



BAGEL BASKETS TO BOEING

Marlin Steel exemplifies the future of the U.S. machine tool industry. Facing global competition and decline, the company set out on a new course: One that has resulted in 700% sales growth and a stakehold in America's fourth industrial revolution.

Marlin Steel is a machine shop dedicated to workplace automation and investments in employee education. The shop has been featured on American business media channels such as Bloomberg Business, CNN, CNBC, FOX, Wall Street Journal, New York Times, among others. But that wasn't always the case.

Marlin Steel was once known as "the king of bagel baskets." Founded in 1968, the Brooklyn, NY steel wire manufacturer established a niche by hand welding its manufactured wire to form baskets for the bagel market. The company went on to become the dominant supplier of wire baskets to bagel bakeries everywhere. So when Drew Greenblatt bought the company in 1998 and moved it to Baltimore, MD, the plan was to upgrade operations and bring an ever more thriving business into a new century. After 30 years of bagel basket market domination, what could go wrong?

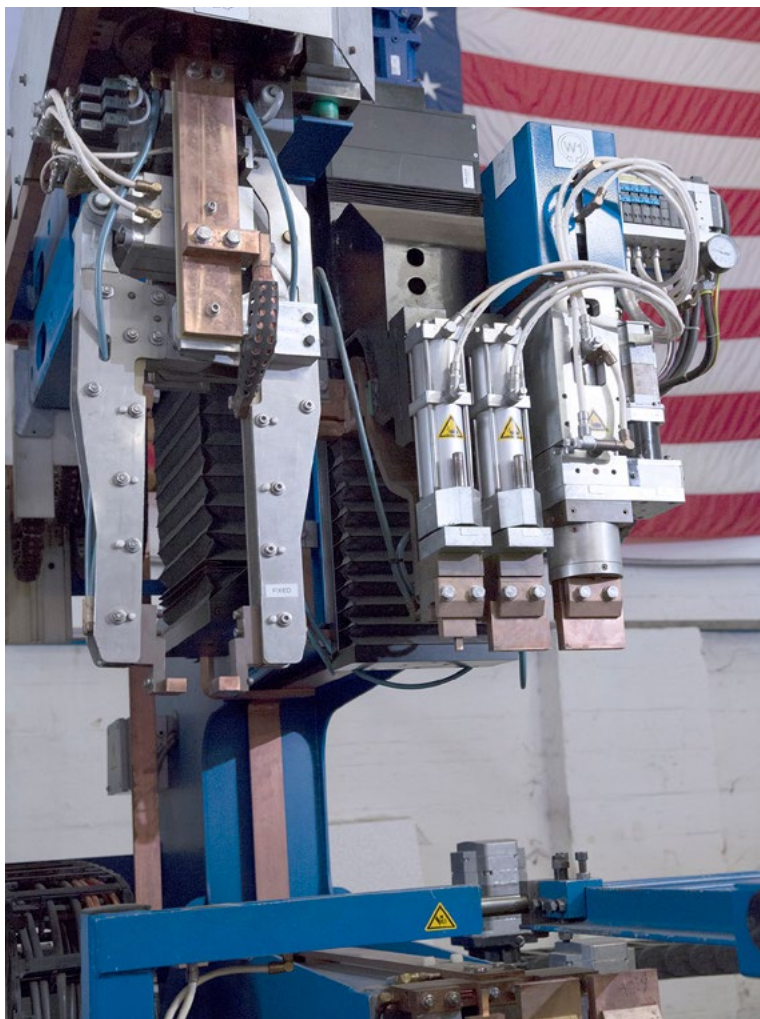
What went wrong was that soon after purchasing the company, Drew Greenblatt found that the bagel basket market was shifting in favor of foreign manufactured wire baskets. The newly acquired company was in jeopardy, because competing basket prices were descending below what Marlin paid for the steel alone.

BREAKING AWAY FROM THE PAST

Around this same time, Greenblatt received a phone call from an engineer at Boeing, who presented an intriguing and fortuitous question: Could the bagel basket shop custom engineer and manufacture a special basket for one of the world's largest airline manufacturers?

