

Power Engineering and Manufacturing LTD Seeks Controlled Growth

Power Engineering and Manufacturing (PEM) LTD, Waterloo, is an Iowa manufacturing company with a worldwide market. The company specializes in the custom design and production of heavy-duty gearboxes, according to John Warren, PEM president. PEM gearboxes are used in such industries as aeronautics, agriculture, construction, gas, oil, transportation, and wind.

Saul Herscovici and members of the Warren family founded the company in 1975 to serve the growing need for gearboxes that could withstand high shock loads. The Warrens purchased full ownership in 2007, and John Warren has led the company since then.

The current plant, built in 1992, is now more than 110,000 square feet. PEM has 81 employees, 26 of whom were hired in 2012.

While companies must grow to survive, CIRAS account manager Sean Galleger emphasizes the importance of controlled growth. "We want to make sure they can manufacture their products efficiently and effectively and with on-time delivery to customers," he explains.

From 2011 to 2012, CIRAS conducted a Theory of Constraints (TOC) Business Improvement Generation (BIG) project to support PEM's controlled growth objectives. CIRAS project manager Mike Willett guided a 12-person leadership team through the five-phase project.

In the first phase a common understanding and agreement of the problem was established. Phase two identified priority problem areas and corrective measures. A key concern involved backlog of product, according to Willett. The team then focused on finding ways to increase throughput by identifying constraints in the system.

Phase three focused on strategies and tactics to exploit those constraints. Development of a future state process map and reality tree identified what needed to be done and when.

In phase four an implementation plan was developed to move the company from the current state to the future state. Key components of this phase include staff buy-in and teamwork, Willett points out.

Phase five is implementation, which is an on-going process, according to Warren.

The BIG leadership team continues to meet weekly to discuss projects. The lead person for each project gives the



status and, if needed, asks for help. The four to six people assigned to each project are those who work in that area day to day, according to Warren. "They have a better perspective on it than management, and you get better buy-in when the people directly affected are working to resolve an issue."

While work continues toward their goals, PEM has already seen some success. Per Warren these projects have generated \$6.1M sales gained or retained, \$2.4M new investments, and \$3.4M costs saved or avoided over the past three years.

PEM has other interactions with CIRAS as well. Warren is in his third year on the CIRAS Advisory Council. CIRAS has also connected the company to university researchers. "We have customers who want to know why something happened," Warren says. "Having research from the university lends a lot of credibility to the analysis and the potential solution."

Iowa State mechanical engineering students have worked with PEM on two projects. The students benefited by gaining some hands-on experience, and PEM received some new perspectives to consider.

All in all, Warren says PEM has gained a lot from working with CIRAS and Iowa State. "We wouldn't have made the progress we have without CIRAS' help," he says. "I'm positive of that."

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