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May 2021



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COVER PHOTO : **HOWARD PRODUCTS** | Worcester, MA

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April showers bring May flowers and... a new issue of The Gateway Mag, right? Right! Regardless of what this new month brings you, we come to you with our insight on current industry trends and a discussion about past topics that still shower down timeless bits of wisdom.

This month our company spotlight is on Howard Products Inc, a company that strives to always put their customers first. Their relationship with their customers is everything to them and the catalyst to their success all these years. Besides the incredible customer service, they have also managed to dip their toes in a variety of industries for the last 70+ years (check out their fry oil cleaning caddy on their site. Wild innovation! Keeping up with manufacturing trends and the automation world is tricky but nothing HP can't handle.

As for our feature, this month we jumped in the Gateway DeLorean we recently found on eBay and rode it back to December of 2012. We take a look at an old piece of content that has been living in our archives for almost 10 years. It was sent in, back in the day, by a reader that wanted to take part in our "A Gateway Educational Enlightenment Article" series. These pieces were submitted by the Gateway manufacturing network to shed light on topics our collective readership might be inspired by. We hope you are 'enlightened' a bit about Computer Numerical Control machinery, which of course, is still wildly present in today's industry operations. If you are so inclined, feel free to send in an Educational Enlightenment piece of your own to [chris@thegatewaymag.com](mailto:chris@thegatewaymag.com).

Happy Spring, and don't let those pesky mayflies carry you off before we catch you in June...

All our best,



May 2021

# THE Gateway MAGAZINE

## PUBLICATION MANAGER

Matthias Roberge

## EDITORIAL DIRECTOR

Chris Hislop

## ART DIRECTOR

Adam Kaufmann

## SOCIAL MEDIA

Molly Hart

## ADVERTISING INQUIRIES

(877) 463-4020

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

Hours: 9am-5pm Mon-Fri

## MAILING ADDRESS

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## BRINGING YOUR IDEAS FROM PAPER TO PRODUCT: SAY HELLO TO HOWARD PRODUCTS



Howard Products located in Worcester, MA, was founded in 1948. From its modest beginnings, and through several shifts in family ownership, for the last 73 years Howard Products has used engineering ingenuity and keen attention to customer service to fabricate parts in a way that delivers value add to its customers. This steadfast belief in quality and customer service has seen the company through the thinnest of circumstances.



## SAY HELLO TO HOWARD PRODUCTS

Integrity and honesty are at the core of HP's expanding team. With their extensive experience, in-depth skills, and service offerings, their team can assist you in finding a solution for any hurdle that you may face during the process. From the moment you step in, customers can expect HP's complete dedication to services with a full line of capabilities to serve the diverse range of customers and industries they service.

Beginning with Donald Howard in 1948 and continuing with the current (family) owners, Martha Hawley and her husband, David, they share the vision of excellence which continues to be the cornerstone of the business. The Howard Product's team of committed employees bring a dedicated work ethic to their customers. Over the course of the last 73 years and beginning with fabricating baby carriages, HP moved on to the bio-med, transportation, and food service industries, to name just three origins of their diverse customer base. With a varied client base intentionally mixed to assure stability should one sector of industry falter, their 70+ year history has proven they have the ability to compete with the larger establishments.



### HOW SO?

Precision sheet metal fabrication increasingly turns to AI to 'automate' various processes. HP is one of the first businesses in the Worcester Area to use computers to control their operations. It continues to maintain its ability to compete in the marketplace by upgrading their equipment. Just last year, they upgraded their CNC/OTC controlled two station welding robot to reflect needed software and hardware improvements. Through various professional memberships and communications, HP strives to keep current with the latest production and engineering developments.

Though HP has long been a *precision* sheet metal fabricator, it recognized the need to provide proof to prospective clients that it was a *quality* operation. It undertook a 'standardization' of its processes along with a firm commitment to demonstrate continuing improvement. They obtained their ISO 9001-2008 Quality Management registration and *maintained* their commitment to continuing quality with their ISO -2001-2015 Quality Management upgrade. It has been a win/win for both HP and their customers.

