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February 2020



**UNITED**  
CENTERLESS GRINDING  
& THREAD ROLLING

SEE PAGE 3



The Benefits Of  
Thread Rolling

SEE PAGE 15

COVER PHOTO : UNITED CENTERLESS GRINDING & THREAD ROLLING | 25 Rosenthal St | East Hartford, CT 06108

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February. The month for lovers.

We're not sure how that relates, but it's the first thing that popped into our minds when brainstorming began for the introductory blurb for this particular issue. That said, maybe it's a good time to tell your employees, vendors, and partners how much you appreciate their hard work. It's cold here in the northeast – this is opportunity to warm up the floor, which, who knows, may increase productivity! Go ahead, spread some love. Tell the folks making your job a little bit easier how much you appreciate them.

Friendly February reminder: You can (always) download a digital (PDF) copy of the magazine on demand at our website, and connect with us on social media (Facebook, LinkedIn, InstaGram) where we share all of our monthly features which enable sharing across the web, making that spotlight shine a little brighter and work a little harder. Check it out at [www.thegatewaymag.com](http://www.thegatewaymag.com) and check back often as it's updated every month when the new edition hits your mailbox!

Speaking of spreading appreciation – thanks for sticking with us!  
We're having a blast!



February 2020

# THE Gateway MAGAZINE

## PUBLICATION MANAGER

Matthias Roberge

## EDITORIAL DIRECTOR

Chris Hislop

## ART DIRECTOR

Adam Kaufmann

## ONLINE MARKETING

Adam Kaufmann

Beau Pingree

## ADVERTISING INQUIRIES

(877) 463-4020

[info@thegatewaymag.com](mailto:info@thegatewaymag.com)

Hours: 9am-5pm Mon-Fri

## MAILING ADDRESS

871 Islington Street, B105

Portsmouth, NH

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## GRINDING AND ROLLING FOR 60 YEARS



**It's been 60 years since United Centerless Grinding & Thread Rolling (United) opened its doors in Hartford, Connecticut back in 1960.**

A lot has changed over the years, including the move of their operation across the Connecticut River to their current location in East Hartford where they've slowly added on to their facility over the years and currently reside in nearly 19,000 square feet worth of space (18,904 sq./ft if you're keeping score at home...)

United is now a third-generation family owned business currently under the guise of Normand Goulet III (as well as Normand Goulet Jr. who can still be found hard at work

on the floor and offering significant input at company meetings). That longevity speaks to the trust and loyalty that exists amongst the company's 400+ customer pool who will often just send in jobs without prior communication knowing full-well that the work will get done, and if it can't, communication is quick, precise, and open.

As the name suggests, United Centerless Grinding & Thread Rolling has been in the business of custom grinding and thread rolling since their inception. They've updated their service offerings in recent years to include wire EDM cutting capabilities and have several automated assemblies in place to knock out large custom contract jobs on an annual basis. The long and short of it is, United aren't afraid of a job's scope. They'll handle small to enterprise sized jobs without any hesitation.



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CENTERLESS GRINDING

United specializes in precision centerless, form, crush and bar grinding services and pride themselves on exceeding industry standards in doing so. Their centerless grinding and thread rolling services can be used across all aforementioned industries, with a special emphasis on aerospace, medical, armament, commercial, automotive, military, and marine. They offer every customer a free estimate to gauge project cost and strictly adhere to predetermined scheduled delivery dates.

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(CONTINUED ON PAGE 6)



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## THREAD ROLLING

United offers high quality thread rolling services throughout the United States. Their inhouse specialists strive for quality in production and performance on all orders, no matter the size – big to small. Their thread rolling services can be utilized in all aforementioned industries, with a special emphasis on aerospace, medical, armament, commercial, automotive, military, and marine. Like their centerless grinding service, United provides free estimates and strictly adhere to predetermined scheduled delivery dates to ensure your project experiences no lag time and hang-ups. United has dedicated some of their workforce and space to automated thread rolling jobs which is an absolute marvel to see in person. They have the ability to reverse engineer any piece or part that you may need to apply threads to and have the equipment in hand to churn out enterprise-sized jobs that roll on year after year.

### SERVICE SPECIFICATIONS:

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(CONTINUED ON PAGE 10)



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WIRE EDM

United has most recently acquired and added the EDM wire cutting offering to their growing service set. Wire EDM services, like the rest of their work, is available for short runs and long contract options throughout the United States. They currently have over 25 years of experience in Wire EDM (Electrical Discharge Machining) and have open capacity on their Agie Charmilles Cut Wire EDM and EDM drilling equipment.



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(CONTINUED ON PAGE 10)



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## FOCUSED ON QUALITY

United Centerless Grinding & Thread Rolling have an inhouse quality assurance team dedicated to quality from project acquisition through post-production. This dedication ensures top-tiered results, and peace-of-mind from contracting customers who literally send in jobs without any warning. A true testament to the trust and loyalty that United customers have.

