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Finishing Facility Polishes Up On Its Specialty Process

Concentrating exclusively on precision stainless steel electropolishing, this 40-year-old family-owned company showcases its uniqueness by developing its own process, delivering consistent quality and treating employees like family.

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New England Electropolishing (NEE) electropolishes medical devices for some of its customers. The company developed its own process to produce a dull finish for some of these products. ElectroMatte, a trademarked process, is derived from one of its customer's needs. Source (All IMages) | New England Electropolishing

Like many children who grew up in family-owned companies, Luke Almeida has fond memories of his father, Alvin (Al) Almeida's, small business and its humble beginnings. He remembers the boxes of files piled up in his home and filing those invoices as an elementary school kid while watching cartoons on Saturday mornings, his mother's typewriter and IBM computer set up in the dining room. He also reminisces on working small jobs at the shop throughout his middle school years.

"As young as I was, I had a real appreciation for hard work and how much time and effort it took to grow the business," Luke explains.

And growth he has seen. In 1985, New England Electropolishing (NEE) located in Fall River, Massachusetts, was born. It has expanded from a small shop with only a few employees to its current 17,500-square-foot facility with 11 electropolishing lines to serve its 300 active customers, with the help of about 35 employees. It also has three passivation lines and offers nitric acid and citric acid passivation as well.

Although the medical device industry accounts for more than half of its business, it regularly services the semiconductor, laboratory, pharmaceutical, marine, food and beverage, and precision machining industries. This customer base is certainly a deviation from Gillette, its first major account.

Humble beginnings

When he opened NEE in 1985, Al already had a full-time job as general manager of a chemical distributor. However, he sensed the need for another electropolishing company because he encountered many electroplating shops that offered electropolishing only as a secondary operation. Al observed that finishers did a good job electropolishing large vessels but could not finish small parts with a consistent high level of quality.

Eventually, the chemical company that employed Al full time went out of busin after working nights and weekends to keep up with both jobs, he could fully foc his new venture.

Al appointed his wife, Jeannine, as president and hired the former finishing manager of F.B. Rogers Silver Co. Together they learned everything they could about electropolishing and became experts at precision rates of removal. Their experience with the Gillette account taught them how to efficiently finish orders of 60,000 parts on tight deadlines.

Those days marked the beginning of an exciting business trajectory that continues to prosper today.

Building the business

The small shop eventually moved to its current location in Fall River in 1995, but continued to concentrate on electropolishing stainless steel parts, as it does to this day. It has added passivation services along the way, which only accounts for about 5% of its business.

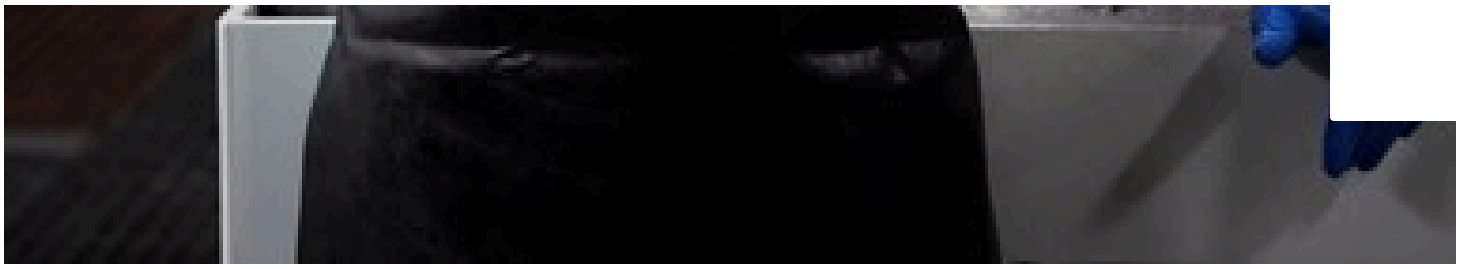
An electropolisher loads a rack of parts into one of the company's 11 electropolishing lines. Electropolishing removes material at a controlled rate and passivates at the same time, which micro-deburrs and creates a smooth, cosmetic finish. It brightens stainless steel, making it more aesthetically pleasing, while also maintaining the geometry of the part.

