

## Capstone Project at Double HH Manufacturing Helps Launch New Automation System

*Senior capstone design projects are the culmination of engineering education for undergraduate students. Iowa companies, through a partnership between Iowa State University's CIRAS and the College of Engineering, provide students the opportunity to apply their engineering knowledge to real-world applications as a final step in preparation for joining the workforce.*

By working with the students, companies gain a new perspective on difficult engineering problems, with many achieving innovative solutions that enhance productivity and lower costs. Companies have a heightened understanding of the value engineers bring to an organization and are able to showcase their company to students nearing graduation.

Bob Coacher, an account manager at CIRAS, works with many Iowa-based companies and looks for projects that might be a good fit for students participating in the capstone program. "I have worked with Double HH Manufacturing over the years," says Coacher. "I knew we could find a good opportunity for our Iowa State mechanical engineering students to help streamline processes and increase revenues for them."

Located in Rock Valley, Iowa, Double HH Manufacturing specializes in manufacturing components machined to customer specifications. They are a leading manufacturer and distributor of agricultural equipment hitch pins and three-point linkage components.

Double HH is a division of Hope Haven, a center that offers care, skills training, and jobs for mentally and physically challenged individuals. The Double HH Manufacturing operations generate needed funding for Hope Haven. The company is an integrated operation, providing employment to persons with and without disabilities, including jobs to some of the higher-skilled residents of Hope Haven.

### Mechanical Engineering Students Begin Working with Double HH

The student teams spent a fall semester at Double HH planning and designing an automation system for the plastisol process used in the hitch pin line. They were challenged to increase throughput and to identify ways



to reduce operations costs. John Wallenburg, the plant manager at Double HH, oversaw the project and worked directly with the students on the automation strategy.

"The students' objectives were to evaluate the current process and design the most suitable system to automate the plastisol process," explains Wallenburg. "The students also needed to understand that the new process must be compatible for operation by persons with disabilities who work with us from Hope Haven."

In December of 2009, the students provided a preliminary plan for a viable automation system at Double HH. Since that time, Double HH took those designs and worked with a small Iowa-based automation manufacturer to build the system. The new automated system was installed early in 2012.

### Installation of New Automation System Reaps Many Rewards

The new automation system has already resulted in many positive impacts at Double HH. Two jobs have been retained and labor savings of \$12K has been reported thus far. "This system removes the judgment process in the line and allows us to utilize a wider range of operators for this part of the process," explains Wallenburg.

The research and development ingenuity of the students provided Double HH with an additional research and development savings of \$20K. With the new system, Double HH reports an investment of \$250K, which will be recouped within ten years.

"The new automated system has tripled our plastisol production," says Wallenburg. "This will now allow Double HH to significantly increase capacity, paving the way for more sales that will provide additional funding for Hope Haven."

➤ For more information, contact Bob Coacher at 515-419-2162 or [coacher@iastate.edu](mailto:coacher@iastate.edu).