Quality is exuded in every vantage point, from the actual staff carrying out that literal role, to the engineers whose capabilities position them as an industry leader in solving project challenges and plotting educated design and processes right at the outset. United staff also includes mechanics who can, in a pinch, fix any issues with their fleet of machines, and have continued to actually fix machines for their competition when their equipment is in need. Handy! Another astonishing site to behold (outside of the cleanliness of the facility) is the proactive approach they've taken to rethink some of their older workhorse grinders that they've taken liberties with and are outfitting with modern functionality (like computer automation processes, etc.). Very cool, and very innovative.



## LOOKING INTO THE FUTURE

As 2020 starts to take shape, United has begun the process of converting a large portion of their operation to solar power, which is a green way of thinking – conscientious on their customers' bottom lines as well as the literal global environment.

United Centerless Grinding & Thread Rolling will celebrate their 60th anniversary with a big bash on May 15th, 2020 which will include appearances from industry leaders, local politicians, and more. Keep an eye on their website for further information.



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## APPLYING PRESSURE: THE BENEFITS OF THREAD ROLLING



*Photo supplied by: United East Hartford, CT*

### **We're all the beneficiaries of the end result of manufacturing processes in our everyday life.**

It is the lifeblood of technological advance and, simple, everyday items that make life what it is. One piece of the manufacturing equation that we're all subject to – we're talking 100%\* of us (\*this is not a formal result of any sort of poll/report), is the thread. If you've got something – anything with some sort of screw in it, you're experiencing the product of manufactured threadwork.

That said, let's put the spotlight on thread creation – one of the most tried and true technologies in global manufacturing.

Threads are accomplished by two general modes of action – cutting or rolling. One, as the name implies, removes material to accomplish the desired geometrical thread through a literal cutting/grinding process (thread cutting), the other applies pressure to a material to generate the desired geometrical thread (thread rolling).

Generally speaking, materials that are best rolled are difficult to cut and materials that are best cut are difficult to roll. That might be the best answer, honestly (a material fueled approach).

### THE INS AND OUTS OF MATERIAL SELECTION

We'll state the obvious for the sake of transparency... Working with the correct material will ensure the overall success of the thread creation process. The softer the material, the easier it is to utilize the process of thread rolling. The harder the material, the more you ought to lean towards thread cutting/grinding as the best application in order to optimize the life of your die/tool.

The other variable here (and believe us, we're not doing a super deep dive here, we're just putting the general operative processes on the table...) is machine speed and how that factors in to your rolling and/or cutting process. As an example, sulfur and lead will allow for high speeds but can compromise the quality of the finish of your rolled thread operation. Other materials such as stainless steel, allow for an excellent thread finish but are harder to roll and may lend itself to a compromised tool life. Working with steel, bismuth, aluminum, or sulfur will produce flakes and slivers which needs to be considered and offset to minimize poor tool/thread finishes.

Hardness and plasticity are two key traits when deciding whether or not the best operative approach will be thread rolling vs. cutting. By-and-large, the idea behind thread rolling is that it relies on the plasticity of the base material which lends to the ability to deform, or, rather, permanently imprint the desired shape into the workpiece through an imprinting die/head.

## BENEFITS OF THREAD ROLLING VS. CUTTING

We're not here to choose favorites. The matter in which you get from point A to point B is entirely up to the operator/engineer, but, we'd be remiss to not mention the inherent benefits of applying pressure to achieve a result vs. cutting into the physical material.

Not to dumb it down too much, but cutting can occur on just about anything. That said, a material that has a higher degree of plasticity is probably best served with the rolling process because cutting it might lead to gummed up edges on the threads (which is obviously an undesirable trait as far as threads go...)

Assuming the workpiece material meets the yield and flow requirements for rolling, the process offers several advantages over cutting threads. Compared to other production methods, rolled threads have improved physical properties. The cold working that takes place in the thread rolling process produces an increase in tensile strength and a better surface finish than is achieved with cutting operations.

Studies of shown that thread rolling improves the tensile strength of the material (metal) by 30% or more compared to that of traditional thread cutting/grinding methods. Improved fatigue strength of the finished product also increases by 50-75% via the rolling process which is obviously better for the application/longevity of the finished product.

---

THREAD ROLLING IMPROVES THE TENSILE STRENGTH OF THE MATERIAL (METAL) BY 30% OR MORE COMPARED TO THAT OF TRADITIONAL THREAD CUTTING/GRINDING METHODS.

---



### **Three basic thread rolling practices\* are:**

- **Axial Thread Rolling** – Axial thread rolling accomplishes its work by moving from the front (tailstock) of the part along the spindle centerline. In a single pass, three (up to six) rollers, synchronized by a planetary gear system, impart the desired OD thread shape, depth and pitch onto a workpiece.
- **Tangential Thread Rolling** – The tangential roller head makes its threads by approaching the workpiece blank from the side. Sometimes called side rolling or cross slide heads, tangential thread roller are designed to roll threads by pushing, at a controlled feed rate, two fixed parallel rolls onto the rotating component.
- **Radial Thread Rolling** – The radial thread rolling process utilizes two or three rolls to form a thread in a single rotation of the workpiece blank. The rolls on this type of thread roller are ground eccentrically. Starting with a flat on each roll, the thread form is progressive. A shallow thread form starts at one side of the flat and full form at the other side.

