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March 2022



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& MACHINE COMPANY, INC

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You all into the way this winter has gone? It's been weird. Absolutely frigid temps paired with 50+ degree days. Barely a lick of snow. Epic melts turn to epic sheets of ice. Back breaking work abound to clear the drive of that ice. It hasn't been fun. That said, spring is around the corner and warmer days are upon us. We're looking forward to that.

Anyhow, how's everyone doing? How's business? How's the pipeline looking? Have you hit your stride as Q1 nears it's close?

Need a boost? Want to tell your story so that the Gateway's readers can learn more about what you're up to? Let's chat. Reach out to us with any ideas you have so we can cast the spotlight on what you've got cooking and/or an industry trend you're seeing in your sector of the manufacturing landscape.

In this issue of the Gateway we're featuring United Gear & Machine Company who have been around since 1954, serving the aerospace, defense, and space industries who have recently renovated and added a substantial expansion to their facility in Suffield, Connecticut and are ready to fulfil your custom needs.

We're also serving up another spotlight on New England Electropolishing due to a layout blunder we made in January's issue. So, we've corrected our error to alleviate any confusion. New England Electropolishing is a family run business serving as one of America's leading electropolishing companies—delivering the highest levels of quality, service, and customer satisfaction since the 1980s.

We hope you enjoy the issue of the magazine and hope to hear from you soon!

Best of luck,



THE
Gateway
MAGAZINE

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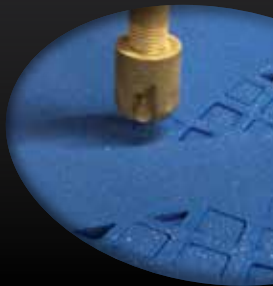
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70 YEARS AND COUNTING: UNITED GEAR & MACHINE KEEP ON GRINDING

United Gear & Machine brings nearly 70 years of gear cutting experience to the production of our products. Started by Victor J. Malec in the late 1940s as Windsor Locks Machine, the company moved to its current Suffield location in 1954, taking on the name United Gear & Machine. Seven decades later, William J. Malec, Victor's son, continues to serve many of the same satisfied customers in the aerospace and manufacturing industry.

The Gateway Magazine recently posed some questions to company President, Kurt Malec, and Production Manager, John Jackopsic. Here's what they had to say:



The Background—Please, fill us in on the history of United Gear & Machine:

United Gear & Machine is a third-generation family business that was founded as Windsor Locks Machine Company in 1949 by Victor Malec. We moved to our current location in 1954 and have continued to expand our business from this location. Currently run by Kurt Malec, who took over from his father William, the company has grown significantly in the last decade with yearly capital investments in machinery upgrades, building updates and an entirely new CNC only building that came online in 2020. There are also plans for another 16,000 square foot mixed use building on site to be complete by 2023, which will add 13,000 more square feet of manufacturing space.

From a capacity standpoint, the company has transitioned from being run entirely on manual machinery, to being a predominantly CNC based shop. This has greatly increased the variety and complexity of work that UGM can take on, as well as the efficiency with which they can complete it. To keep up with this, their inspection department has grown significantly with two new members in the last year alone, as well as the addition of a new



Kapp Niles 9x Gear Analyzer that allows charting of much larger parts. The result of these two changes is closed loop manufacturing, where UGM can now take results directly from a gear analyzer and use that data to drive corrections and refinements on the CNC program for every piece.

Looking ahead, United Gear and Machine's next build out will be an engineering department. This team will create internal processes for all machine complete builds, resulting in greater accuracy, efficiency and record keeping, as well as assist customers with their design to manufacture needs.

WHAT IS UNITED GEAR & MACHINE'S OPERATIVE OFFERINGS? WHAT DO YOU DO?