HP's broad capabilities and strong relationships with outside services (machining/finishing, etc.) allows it to take a project from idea to finished, on time delivered, part. In the beginning stages, engineering works closely with the client to completely understand the project and suggest efficient cost saving methods of fabrication. As the project moves forward, parts are finished to spec and delivered on time.



*“Employees are continuously trained in quality procedures and keep watch through out the process to assure a good outcome. HP customers have confidence that their parts will be processed “the right part, the FIRST part, EVERY time.”*

**That process might include:**

- *Shearing a certed material (cert provided upon request)*
- *Laser cutting*
- *6 axis CNC bending*
- *CNC/OTC controlled 2 station robotic welding*
- *Finishing (complete with spec cert.)*
- *And more...*

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- *Bio-med*
- *Transportation*
- *Food service industries*
- *General manufacturing*



Howard Products offer a wide range of affordable capabilities and solutions, working in up to 1/2" steel, 1/4" stainless steel, 1/4" aluminum, and other metals. They can shear and bend to 10' while running 'full sheets' through their in-house Finn Power Turret Punch Press or Amada 2500Watt Laser.

The company continuously works with clients in the Metro Worcester Area, reaching as far North as Maine, South as Providence, RI , East as Metro Boston and West as the Berkshires concentrating in the Central Ma Area. It provides delivery, though will arrange truck transportation in accordance with customer preference. Because the company works in all sizes of runs from prototype/new development to production quantities, the variety keeps ideas and processes 'fresh'.



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## SPOTLIGHT ON THE PAST: A LOOK BACK ON OUR INDUSTRY

We thought it might be fun to, from time-to-time, revisit some old pieces of content that have lived in the pages of the Gateway Magazine at some point in the last 20+ years of the periodical's existence. This will also serve as a welcome departure from all the pandemic prose we seem to have been typing up for the past year... With that departure in mind and in the spirit of taking “a look back,” let's move forward (as best we can)! In many ways, the industry has changed greatly, while, in others, it's “business as usual” where we're simply looking to continue the grind and get ourselves from point A to point B in a job cycle.

Today we're going back to December of 2012 to have a look at “A Gateway Educational Enlightenment Article” that we used to run as space permitted. The pieces were submitted by our readers, and, if you'd like to submit a new Gateway Educational Enlightenment piece, but all means, send away. The spotlight in December's issue 9 years ago was an overview on CNC Machining. So, without further ado, here's the text verbatim (with some minor formatting changes...)



### WHAT DOES CNC MEAN?

CNC is defined as Computer Numerical Control. A CNC equipped machine would be a machine that moves, operates, or is controlled by a computer with a program. The program tells the machine a lot of useful information, such as:

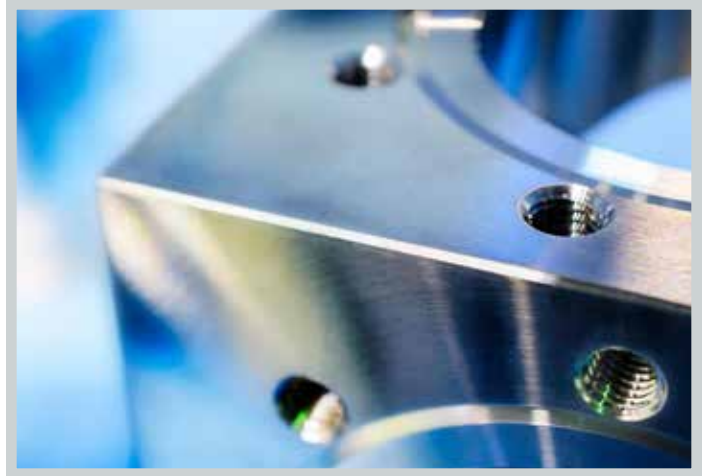
- *What material to remove*
- *Where to remove said material*
- *How much of that material to remove*
- *Where to place a weld*
- *Where to set a gauge (back gauge) to bend or fold apart*
- *Etc.*

In short, it tells the machine to perform an operation to initiate a needed function of a job. There are also CNC systems which would be a system, or even a number of machines that can be computer controlled. CNC can also handle the change of tooling either automatically or for operator intervention.

