

By David A. Smith
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TORRINGTON

Step One: Root out the waste. **Step Two:** Repeat step one.

Four years ago, Torrington Research Company set out to reduce the number of parts in its fans with the simple premise that putting fewer parts together takes less time. Less time equals less cost.

The point? Less cost means the work can be done in Torrington instead of places like China and Mexico, where low labor rates can give companies a steep price advantage in global markets.

But as most anyone who subscribes to the “lean” manufacturing philosophy will testify, the subscription doesn’t come with an expiration date.

Now Torrington Research has turned its attention beyond its fans and applied that same philosophy to the motors that drive them.

“The thought here was that we were going to find ways to reduce the cost of motors and the cost of producing them,” said Roger Dickinson, Torrington Research Company’s chief executive officer, chairman and one of its co-founders. One way to do that was to cut the number of parts in its motors by 80 percent.

It was a natural progression for the 19-year-old company, which designs and produces quiet, highly-efficient fans used in products such as computers and blower inserts installed in fireplaces and pellet stoves. It also produces blowers used in the machines that help people who suffer from the sleep apnea sleep disorder get a good night’s sleep.

Though already known for those blowers, Torrington Research in 2000 bought a city firm that produced the motors used to power those fans. In order to make it affordable to incorporate the motors it wanted into its products, the company had to find a way to make the motors more cheaply.

“Over the last several years we’ve been investing a ton of money in this technology,” Dickinson said, noting that Torrington Research set its sites even earlier in the process by leaning its products. “When you can do that, the assembly becomes reasonably easy to do. We’re taken it one earlier step.”

A journey

Taking the lean philosophy beyond the factory floor and into all facets of the operation represents a true integration of the lean mindset, said Paul Parent, president of ProSol, a Winsted limited liability company specializing in continuous improvement and supporting those efforts.

“Lean is a journey and not a destination,” Parent said. “What it shows is a maturity in that journey.”

U.S. Manufacturers have long embraced the “lean” philosophy of launching an all-out effort to cut waste from operations by questioning the way everything is done. The goal is to increase productivity, yet still maintain quality, and make their operations better able to compete in a global economy.

Torrington Research isn't the first firm to look beyond obvious wasteful steps on the factory floor and office functions and try to root out waste even earlier in the manufacturing process.

Massachusetts-based Nypro designs plastic products, builds the molds used to make those products, manufactures plastic parts and assembles completed products for its customers. Though involved in "lean" efforts for six and seven years, it launched an initiative two years ago to focus on just one part of its operations: the time it took to produce the special molds used to make plastic products.

"For many, many years, it was 12 weeks," said Al Cotton, Nypro spokesman. "The customer knew they had to wait three months to get a mold."

Nypro decided that wasn't good enough, and launched a program designed specifically to reduce the amount of time the process took. Today, it takes 12 days.

"This is a quantum leap," Cotton said. "This was a complete look at every single facet. That's what made this big leap down to 12 days."

That sort of thinking has been behind Nypro's transformation from a company supplying primarily molded plastic parts to one that now provides its customers complete solutions, from design to final assembly, said Brian Jones, president and chief executive officer. Jones recently addressed a Connecticut Business & Industry Association seminar on "Next Generation Manufacturing."

The gist of his message? Companies need to find ways to take charge of their own destinies.

"The rewards will go to the ones that solve the problems best," Jones said. "Speed is what counts. Flexibility. Not labor cost."

Nuts and bolts

At Torrington Research, which employs about 50 people at its 89 Commercial Boulevard quarters, the company wanted to include a certain type of motor in its fans. Because those motors are controlled by an electronic circuit, they are more expensive than traditional motors, making the final product that much more expensive, Dickinson said.

"The fundamental problem with them was the cost," he said.

So the company came up with a design that cuts by 80 percent the parts in the motors to power its fans.

For example, it replaced the motor's "lamination stack" one of the key elements making up the motor, with a new design. Typically, that stack consists of at least 40 to 50 stamped parts. Instead, Torrington Research replaced those parts with a continuous coil, not unlike a child's Slinky toy. Not only is it relatively simple to produce, it can be made without the waste generated by traditional stamping, Dickinson said.

"It's a fundamental piece that allows us to build the motor assembly in a much, much simpler way," he said.

The company also took those designs a step further, integrating its motor components with the structural components housing them. And they've eliminated screws, nuts and bolts, all of which take time to tighten, allowing its products to simply snap together.

"Now we have two, fundamentally simple pieces that you've put together, and you have a blower," he said. "It's cheaper for us to do that here than it is to do it in China."

In part, that's because the 120 parts in the typical motor Torrington Research might have used have been reduced to about 20, he said. Each part not only represents a piece of the assembly, but is something that could ultimately fail.

"All of that goes away when you do it this way," Dickinson said. "It solves a ton of issues."