United Gear & Machine specializes in precision gear and spline cutting for the aerospace industry, including military and space exploration customers. UGM's capabilities include gear shaping (both manual and CNC driven), broaching, hobbing and gear grinding for high precision work on hardened materials. Primarily a job shop, we work typically in lot sizes from 1-50, but are capable of handling larger productions runs as needed. Gear shaping and splining is a very niche procedure, and UGM's history and experience with this process is invaluable to their customer base. Whether it is directing the conversation on manufacturability or coming up with solutions for understanding acceptance criteria, UGM is able to draw upon its years of experience and wealth of knowledge to help get job's done right. They excel at handling complex jobs, whether that comes in the form of a unique set up, an extra coarse spline pitch, or a non-standard pressure angle. UGM's network of resources provides fast, reliable services such as custom tooling and product finishing. Additionally, United Gear and Machine helps customers with their design for manufacture needs. Once again relying upon their expertise, UGM helps to ensure customer drawings are created reasonably and properly the first time, to avoid the struggle of dealing with an impossible design once a part is already in WIP.

WHAT TYPES OF INDUSTRIES DO YOU TYPICALLY SERVE IN A DAY-TO-DAY BUSINESS?

Aerospace – Commercial, Military and Space Exploration.



TELL US ABOUT YOUR COMPANY'S PEOPLE. HOW DO THEY HELP DIFFERENTIATE YOU AND HELP YOU GET THE JOB DONE?

UGM has a great fusion of a youthful, experimental, and aggressive management team combined with veteran department leads with 20+ years of experience in gear cutting, machining, and inspection. Our shop foreman has been working with gears and splines his entire adult life and has that intangible connection to his work that all great craftsmen do. Our machining and inspection leads, with 25 and 35 years of experience respectively, have seen almost all there is to see in the gear and spline world, and they are helpful resources for everyone from operators to quoting.

Gear & Spline Capabilities:

- ***Spur Gears & External Spline***
- ***Internal Splines***
- ***Gear Crowning***
- ***Broaching***
- ***Worms***
- ***Racks***
- ***Face Gears***
- ***Bevel/Mitre Gears***
- ***Gear Grinding***
- ***Sprockets/Timing Belt Pulleys***
- ***Turning***
- ***Keyways***
- ***Helical Gears***
- ***And more...***



HAVE ANY PROCESS(ES) BEEN ADDED OR IMPROVED IN RECENT TIMES THAT YOUR PRESENT CUSTOMERS SHOULD KNOW ABOUT?

In the last year, United Gear & Machine has replaced two manual Pratt & Whitney Gear Grinders with a KNG 3P Ready CNC Gear Grinder that has greatly increased our capacity and efficiency on gear grinding. This is especially helpful on parts with ultra-precise quality requirements as well as hardened material. This followed a new Kapp Niles 9x Gear Analyzer that allows us to chart parts with up to a 1m OD. Most recently, UGM has added a NIDEC GD30 Hob: a CNC based hob that is great for large shafts as it can run parts with a 500mm OD and 740mm height. On the machining side of the shop, we added two Trak Lathes, which have greatly increased our capacity and turnaround time on machine complete orders.

ANY SPECIAL AWARDS OR ACHIEVEMENTS YOUR COMPANY HAS RECEIVED?

United Gear & Machine received a 1st Place Family Business Award from the Hartford Business Journal in 2014. Additionally, UGM's Quality Manager, Christopher Musco, and Production Manager, John Jackopsic, received Emerging Leads Awards from the NTMA in 2021.

DOES YOUR COMPANY OFFER SPECIAL SERVICES?

United Gear & Machine does offer reverse engineering on gears, splines and some basic made complete products. Additionally, they help customers with their design needs as it pertains to splines, ensuring that drawings are accurate, manufacturable, and clear.

For a full list of UGM's capabilities and capacities, please visit their website at www.unitedgearct.com.



DESCRIBE THE COMPANY'S QUALITY CONTROL PROGRAM. QUALITY IS OFTEN A HOT BUTTON TOPIC FOR READERS.

