



Since 1997 OSU's Applications Engineering Program has provided expert advice to hundreds of Oklahoma manufacturers resulting in a much-needed boost to Oklahoma's rural economy. By placing a staff of experienced engineers across the state, the program provides manufacturers direct access to the latest in technology. These engineers are an integral part of Oklahoma Cooperative Extension Service and also have access to the resources of OSU's nationally-recognized engineering faculty. This knowledge and experience represents a valuable resource for Oklahoma's manufacturers. Companies are surveyed by an independent organization after completion of a project. The opinions expressed on the survey help shape the direction of the program in the future.

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Applications Engineering Program **Advanced Steel and Crane**

Construction of the massive metal poles used by utility companies across North America is more efficient and lots more high-tech because of the work of Oklahoma State University's Applications Engineers.

As head of business development and commercial projects for Advanced Steel and Crane in far west Tulsa, Byron Perry oversees the production of transmission and substation steel structures and components for major electrical and power utilities across the United States and Canada.

When Perry joined Advanced Steel and Crane early last year, the company was going through a drastic transformation after being purchased. Company leaders hoped to make the transition as seamless as possible while drafting an aggressive expansion plan. One of the biggest challenges faced by the company was expanding production while taking advantage of its limited property. Surrounding businesses meant expansion of facilities would need to be strategic.

Near the top of Perry's business plan was contacting the Oklahoma Manufacturing Alliance to get the expertise the company would need to successfully execute its aggressive growth strategy. Perry first met with Pat Crane, a manufacturing extension agent with the Oklahoma Manufacturing Alliance who is sponsored by Meridian Technology Center in Stillwater.



Based on Advanced Steel and Crane's aggressive plan, Crane called on Dr. Rajesh Krishnamurthy. He is one of five OSU Applications Engineers located throughout the state. The group assists small and medium-sized manufacturers on short-term engineering projects.

The two suggested focusing on facility expansion and information flow. Working with company leadership, Krishnamurthy helped map and streamline production process flow across various products, which presented challenges considering it encompassed three separate buildings.

"We started by grouping product lines and process flows, looking at how they traveled through the plant," said Krishnamurthy, who used 3-D simulation tools to begin the process of determining the most efficient production flow while trying to grow its business. "One of the biggest challenges any small manufacturer faces is finding the time to improve their systems. By developing a phase-by-phase project plan, spread over a finite timeframe, those challenges were addressed at Advanced Steel and Crane."

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Dr. Rajesh Krishnamurthy

Perry admitted it would have taken his team months to implement the changes that already have allowed the company to increase productivity. For instance, the company wanted to implement a seamless welding unit. It would be used to weld rivets on the massive poles after bolts were calibrated and placed. Most of his team had ideas on how the seam process should work, but couldn't capture the ideas and take them from drawing board to plant floor. Krishnamurthy was instrumental in helping finalize the ideas and move the project forward. When Krishnamurthy's engineering specifications were taken into account, Advanced Steel and Crane was then able to contract with a private company to construct the seamer. It was the one his team had envisioned, which could work with longer structures and thicker steel many of their new customers might need.

Now, instead of using a crane to move the massive poles to weld the seams, a robotic-driven stand moves on tracks along the pole, allowing the welder to travel the distance of the pole without once moving the structure. This, Perry said, cut production in half while minimizing the length of the building now used to put the finishing touches on the product. In fact, the new 14,000-square-foot building not only is used to put final touches on the product, but can also house other production processes, as well as a staging area for the poles before delivery.

“The delivery dates are important to the bigger customers,” said Perry. “We are unique in that we can put out a quality product without missing delivery dates. We have a strong alliance with U.S. utilities, and have renewed many of the contracts for a minimum of three years and a maximum of five. That gives us a good baseline of work. Now we can continue to refine our processes and enhance what we do, giving us the opportunity to get more customers and increase our productivity.”

In addition to production improvements, Crane and Krishnamurthy continue to help the company obtain its ISO accreditation. Krishnamurthy said international standards will help the company tackle some of the most demanding challenges of modern business, ensuring operations are efficient as possible while increasing productivity. The process can increase cost savings, enhance customer satisfaction, access new markets, and decrease negative impacts on the environment. All are areas Advanced Steel and Crane are attempting to achieve, said Krishnamurthy.

“In response to the growing dynamic business environment, Advanced Steel and Crane understood it needed to address gaps in process flows and streamline its production control systems in order to improve its bottom line,” he said. “This understanding helped us to develop and implement solutions to address the gaps.”

It's a unique arrangement, Perry concluded.

“For us this is a long-term partnership,” he said. “We view Pat and Rajesh as part of our team.”



Advanced Steel and Crane with headquarters in west Tulsa produces transmission and substation steel structures and components for major electrical and power utilities across the United States and Canada.