a small company in the biotechnology field is essential but very expensive. IPRT has an R&D cost-sharing program that can help relieve some of that burden. "The cost-share arrangement has allowed us to do more research, and the expertise that we have plugged into on campus has opened up synergistic applications that we may never have discovered on our own."

## Research means new products

Mulder worked with Lynne Mumm, a technology commercialization associate at IPRT Company Assistance, to investigate the possibilities of doing research with Iowa State. Mumm has put the company in contact with experts in Iowa State's agronomy and animal science departments as well as its Center for Designer Crops, Plant Sciences Institute, and other organizations. "She has been great about doing much of the legwork for us on our projects," says Mulder.

For instance, Van Beek currently uses a primary essential oil in a line of products as part of its active compound. But it wanted to study other essential oils that would be even more effective against certain strains of bacteria. So Mumm enlisted Byron Brehm-Stecker, an assistant professor in Iowa State's food science and human nutrition department, to conduct a study of some promising compounds. Brehm-Stecker also combined another natural enhancer to these compounds to further improve their effectiveness.

"The research that Brehm-Stecker did for us was excellent," Mulder says.

"The end result could be that less compound needs to be used, with the ultimate market benefit of reduced costs to food producers who use our organic feed additives. This can help to make Van Beek Natural Science products even more cost competitive." He adds that the research will lead Van Beek to develop and market a new generation of even more effective products at reduced costs. Brehm-Stecker also helped the company explain his research methods to Van Beek's customers in Japan.

## Certified quality

In addition to the work done by IPRT, CIRAS worked with the company to prepare it for ISO and HACCP certification, two essential benchmarks of quality for companies selling products in the international market. "Once we do get ISO and HACCP certification, we will be able to keep our international business going and more aggressively go after new opportunities," Mulder says.

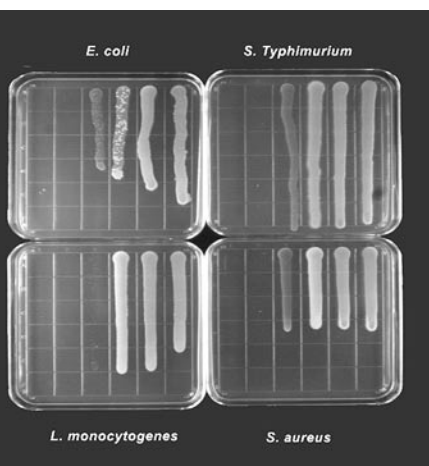
The company worked with Merle Pochop of the CIRAS Northwest Area Office to get training and to evaluate processes and documentation requirements as it prepares to meet quality goals. "CIRAS has also helped to cost share some of the outside training requirements for our staff. As a small business, we really appreciate the help offered to us by the state of Iowa," Mulder says.

*For more information on how IPRT can help your company, contact IPRT Company Assistance toll free at 877-251-6520, by e-mail at [iprtinfo@iastate.edu](mailto:iprtinfo@iastate.edu), or visit the Web at [www.iprt.iastate.edu/assistance](http://www.iprt.iastate.edu/assistance). For more information on quality please contact Merle Pochop at 712-274-0048; [pochop@iastate.edu](mailto:pochop@iastate.edu).*

## About IPRT Company Assistance

The technology commercialization group at IPRT Company Assistance makes it easy for Iowa companies to leverage the resources of Iowa State University. Its associates can help a company determine its research needs, locate scientists with the appropriate expertise, and set up the research contract. IPRT can also help fund the project on a cost-share basis.

IPRT Company Assistance provides access to world-class expertise and equipment to help Iowa manufacturers and entrepreneurs address technical problems and R&D needs. IPRT is a network of scientific research centers at Iowa State University and has been assisting companies from all corners of Iowa since 1987.



*This bacteria plate shows the results of testing natural oils for effectiveness against food-borne pathogens. The test was part of the research set up by IPRT Company Assistance at Iowa State University to help Van Beek Natural Science develop new natural animal health care products.*

# Industrial targeting research and assistance for southwest Iowa

By Dave Swenson, Department of Economics, Iowa State University

Economic vitality is somewhat of a mixed bag in southwest Iowa. The metropolitan county of Pottawattamie and a few others heavily influenced by the vibrancy of the greater Omaha-Council Bluffs metropolitan area are performing reasonably well. But those beyond the reach of these metropolitan areas are not. On the whole, there has been no increase in population or jobs. When metropolitan influences are excluded, the region has lost both people and jobs at a rate that's worrisome to local leaders and economic development professionals.