Christopher Musco leads United Gear and Machine's Quality Department, bringing nearly a decade of manufacturing experience while still being able to communicate across mediums and offer new solutions. Over the last three years, he has led a rebuild of the company's Quality Manual and Processes, which has led to stricter controls and checks across all functions of the business.

UGM is AS 9100 Approved and ISO 9001 and QS Certified. Additionally, UGM can meet SPC requirements if quoted appropriately.

WHAT TYPES OF QUANTITIES ARE YOU PRESENTLY PRODUCING?

UGM accommodates a wide variety of projects for our customers, including everything from single pieces to larger production runs into multi hundreds. We also lend our expertise to customers in the R&D phase of their product development, helping them DFM spline and part geometry that is intelligent, functional, and manufacturable.

DO YOU HAVE ANY "GREEN" INITIATIVES AS A WORKING PIECE OF YOUR OPERATION?

United Gear & Machine looks to be as green as possible across all areas of its business. We recycle all excess chips and other waste products and installed high efficiency heating and cooling systems in its new building that came online in 2020. Additionally, all lighting has been converted to LED. In 2022, UGM plans to install an Electric Vehicle Charging Station for its employees.

WHAT ONE THING WOULD YOU LIKE PROSPECTIVE CUSTOMERS TO KNOW ABOUT YOUR COMPANY?

That we are a shop large enough to accommodate your technical needs, but small enough to adapt to customer's timeliness requests.



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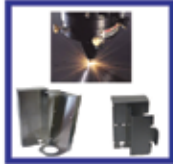
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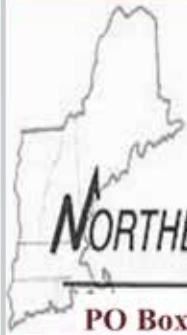
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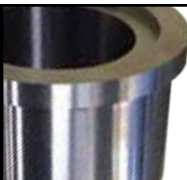
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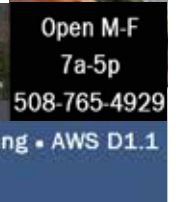
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NEW ENGLAND ELECTROPOLISHING DELIVERS PRECISION STAINLESS STEEL ELECTROPOLISHING NATIONWIDE



The story of New England Electropolishing begins with a chemical salesman named Alvin Almeida, who saw an opportunity in the marketplace and seized it. In the 1980's Alvin was selling chemicals to metal finishing companies and noticed that they could not achieve consistent results on smaller parts. In 1985, Al started the company with his wife, Jeannine, working by his side. Now under the leadership of their children Amy Prigmore and Luke Almeida, New England Electropolishing has become one of the leading electropolishing companies in the country.



NEE founder Alvin Almeida, center, in 2018 with his children and today's company leaders, CEO Amy Almeida Prigmore and COO Luke Almeida.

New England Electropolishing is one of the few metal finishers in the U.S. to concentrate exclusively on precision stainless steel electropolishing. Electropolishing is an electrochemical process sometimes referred to as “reverse plating,” which removes material at a controlled rate to help restore the natural corrosion resistance of stainless steel. Electropolishing also improves the surface finish of parts, enhances aesthetics, and makes products easier to clean and sterilize.

Electropolishing has become a critical step in the manufacturing process for the medical field, aerospace, food manufacturing, semi-conductors, scientific laboratories, and other industries that demand a tight tolerance on parts.

New England Electropolishing takes pride in their ability to turn parts around quickly. Since electropolishing is often one of the last steps in the manufacturing process, manufacturers need their parts in a timely and efficient manner. New England Electropolishing has a large capacity facility with a reliable staff of about 35 employees to ensure quick and consistent turnaround times for their customers.