After earning his college degree and working in sales for PepsiCo, Luke decided to dedicate his career to the family business. He started in sales at NEE and eventually became the chief operating officer (COO), his current position. His sister, Amy Almeida Prigmore, is the company CEO. The two have grown the business together over the past 20-plus years.

Al remained active in the business up until his death six years ago. Because the family had a succession plan in place, the siblings were prepared to move the business forward without the benefit of their father's leadership.

NEE's talented and dedicated staff is a key reason for its success, according to Luke. "We have employees who have worked at the company for more than 20 years. We treat our employees like they are family. We do our best to take care of them so they can grow with us and retire from the company."

The company's stated mission is: "The Northeast's most responsive, reliable and trusted electropolisher, exceeding customer expectations every day." As a result of being laser focused on this goal, the shop receives high marks for customer satisfaction and is able to maintain long-term customer loyalty.



A member of NEE's production team prepares parts for electropolishing at a weld cleaning station.The company offers workforce development training to increase the skills of its employees. For employees who have the aptitude and desire to advance their career at the company, Luke says he places them on track to potentially work as a floor supervisor over time.

With that in mind, it's no surprise to learn that the customer service team prioritizes its customers. So, whether an account spends $1,000 a year or $100,000 a year, they are treated respectfully. "We really try to make all customers feel important and heard," Luke says.

As most of its customers are medical device suppliers that require stringent specifications, the shop has developed strong internal systems to continue to provide high -quality service. In fact, Luke says the team is in the process of hiring a quality engineer to support its quality manager because customer requirements continue to increase yearly.

Despite these challenges, it has earned ISO 13485 medical certification as well as others. "I believe we were the first metal finishers to be certified to ISO 9001," he adds.

Although the company processes mostly high-volume jobs, it also processes smaller lots as well. "We go from one piece all the way up to 100,000-piece orders," he says. "In 2024, we processed 12 million parts, roughly 5,000 purchase orders and 9,000 job orders. And we run, on average, about 50 to 60 jobs per day."

The shop mostly serves customers in the northeastern U.S., including New England, New York and New Jersey. However, it also reaches customers across the U.S. and internationally, with one customer based in Costa Rica.

Offering only electropolishing is a unique characteristic of NEE, according to Lu which is something he is proud of. The company's competitors offer other capal as well as electropolishing, unlike NEE.

"Electropolishing in the metal finishing world is still seen as a secondary service," he explains. "But it's not; it doesn't get as much attention because it's not as lucrative compared to some other forms of finishing. Our company is a niche business."

Although maybe not as popular as other finishing processes, electropolishing boasts plenty of benefits that enables the process to sell itself.

What is electropolishing?

Often referred to as reverse plating, electropolishing removes material at a controlled rate rather than adding metal (which occurs during plating). The process passivates at the same time, which micro-deburrs and creates a smooth, cosmetic finish. Under the right circumstances, it will brighten stainless steel and make it more aesthetically pleasing while also maintaining the geometry of the part.

This before and after photo is of a machined 17-4 stainless steel part that has been electropolished at N

Similar to electroplating, the process requires a chemical bath and racked parts unlike plating, where the chemistry is negatively charged, in electropolishing, DC power/current is positively charged. Electropolishing removes material at a controlled and precise rate.

Luke explains that electropolishing can be controlled to remove as little as 0.0002 inch from raw material.

“If a customer says we need to take off 0.0004 inch, we can adjust our process and our controls to accommodate that requirement,” he says. “Electropolishing increases the inherent nature of the stainless and its corrosion resistance through the process.”

A typical electropolishing process works in short cycle times that depend on the square footage of a part or how many pieces can be placed on a rack. Times can vary from 20 seconds up to 15 minutes. However, for NEE, about one to three minutes is most common.