This region is composed of Adair, Adams, Cass, Fremont, Harrison, Mills, Montgomery, Page, Pottawattamie, Shelby, and Taylor counties. In the aggregate they suffer from many of the same challenges of other rural Iowa regions: death rates exceeding birth rates, persistent outmigration among young adults, erosion in public school enrollment, and declining rates of entrepreneurship and returns to entrepreneurs.

To help support this region, the Center for Industrial Research and Service (CIRAS) combined resources with the Department of Economics at Iowa State University to develop and deploy research and technical services specifically intended to assist Iowa's economically distressed regions. CIRAS is a U.S. Economic Development Agency University Center. Southwest Iowa is the third area of the state receiving assistance from this partnership. The first project focused on the southeast part of the state and the second on southern Iowa.

The technical assistance organizing effort starts with a two-prong discussion by all economic development professionals in a specified area: (1) what the needs are of the region, and (2) what approaches researchers will take to address their information needs. For southwest Iowa, the regional representatives were very interested in obtaining detailed information about their respective counties so that they could assess their positions relative to the entire region. This represented a significant shift from previous efforts, which were designed primarily to assist the entire region in marketing its abilities as a whole, not as a set of separate, distinct entities. The needs of the southwest Iowa group required the researchers to adjust and develop more information pertinent to the individual counties and less for the region. In addition, because of the overwhelming influence of the metropolitan area, several adjustments were made to the analysis to separate either all of Pottawattamie County or, where possible, Council Bluffs from the region in order to provide better perspectives on some of the data.

This back and forth between the researchers and the clients yielded three specific reports. The first is a comprehensive overview of the region's demographic, economic, occupational, and industrial structure characteristics. The second is a summary for the region and for each

individual county of their basic industrial structures, along with several rankings of their major industries, the types of production inputs that are required, and the kind and value of commodity imports into the region. These highly detailed tables quickly summarize the different counties' industrial characteristics, strengths, and potential weaknesses. The third report focuses on the overall region, isolating the potential for economic development considering import-substitution possibilities and external export demand that might link well with the region's industrial structure. In addition, this section will isolate areas where the region demonstrates a competitive advantage and is clearly producing for export sales. Last, these clients desired the actual statistical data for their counties so that they could assess their own county and compare themselves with their neighbors.

Among the overall findings, the research noted that:

- The southwest Iowa area has competitive advantages in agricultural production, mining, utilities, transportation services, health and social services, hospitality industries, and government services and agencies.
- Specifically, out of 38 industrial categories where the region demonstrates a strong degree of specialization—industries clearly producing for export sales—12 are in agricultural, 19 are in manufacturing, and 7 are in other industries.
- As expected, when Council Bluffs is excluded the region has fewer areas of competitive advantage.
- The region has competitive disadvantages in several industrial areas that are growing statewide or nationally, such as professional services, finance and insurance, arts and entertainment, and accommodation and food service activities.

Southwest Iowa has important challenges for growth.

Among them are:

- The prevalent industrial structure and its occupational demands are out of alignment with overall statewide and national growth patterns.
- Returns to business start-ups are decreasing over time.
- Persistent outmigration has undermined the current and future workforce of much of the region.
- The population of the region is less educated, which limits industrial competitiveness.
- The workforce in the region is older, on average, than in the rest of the state.

The entire research and assistance project was completed in April.

*The complete report can be viewed at [www.ciras.iastate.edu/publications/TIGinSWIowa.pdf](http://www.ciras.iastate.edu/publications/TIGinSWIowa.pdf). For more information, please contact Dave Swenson, 515-294-7458; [dswenson@iastate.edu](mailto:dswenson@iastate.edu). ■*

**The CIRAS Advisory Council recently welcomed seven new members. They are Larry Ehlinger, Jeff Judisch, Dave Leitten, William Madsen, Jo Martin, William Van Lent, and Thomas Wenstrand.**



Larry Ehlinger is the director of corporate manufacturing engineering for Pella Corporation, headquartered in Pella, Iowa. Founded in 1925 as the Rolscreen Company, Pella Corporation is a leading manufacturer of quality windows and doors and holds more than 100 product and design patents. In addition, Pella has been honored by *FORTUNE* magazine as one of the “100 Best Companies to Work For” in the United States.



Jeff Judisch serves as the quality assurance specialist for United Equipment Accessories, Inc. UEA is a leader in the production of reliable slip rings, heavy-duty industrial cable reels, Decril cable and hose carrier systems, and durable shift controls. The plant, located in Waverly, Iowa, celebrates its 55th anniversary in 2007.