*\*Information sourced from Modern Machine Shop Magazine.*

(CONTINUED ON PAGE 18)

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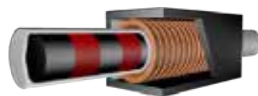
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### IN A NUTSHELL

If you've got a project that requires some degree of thread production, utilize your trusted partners/sources to understand the pros and cons of both sides of the proverbial coin. As with many parts of the manufacturing process, the path you ultimately choose is decided by the unique variables the task at hand is faced with. From the perspective of thread production, the most efficient and economical method is thread rolling.

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We're not saying that thread grinding, cutting, or chasing is inadequate and can't provide a good ROI. We're simply suggesting to consider what you've been up to and if that due process can be improved upon.

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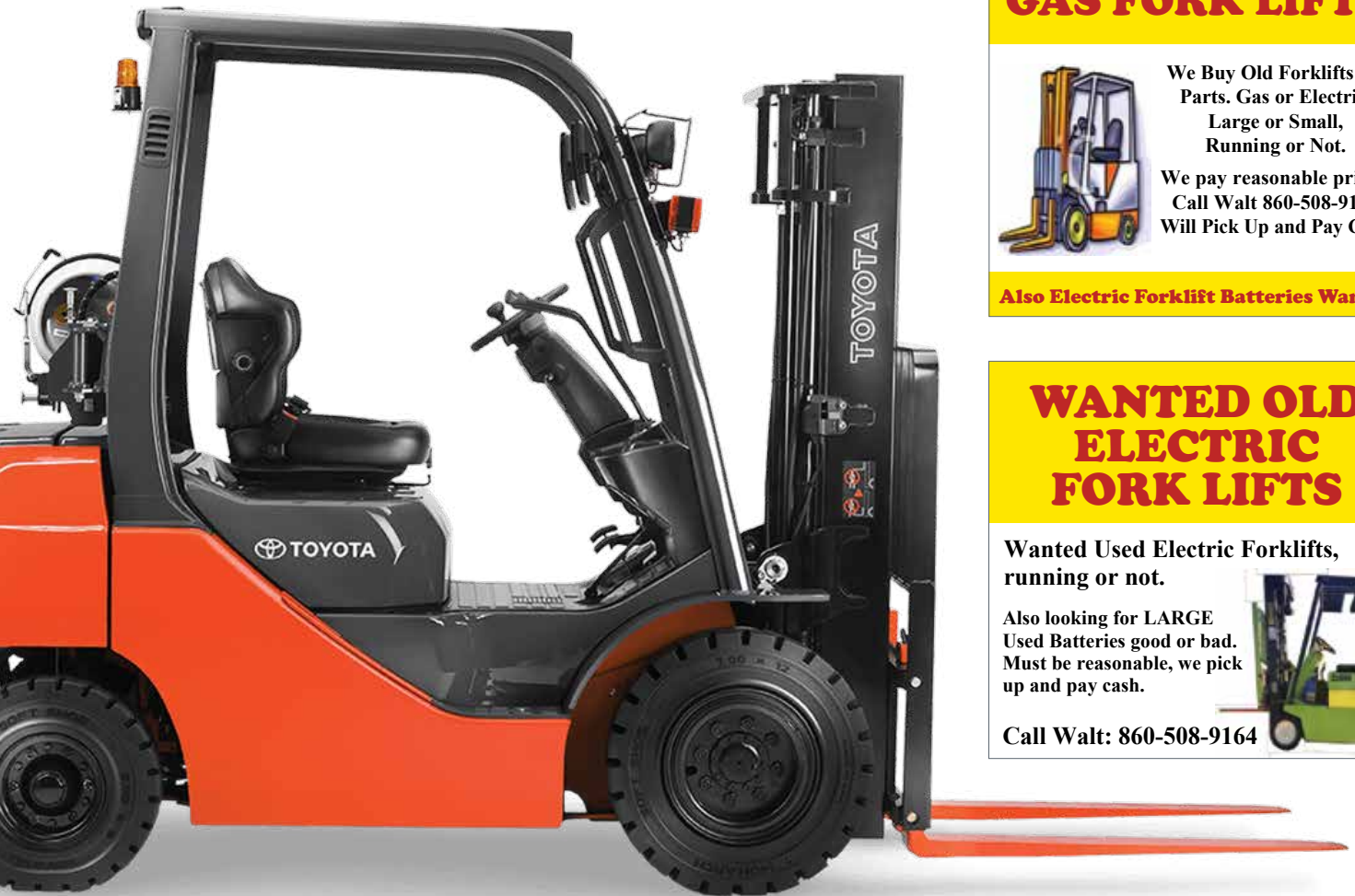
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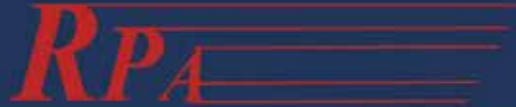




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