### WHY DO WE NEED IT PRODUCED ON CNC?

If you have a need for just a few pieces, you may not need to have it CNC machined. Parts are still produced on manual machines very successfully; but even for one or two very intricate designed parts, it may be faster to develop the program and use a CNC machine.

CNC machining is very accurate and precise compared to manual human operated machining. The CNC machine will never make an error because it only produces what the computer program tells it to do. This allows very detailed, intricate machining to be performed repetitively. If the part needs to be made every few months, or years, or a million parts are needed, the finished parts will be exactly the same each time if all other factors are controlled.



### I SEE ADS FOR ALL TYPES OF CNC PROCESSES. ARE THEY ALL THE SAME?

The real difference is the varying types of movements that are controlled. A CNC guided welding machine can lay down very precisely positioned and sized welds for very good looking, sound welds, and, when coupled to a robotic arm, can be placed in very long continuous welds on very large assemblies.

A CNC lathe has material loaded to be turned into shapes of the parts. It can be a single piece mounted in a chuck, or through a hollow feed chuck for multiple parts. The material is clamped in the chuck that rotates the material while the cutting tools are fixed on a movable tool holder. The tool moves against the rotating material as the computer program directs, cutting the material to shape.

A CNC milling machine holds the tools, the rotating chuck, and the material to be worked, and is mounted (clamped in a vise or work holding fixture) in a fixed position. The spinning tools are moved against the fixed material cutting it to shape. In some cases a movable pallet may be used to move parts into position for metal removal. This allows the operator to pre-load the pallet while the machine machines a pallet already in place, resulting in essentially non-stop production.

In both cases, the speed of the machine is controlled by the computer program.

## HOW DOES A CNC MACHINE WORK?

Mills typically consist of a table that moves in the X and Y axis, and a tool spindle that moves in the Z (depth). The position of the tool is driven by motors through a series of step-down gears in order to provide highly accurate movements, or in modern designs, direct-drive stepper motor or servo motors. Open-loop control works as long as the forces are kept small enough and speeds are not too great. On commercial metal-working machines, close loop controls are standard and required in order to provide the accuracy, speed, and repeatability demanded.

As the controller hardware evolved, the mills themselves also evolved. One change has been to enclose the entire mechanism in a large box as a safety measure, often with additional safety interlocks to ensure the operator is far enough from the working piece for safe operation. Most new CNC systems built today are completely electronically controlled.

CNC-like systems are now used for any process that can be described as a series of movements and operations. These include:

- *Laser cutting*
- *Water jet machining*
- *Flame and plasma cutting*
- *Tape and fiber placement*
- *Welding*
- *Bending*
- *Gluing*
- *Routing*
- *Friction stir welding*
- *Spinning*
- *Fabric cutting*
- *Picking and placing*
- *Ultrasonic welding*
- *Pinning*
- *Sewing*
- *and sawing...*

Virtually any material operation or step.

The machines can be as simple as a drilling machine that drills a hole repeatedly, or they can be huge complex devices that can machine large cylinder blocks in multiple designs.

CNC machines can be operated either unmanned, or with a few operators manning a production “cell” of many machines. Once the program that is used to give the machining detail and the tools to be used, etc., is given, then the machinery can run by itself. They will change the tools in the ordered sequence; turn the component around so that a fresh face is exposed, and so on. Because these machines can run by themselves for hours at a time, they save man-power and other resources. Usually rouging operations are done on other machines to save on productivity.

The CNC machine can be equipped with sensors to evaluate the sharpness of the tooling cutters based on the drag of the cutter to either change feed and speeds, or to actually change to a new cutter. In some automated





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machine shops the lights are turned off, and the machines operate completely by program in the dark. Robots driven by computer move parts from station to station keeping the entire plant in operation. It will provide lubrication and even sense if a lubricator is out of oil or gets plugged up.

CNC machine operation is relatively easy to learn and to set up as you just have to enter the instructions into a computer program. You can also recall the machine's previous settings instantly. This process allows you to save time as lengthy manual changeovers are not required.