Although the electropolishing process has not changed since the shop opened its doors, its *customers’* specifications have evolved as they become more stringent, especially in the medical space. Therefore, removal control is more critical than it has ever been, and consistency is critical.

Because the process presents the ability to do those things well, medical parts are good candidates for electropolishing. Parts are often laser cut and therefore have laser slag or discoloration from heat that is used to machine the part, and so they need to be cleaned well prior to use.

“There’s various pre-cleaning operations we use to descale to produce a clean and uniform part,” Luke explains. “That’s important when you are talking about parts that are going into a finished device that must be precision cleaned. Product quality is paramount in that industry, as well as the semiconductor industry.”

Innovations and advancements

Continuous improvement is top of mind for Luke and the NEE team. Whether it is responding to customer needs or discovering ways to be more efficient and repeatable, the company has developed innovative methods to move it forward as an advanced and successful surface finishing business.

NEE's CEO Amy Almeida Prigmore and her brother, COO Luke Almeida, grew up in the family business, although both worked outside of the company prior to dedicating their careers to NEE.

The company developed a unique electropolishing process about 10 years ago, which is trademarked as ElectroMatte. Catering to the medical industry, it provides all the attributes of electropolishing. The difference: It is a dull process that creates a satin finish instead of the typical highly reflective finish. The matte finish is attractive to the medical device industry because doctors often prefer nonreflective tools during surgery.

The concept derives from a customer's need. "One customer was having a lot of challenges with material. They needed a heavy electropolish to deburr, but they wanted the resulting finish to be dull. So, we started playing around with chemistry a little bit, and we ended up setting up a line specifically for (what would later be named) ElectroMatte," explains Luke. "We've been able to grow that footprint, and it's been a nice value add for some of our customers."

Using automation via software to improve its inspection process is another way the company has advanced and responded to customers that demand precision removal rates. NEE's quality manager, Savath San, created a customized inspection software that automates material removal validation.

Although the company uses digital micrometers for measuring removal, this custom software automates the process of recording and analyzing the data. It takes data from first article and in-process quality checks to build a job history in an Excel spreadsheet. Over time, it calculates historical averages and performs trend analysis. This enables the NEE team to respond with adjustments in the electropolishing process to accommodate variations in the raw material to ensure customer specifications are met on every order.

"It's given us even more control over the consistency of our electropolishing process for precision applications that require ongoing validation," Luke says. "That's something that separates us from our competitors."

NEE's quality supervisor measures first article samples to validate material removal.The company's custom software enables the team to respond with adjustments in the electropolishing process to accommodate variations in the raw material to ensure customer specifications are met on every order.

An unforgiving process

With all the benefits electropolishing offers, there is one challenge electropolishers like NEE face: it is an unforgiving finishing method. In other words, if customer parts come in that have scratches or any type of flaw on the material, it will be magnified by electropolishing.

"If there's any kind of defect on the product, it can be prone to rejection after the electropolishing is complete," Luke explains. "Sometimes parts become damaged during shipping, too."

Therefore, the shop does a thorough incoming inspection of every part from the customer prior to releasing a work order. If there's concern with the material, NEE's inspection team takes photos and shares them with the customer who can confirm

whether to move forward with the finishing process.

“We want customers to know that we’re taking great care of their parts,” he adds.

The next 5-10 years

With automation finding its way into the finishing industry, the opportunities are plentiful for learning how to integrate it and experimenting with these methods. Although he never expects NEE to be fully automated, Luke believes that the job shop will be implementing automation, or semi-automation, for completing rudimentary tasks within five years or less.

Committed to staying in its current location and facility, he believes the business can still operate efficiently within the footprint they currently have. He says there’s room for more business, and therefore, growth and expansion are on the horizon.

“There’s room to bring on more lines or to recalibrate some older lines and put more modern electropolishing lines into our existing footprint,” Luke explains. Expanding the quality department is in the plan as well.

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