Greenblatt says the opportunity with Boeing made him realize the critical relationship between quality, engineering, and speed: "Quality Engineered Quick became our mantra and our future," he recalls. "We were moving into the Siemens world, where you measure performance in increments of plus or minus 0.01 millimeters. Until then, we had done business in a world measured by plus or minus a bagel, and so long as the bagel stayed in the basket, the customer was very pleased."

Quality Engineered Quick meant breaking away from the past and from the hundreds of wire basket manufacturers using alternating current (AC) welding to produce wire formed baskets. Dating from the early 20th century, the AC welding process involves the manual clamping of copper electrodes to weld the intersecting wires. Each weld leaves a deposit of scars, divots and pockmarks. This requires labor-intensive



minimizing deformities as a result of the weld and producing a basket that eliminates cleanup time and labor cost.

NEW DIGITAL TECHNOLOGIES

At the operational level, the investment in advanced CNC is helping Marlin Steel to integrate a new generation of digital technologies, ranging from robotics to additive manufacturing. Operational schemes have been reconfigured for increased productivity. Deburring activities have been eliminated by the Siemens-driven medium frequency welding operations; and the system does not miss weld intersections, thus eliminating a rework step that was part of past operations.

At the employee level, the removal of the costly cleanup phase has enabled the company to win new customers, increase revenue and redirect expenditures to support an entirely new business model: One centered on a more skilled and empowered workforce. "Today, 20% of our employees are degreed mechanical engineers," Greenblatt says. "We are now shipping custom engineered and manufactured wire baskets to 39 countries – regions where now we have the competitive advantage."

ANYTHING IS POSSIBLE

The Siemens Sinumerik CNC platform has brought Marlin Steel a return on CNC that is game changing, but Greenblatt knows the game goes on. His company has only just begun its move into the era of Industrie 4.0. He has become an often-quoted believer in the return of American manufacturing by way of investments in leap-ahead technology that will uplift a new generation of skilled workers.

"We are in a very dynamic, global marketplace," Greenblatt says. "Quality Engineered Quick means we have to be even more focused on engineering, more focused on shipping faster, and that means staying focused on having the best CNC technology." **IMD**

About Siemens

Siemens Corporation is a U.S. subsidiary of Siemens AG, a global powerhouse focusing on the areas of electrification, automation and digitalization. One of the world's largest producers of energy-efficient, resource-saving technologies, Siemens is a leading supplier of systems for power generation and transmission as well as medical diagnosis. With approximately 348,000 employees in more than 190 countries, Siemens reported worldwide revenue of \$86.2 billion in fiscal 2015. Siemens in the USA reported revenue of \$22.4 billion, including \$5.5 billion in exports, and employs approximately 50,000 people throughout all 50 states and Puerto Rico

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cleanup to produce a basket that is safe and hygienic for food, medical, pharmaceutical and other customer applications.

A GREATER RETURN ON CNC

Greenblatt says his company's ascent with Boeing compelled him to invest in truly advanced, CNC-driven welding technology. The opportunity was not to just cut costs and try to compete with Chinese wages. Greenblatt was determined to leap ahead of competitors by investing in CNC that would bring the highest possible return on CNC at every level – machines, operations and people.

At the machine level, an incremental first step was to produce faster welds. But another need was to eliminate the post-weld cleanup process. "Our biggest technology investment was a Siemens CNC-driven, medium-frequency welder," Greenblatt says. "It's a Versaweld CSR102 Jig Welding system built by Ideal Welding Systems. And it's powered by a Siemens Sinumerik 840D sl control package."

A key advantage of the machine is the vertical motion of the Z-axis welding head, which enables the automated welding of basket wires. In the time it takes to complete two welds using conventional AC welding, the Siemens-driven Versaweld CSR102 can finish 60 welds. Each weld is completed in 2/1,000 of a second, 30 times the speed of other automated welders on the market. So heat saturation is diminished,