Dave Leitten is the general manager of Wellman Dynamics, located in Creston, Iowa. Fansteel/Wellman Dynamics specializes in manufacturing premium grade aluminum and magnesium sand castings. The firm is best known for large aerospace applications. Wellman's core competency includes large, complex, multi cored transmission housings for helicopters and air inlet frames for jet engines.



William Madsen serves as the manager of order fulfillment integration, corporate supply management, Deere & Company, headquartered in Moline, Illinois. Founded in 1837 as John Deere, the company today has four manufacturing divisions—agricultural equipment, construction and forestry equipment, commercial and consumer equipment, and power systems—as well as support operations and services, such as credit and parts.



Jo Martin serves as the chief operating officer/vice president of Times-Citizen Communications in Iowa Falls, Iowa. TCC is the parent organization of the *Times-Citizen*, a semiweekly newspaper with a circulation of approximately 4,000. The paper, founded 129 years ago as the *Citizen*, has the distinction of being the first non-daily in the state to use computers for all phases of operation.



William Van Lent is the president and CEO of Veridian Limited, which was created in 1992 to serve international and domestic customers. Located in Spencer, Iowa, Veridian produces heat/flame- and moisture-resistant apparel and accessories for use in the fire service industry.



Thomas Wenstrand serves as the president and CEO of Hawkeye Steel Products, Inc., in Houghton, Iowa. The firm comprises five original companies and manufactures equipment for four markets: grain and oilseed storage, livestock production, poultry production, and poultry meat processing.

**A recipe for success**

**Continued from page 1**

use the desired skill sets identified by the mentors in our recruiting process, and we're then able to work with our university relations team to hire individuals according to those profiles.”

Following are examples of outputs from past SEPP projects:

- an enterprise-wide engineering search agent
- a scaleable kit of common building blocks for rapid test and evaluation of prototype electronic products
- functional prototypes of flight deck human machine interfaces using voice recognition techniques
- rapid prototyping via immersive virtual reality

Rockwell Collins isn't alone in its use of the program as a recruiting tool. Each of the participating universities uses it as an aid in recruiting future engineering students to their respective schools.

“We tell potential Iowa State engineering students that they will indeed have opportunities for internships, co-op experiences, and summer jobs with industry if they choose to study at our school,” says Ted Okiishi, associate dean for research and outreach at the Iowa State University College of Engineering. “We can never hope to duplicate in the classroom what happens in an actual, industrial setting. There's nothing like being in what we call the ‘actual world of engineering practice.’ SEPP is an outstanding example of this kind of learning.”

That kind of real-world experience is exactly what Rockwell Collins offers to its interns and co-ops, according to principal material and process engineer David Adams, who mentored Lehmann last summer.

“It's important to learn what really goes on when you interface with people,” says Adams. “It's the kind of experience that you can only get in a work environment.”

Adams says the projects are designed to be achievable in a summer. They must also provide benefit to the company. Obviously, Rockwell employees could've accomplished the project that Lehman's team worked on, but it would have meant taking them away from everyday duties to do what the interns did during the summer.

“As long as it's something of value and has benefit to the company, it's a valuable resource,” Adams says of the program. The value of the experience for students who have participated in SEPP include knowledge, experience, resume building, and, for 35 participants since its inception, employment with Rockwell Collins after graduation.

**For more information on SEPP, contact Bonnie Knittel at 319-263-8832; [BJKNITTE@rockwellcollins.com](mailto:BJKNITTE@rockwellcollins.com). For information about how the College of Engineering at Iowa State University can help your company establish an internship or co-op experience, contact Engineering Career Services at 515-294-2540. ■**

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## 2007 Product Costing Analysis for Iowa Meat Processors

One-day workshops to provide information on evaluating product profitability are planned for Iowa meat processors. CIRAS, ISU Meat Science Extension and Iowa Central Community College staff are offering these one-day workshops, which will be given from 8:30 am to 4 pm on the following dates at the Community College Computer Labs:

June 6—Eastern Iowa Community College (High School) 600 Washington Street, Maquoketa

June 7—Iowa Valley Community College Downtown Center, Marshalltown

June 14—Northeast Iowa Community College, Calmar

June 19—North Iowa Area Community College, Mason City

June 20—Northwest Iowa Community College, Sheldon

June 22—Iowa State University, Ames One session utilizing paper forms only, no computers, for those who have no prior experience with Excel software or computers.

July 24—Des Moines Area Community College, Carroll

July 25—Iowa Western Community College, Atlantic

August 16—Indian Hills Community College, Ottumwa

The workshop fee is \$75.00 per person for Iowa Meat Processors Association Members or \$100.00 per person for non-members. Pre-registration is required and can be made by calling 515-294-9279. A feature of the event will be hands-on instruction on improving overall financial performance.

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