U.S. Based Fabricator Metalforms
Increases Productivity & Reduces Cost By 50%

Featured: (from left to right) Joseph Hardy Jr., Trey Frederick, Walter Bearden, Su Ngo, Robert Buentello, Maximo Cardenas III, Mark Chisum, and Ray Hunter.

QUICK SUMMARY

The Challenge

- Produce quality heat exchangers as cost effectively as possible.
- Current tube rolling system was falling short of company goals, with too much cost attributed to re-rolling tubes.
- Increase the safety of their employees in order to maintain a competitive edge in the marketplace.

The Solution

- Elliott's Hybrid Series Rapid Hawk with pneumatic motor and Direct Torque™ electric torque control.
- Production trial to determine the cost, productivity and safety of the system.

The Results

- Cost per expansion reduced by more than 50%.
- No tube leaks due to the system.
- Capable of completing up to 360 expansions per hour.
- Ergonomics & ease of use greatly improved operator working conditions.

The Challenge

Metalforms, Ltd., a fabrication company located in Beaumont, Texas, manufactures heat exchangers and pressure vessels in the highly competitive shell and tube market. Their challenge was three-fold: change the tube expansion process to improve consistency while maintaining their high quality standards, decrease the overall cost of the process, and increase the safety of their employees through better ergonomic efficiency, in order to maintain a competitive edge in the marketplace. With a recent increase in business volume, maintaining efficiency and accuracy was of utmost importance. Their current tube rolling system was falling short of company goals, with too much time and cost attributed to re-rolling tubes.

In addition to productivity and cost concerns, Metalforms was also looking for a method that would benefit operators. Stress and fatigue have become an unwelcome reality for many individuals in the field. One of the lead operators at Metalforms mentioned back pain and muscle fatigue had become an unwanted part of their daily routine. This type of stress not only negatively impacts workers but overall performance as well. In order to reduce costs and operator fatigue associated with rolling and re-rolling a vessel, Mark Chisum and Trey Frederick, Manufacturing Engineers, began looking for an alternative.

The Solution

With company and operator challenges in mind, Mark and Trey researched and eliminated a dozen various systems, before wondering if Elliott's Hybrid Series Rapid Hawk could be the best comprehensive solution. After going through the benefits of the system with Dave Hearn, President of Metalforms, they agreed to trial two units.

Elliott's Hybrid Series Rapid Hawk utilizes a pneumatic motor to provide fast cycle times for each expansion. While pneumatic motors are faster than electric, they tend to have challenges with consistency due to fluctuations in air volume or pressure. The Hybrid Series is able to help Metalforms achieve their goal of more consistency and less rework by utilizing Direct Torque™, an electronic torque control built into the Hybrid Series that can work with a motor regardless of its power source. Metalforms' operators also appreciated the triggerless operation and auto-cycling capabilities, now they

> *"The industry is trending towards thinner wall tubes, tighter tolerances, and defined processes and specifications, which could greatly increase the man-hours that go into a bundle. The Rapid Hawk enables us to get ahead of this trend while at the same time, significantly reducing the number of man-hours."*
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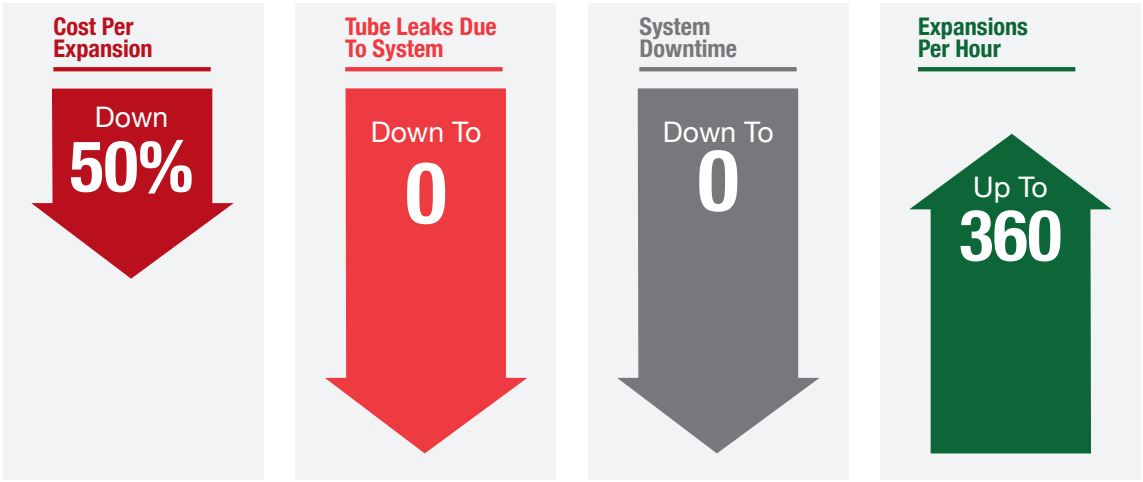
> *- Trey Frederick, Mechanical Design Engineer, Metalforms*

Benefits of the Rapid Hawk

Key results achieved during extensive production trial at Metalforms



would be able to roll tubes faster and more efficiently while reducing the need for costly rework. In addition to improving productivity and expansion accuracy, the Rapid Hawk's self-supporting arm and built-in safety features would go a long way in improving employee safety.

After receiving the Rapid Hawk units, Metalforms conducted several internal tests to determine the accuracy, productivity, and safety of the system as well as the overall cost to operate it. This was important in helping them determine if the ROI justified the purchase of the system.

The Results

With cost & productivity being primary concerns, Mark and Trey made sure to monitor tool life and the time needed to complete a project. Using both the cost of the tooling and the operator's time, Chisum and Frederick were able to determine Metalforms' cost per expansion. The Hybrid Series Rapid Hawk showed positive results almost immediately, compared to their previous rolling method. "As a result of the changes we made with the Rapid Hawk we can say that our cost to expand a tube has dropped by more than 50%," Chisum explained. This was primarily due to the system's reach and mobility, making it easier for the operator to complete the job. In addition to cost savings, Metalforms saw a significant decrease in the amount of rework needed on their heat exchangers. "We have over 280,000 expansions on the Rapid Hawk, with the capability of 360 expansions per hour, with 0 tube joint leaks due to the system, and with 0 downtime," Chisum stated.

The reduction in time spent rolling not only benefitted their customers, but it also made a positive impact on operators. The ergonomics of the system alleviated unnecessary operator stress. After only four hours of use during the first trial day, one of Metalforms' lead operators commented: "I can't remember a time where my shoulders weren't hurting by now." The new ease with which operators were able to complete the job, made them eager to use the machine. Their enthusiasm and willingness to use the Hybrid Series Rapid Hawk helped Metalforms transition their team to the new system more quickly.

Overall, Dave Hearn was impressed with both the results generated from the Rapid Hawk system, as well as, the customer service provided. "In the competitive environment we are in, Metalforms is always looking for ways to reduce our costs, improve our quality, and improve our safety. It is good when we can find a supplier that can do one of those really well. We are impressed when a supplier can do two of those. Elliott Tool was instrumental in helping us with all three!" Dave Hearn said. After purchasing two additional Hybrid Series Rapid Hawk systems, Metalforms, Ltd. is confident that they can maintain their competitive edge within an increasingly competitive environment.