CNC machines used in punching sheet metal parts are available to load a fresh raw sheet of material, punch out all the components, chop up the waste skeleton, and reload another fresh sheet of material. The labor savings lowers the costs to produce parts and speeds up the lead time to get the parts made. There are a wide variety of CNC machines available such as turning, drilling, grinding, and machining centers that perform milling, drilling, boring, tapping, and contour operations. CNC lathes like Swiss Automatics can be equipped with milling heads that allow a part to be turned to shape, then milled with flats, drilled, and tapped, producing 100% finished parts non-stop.

### WHERE CAN CNC MACHINES BE FOUND?

Although CNC machining is used by many types of industries it can also be used in other areas such as:

- *Sawmills*
- *Planers*
- *Wood working*
- *Plastic forming*
- *Routing*
- *Metal fabricating*
- *And more...*

A typical CNC system may consist of a CNC mill or a lathe on a 4th axis rotary table. There are 3 axis, 5 axis, and 7 axis machines on the market with additional special attachments that can be used to perform special operations.

### ISN'T PROGRAMMING THE MACHINES COSTLY?

Programmers can be thousands of miles away and the programs can be sent by broadband to operate the equipment. But the major change is many engineering programs now incorporate CAD (Computer Assisted Design) software. That allows the part or assembly design to go directly from design to manufacturing without the need of producing a drafted paper drawing of the manufactured component. That produces user-friendly information that can be interpreted by the CNC computer to use the raw data directly from the engineering specifications. The programmer role is simplified and they only need to choose the tool, the

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This is the CNC environment.

---

*Fun to revisit, and hey, if you've got an "Enlightenment Article" you'd like to submit, please, don't hesitate, we, and all our readers, love learning about the goings on in the vast world of manufacturing! Email submissions to: [chris@thegatewaymag.com](mailto:chris@thegatewaymag.com)*

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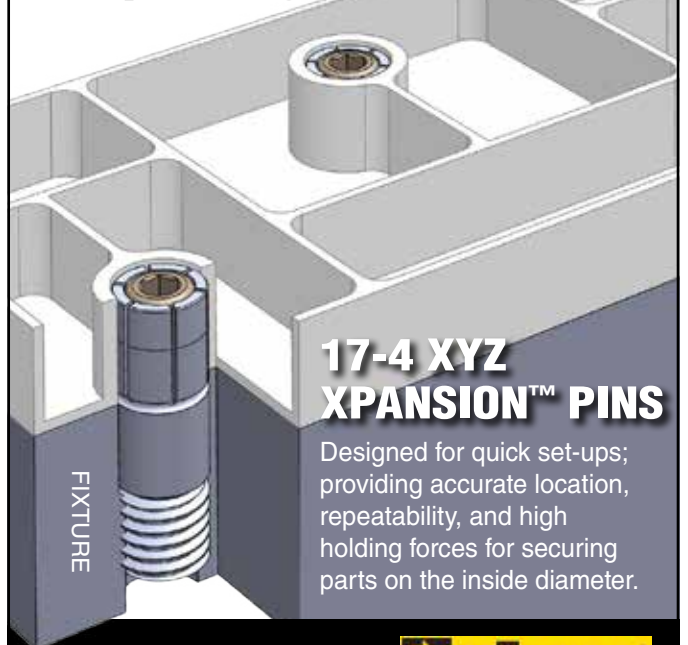
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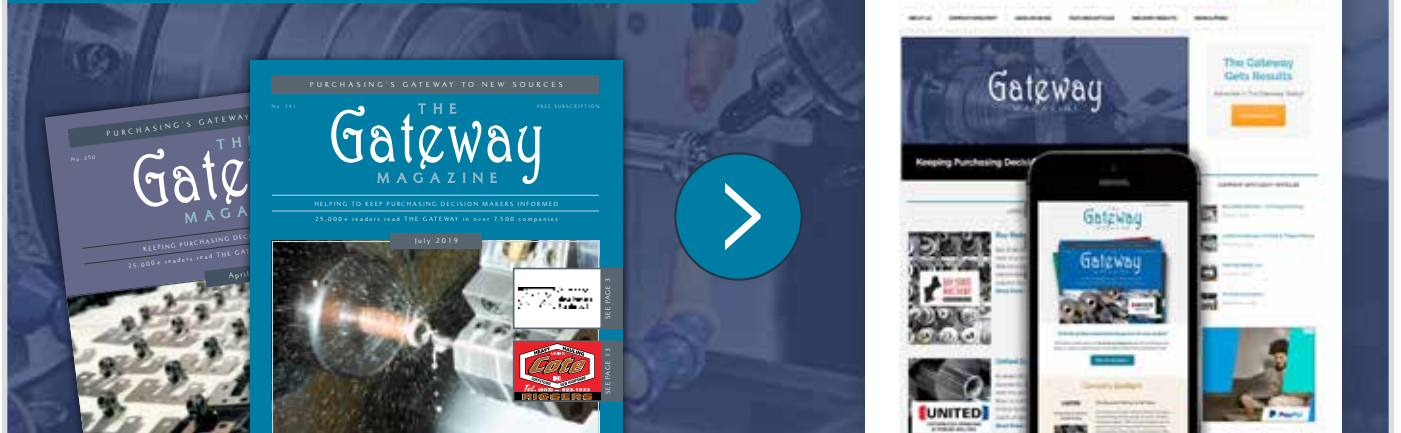
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HARTFORD, Conn., April 15th, 2021 – The STANLEY + Techstars Accelerator is proud to announce its third annual Demo Day on April 29. This will mark the culmination of an intensive, three-month program which helps startup founders accelerate their businesses through investment, resources and mentorship.