“Most of our clients are behind schedule before their parts even hit our loading docks. Because of our capacity, expertise, and flexibility, we can turn parts around in 24 hours without any sacrifice to our high-quality standards,” says Luke Almeida, VP of Business Development

Manufacturers don’t just need a quick turnaround time; however, they need reliable and repeatable quality control as well. That is where New England Electropolishing really shines. They employ highly controlled processes that ensure material removal is precise and repeatable every time. The key to their consistency and reliability stems from their

longstanding operations manager, Imad Jaber, and quality control manager, Erica Bert.

“Electropolishing is a science and art,” says Jaber. “By combining both we are able to meet exact finishing requirements, whether you need one part or 100,000.”

New England Electropolishing is one of the few metal finishers concentrating exclusively on stainless steel, and because their electropolishing lines and processes are validated by third party audits from organizations like ISO and ASTM, New England Electropolishing has become a leader in medical device electropolishing.



The company made an early commitment to having its process registered to third party certified Quality System. The management team at the time worked hard to earn the certification and in 1996 became one of the first metal finishers in the United States to achieve ISO 9001 registration. The company is now ISO 9001, ISO 13485, and ITAR certified.

“We have validated lines which are required by our medical customers, so we put ourselves through validation studies. It is a significant point of pride for our company, so much so we keep the original certificate as a reminder of the achievement,” says CEO Amy Prigmore.

Another defining characteristic of New England Electropolishing is their strong commitment to customer service. At NEE, you can always get an owner or manager on the phone. They honor their commitments, and quotes are handled and processed in under 24 hours. In 2020, the company took its commitment even further and developed the “Customer Support Squad” which comprises a team whose job is to ensure a smooth experience from your first call to the delivery of your product.



“New England Electropolishing is built on responsiveness, a commitment to customer satisfaction, and respect for all of our hardworking employees,” Amy says. “These are the values our father instilled in our family, and these are the values our team works to honor.”

Lauri, of High Purity Piping Company concurs. “Doing business with New England Electropolishing is easy,” she says. “They always provide quick turn around on quote requests and work very hard to meet our delivery requirements once an order is placed. NEE is very accommodating to special requests. Our relationship with New England Electropolishing is a key component to our continued success in meeting and exceeding our customers’ expectations.”

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[MORE FROM NEW ENGLAND ELECTROPOLISHING](#)

One thing that strikes us about New England Electropolishing here at the Gateway is the care they put into their website. Along with videos they have a blog that gives further insight into their industry and operative processes. As an example, here's an example:

How Much Material Does Electropolishing Remove?

Customers often ask us, how much material does electropolishing remove? Electropolishing, when done properly is a highly controllable process, which removes as little as .0001" per surface or .0002" total material. Material removal can be increased by adding more time and/or direct current to the process. Electropolishing will typically remove between .0002" to .0003" per surface depending on a part's size and square footage.

There are many variables involved in the electropolishing process such as time, amperage, bath temperature, bath chemistry, and specific gravity. New England Electropolishing has tightly controlled processes for thousands of parts that yield consistent repeatable results on each order.

Removal rates are generally very consistent assuming parts have the same starting thickness. Edges and radius generally have slightly more material removal as they are higher current areas. This is often a plus as burrs and high points will be brought down and removed. Additionally, the surface roughness of parts (Ra, RMS) will be reduced as more material is removed. On average, the surface roughness of parts can be reduced between 25-35% assuming a moderate amount of material removal.





Many of the parts we electropolish for the medical industry have strict tolerances. These are often critical components to a device where form, fit and function are essential. In these instances, NEE will measure parts before and during processing to ensure product consistency. Records are kept with each job order. Additionally, we can share removal data with our customers to maintain transparency and confirm results.

NEE often develops electropolishing processes for customers through product sampling. We often will provide customers with multiple groups of samples with different removal rates. Once we receive positive feedback, the electropolishing process will be locked in our ERP system for future orders.

NEE NEW ENGLAND
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Visit www.neelectropolishing.com/blog for further reading!