This year, when selecting companies, the STANLEY + Techstars Accelerator placed an emphasis on those working on solving problems within advanced manufacturing and Industry 4.0 with AI based solutions that impact the factory floor.

The selected companies range from hardware to software, touching on robotics, automation and often creating combined hardware, and software solutions.

Three companies part of this years' cohort are aiming to change how we think of manufacturing by innovating how and when we make:

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***Learn more about these companies and others by attending Virtual Demo Day on April 29 at 12pm EST. Go to <https://hopin.com/events/stanley-techstars-demo-da>.***

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Louisville, Kentucky – Product manufacturers, buyers, and consumers are invited to exhibit and/or attend the nation's only trade show devoted to showcasing American-made products. At the Made in America conference, manufacturers can show their products off to purchasing agents, corporate buyers, retail consumers, and the media as they network with one another. They will be able to take orders and sell products at the showcase. Some brands, including Red Gold Ketchup and Wellborn Cabinets, will be showcasing products and looking for new suppliers. The deadline to register to exhibit is August 15th.

MadeInAmerica.com is hosting the event. "Our goal every day is to inspire people to innovate, build and buy American-Made," said CEO Don Buckner. "American-Made products are the backbone of America's economy. As Americans, we should take great pride in our ability to deliver exceptional products."

Interest in Buying American is Surging

The federal government announced in January that its buyers should focus on spending American taxpayer dollars on American-made goods noting that this will help create well-paid jobs and boost the economy. Additionally, major companies are realizing how important it is to support American manufacturers. Walmart announced this year that it is strengthening its commitments to sourcing American-made products. Walmart pledged to invest \$350 billion in products that support U.S. jobs by 2030.

Research from Consumer Reports shows eight in ten American consumers would rather buy an American-made product than an imported one. That's good news for people who work in manufacturing. For every one person employed in manufacturing, there are another five employees hired elsewhere in the community. The cycle ripples through local economies, state economies and the national economy as manufacturing leads to job creation in other sectors, such as transportation and business services. According to the National Association of Manufacturing, every dollar spent in manufacturing adds \$2.74 to the economy.

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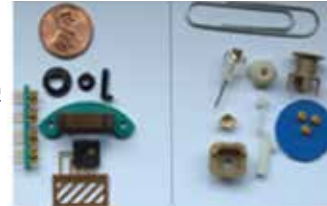
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