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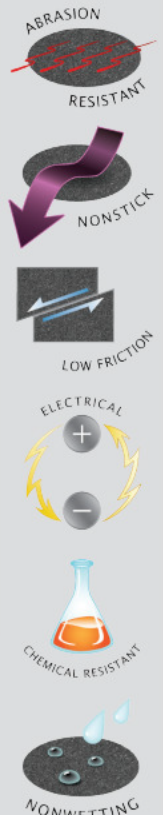
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Since 1972, Comairco has been the leader in the field of compressed air. During these 50 years, Comairco has always been an important player in the sale of new and used equipment, rentals and service. Comairco's value package has greatly diversified and now offers a wide range of specialized services, such as management of complex projects, construction of custom units, in-depth analysis of compressed air networks and support applications for energy subsidies. Today, thousands of companies in the food, mining and manufacturing sectors have benefited from Comairco's expertise.

Comairco has adapted over the decades, focusing on innovative products that offer added value for our industrial and institutional customers. For example, in the 2000s, Comairco introduced an exterior cabinet for air compressors. This product, entirely designed and manufactured in North America, makes it possible to install electric compressors outside, in a weatherproof compartment. This unique solution offers significant interior space savings for several customers.

To support its growth over the past 50 years, the family business has distinguished itself through numerous acquisitions as for to maintaining a leading position in the current market. During these acquisitions, Comairco ensured that each of the branches offered unparalleled local service while maintaining that personal touch that only a family-owned company can offer. Another strength of the organization: the training of employees, specifically technicians, which has always been a priority for Comairco in order to stand out and offer the best after- sale experience in the industry.

“In business partnership for more than 50 years with our manufacturer Sullair, we have continued over the years a progressive expansion in Canada and the United States. Our expertise, reinforced by our acquisitions, as well as our increased geographical presence allows us to sustain our market shares in all sectors of activity. Comairco's commitment, the quality of service and the wide range of products have led us to the success we are currently enjoying,” says Eddy Nadeau, President of Comairco, United States division.

To highlight the event and thank its employees and customers, various celebrations will take place in Comairco branches during 2022. These events will then be shared with the general public on the company's social networks. Follow us to discover these privileged moments!

**For more information:**

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“This well-known company was searching for a partner to help them outsource the assembly of their systems. Like many companies, they found that maintaining the leading-edge technical and assembly staffs necessary to achieve optimized assembly of complex electromechanical systems is extremely expensive and increasingly challenging,” said Hutchinson EVP Bob Anderson. “With our comprehensive security protocols, we were easily able to meet the customer’s compliance requirements. Our quality management system and focus on process control, combined with certified ISO disciplines, helped ensure that the assemblies we produced would consistently meet the demanding performance requirements of this system. In addition to our demonstrated engineering leadership in developing isolation solutions for this customer, our system design and analysis capabilities ticked all the boxes for their evolving needs.”

Hutchinson engineers worked with the customer, whose systems largely serve the military and aerospace markets, to understand the assembly and testing process in greater detail through regular program management

meetings. With insight into the customer’s specified electromechanical system performance requirements and environmental parameters, Hutchinson devised assembly processes and test procedures, as well as data collection and analysis methods, to cost-effectively meet the requirements for consistent performance.

“Our team was able to draw from extensive experience with sensitive electronics and a deep understanding of the system’s environmental and vibration exposure,” continued Anderson. “The customer is now benefiting from having Hutchinson orchestrate all supply chain aspects of this program, while also technically helping to refine the system’s assembly process and performance consistency. We are excited that our customer is now receiving assembled systems at their targeted cost objectives that consistently meet all performance requirements.”

For the customer, managing seven suppliers supplying fifteen different components, is now reduced to Hutchinson delivering a single component on time and 100% compliant to specified requirements.

To learn more about Hutchinson’s capabilities, including those within the electric vehicle marketplace or custom solutions in any industry, please visit hutchinsonai.com.



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