

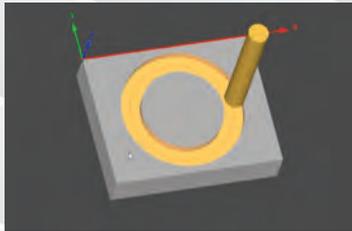
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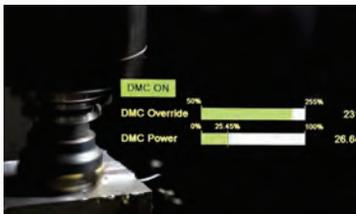
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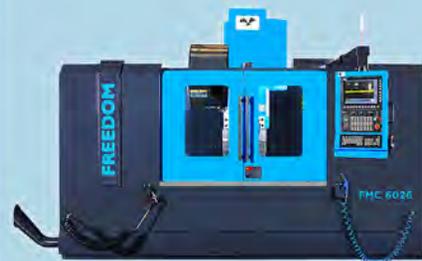
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CNC West

October/November 2020 • Volume 39 No 1

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Coming in Dec 2020/Jan 2021

QA & Fabrication —
Look for some really great stories and features covering the latest techniques, in quality assurance and metal fabrication, plus the latest news from the world of metalworking
Editorial: Nov 19, 2020
Ad Space: Nov 26 2020
Ad Material: Dec 2, 2020

CNC WEST

VOL. 39 NO.1

October/November 2020

The oldest regional industrial publication serving the Western States manufacturing managers, owners and engineers from 1 employee to those larger plants of 5,000 or more. Its editorials feature numerical control applications in all size machine shops, tooling, programming, robotics and shop operations, training personnel, financing of new equipment, cutting tools and all related manufacturing requirements. Coverage extends to all of Arizona, California, Oregon, Washington, Nevada, Utah, Idaho, Colorado, New Mexico and Texas.

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Founder:

Thomas F. Arnold (1927 - 2009)

PRESIDENT/PUBLISHER:

Shawn Arnold

EDITOR: Sean Buur

CIRC. MNGR: Charlene Strawbridge

PROD. MNGR: Linda Arnold

PROD. ASST: Jennifer Hallman

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39 Years and Still Going Strong

This issue of CNC WEST is the start of our 39th year. Considering I was there from the start I guess that makes me old. It also means the magazine has been able to survive all of these years which is no easy task. Just ask the 21 metalworking magazines that have ceased printing since that time. If interested in the list please shoot me an email and I will send it to you. All of these magazines had some success ranging from great to so-so in the last 39 years and in some way they all benefited the metalworking industry. Some were published by huge conglomerates like McGraw Hill and most were smaller publishing companies like CNC WEST.

CNC WEST could not have made it this far without our loyal western region readership. THANK YOU all for reading the magazine and supporting us. And to those selling machinery, software, tooling, workholding and anything to do with metalworking manufacturing and put your faith in us by advertising with us a BIG THANK YOU to you also.

So what is in this nice 96 page issue that we have mailed to you. In addition to advertising from some of the top builders, distributors and software companies in the industry we have an issue jam packed with interesting case histories.

Our cover article is about a Northern California shop who sees challenges as opportunities. They have a milling, turning and Swiss department and even through Covid are doing quite well. I think you will find the article written by Sean Buur quite enjoyable and informative.

Educating our youth about the advantages of metalworking manufacturing is of huge importance now days. In this issue we have two stories about the youth who will hopefully be the future of the industry. One article is about a high school in Arizona. It is in a lower income area of Tucson where jobs are limited but with students learning about manufacturing it hopefully opens the doors for a worthwhile career. The other education story is based at the University of Colorado in Boulder.

The college is responsible for teaching engineering students the inner workings of manufacturing. This includes CAD/CAM, 3D printing, materials science and product design principles, and CNC machine tool operation. Especially the latter.

There is also an article about an Orange, California shop EMS that started 9 years ago with two people. They now have over 30 employees and running 3 shifts. Quality is key at EMS and they rely on Verisurf software to provide consistency of operation, quality reporting, data management, and reduced training and support costs.

Big Kaiser provides important advice for milling holders and there is much much more. Thanks for reading this special anniversary edition. I am pretty sure I won't be around if we last another 39 years but I see no reason why the magazine won't be.

Sincerely,

Shawn Arnold

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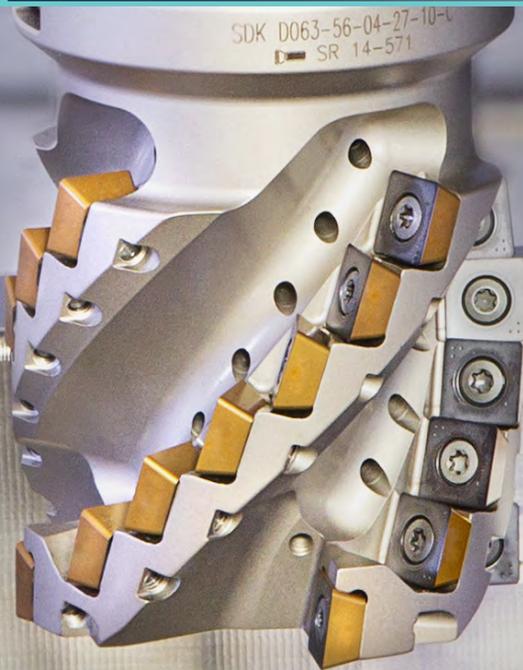


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EXEC HOTLINE

Northrop Gets \$135M Air Force IDIQ to Remanufacture Cruise Missile Navigation Tech

Northrop Grumman has secured a 14-year, \$135M contract to rebuild the inertial navigation component of an air-launched cruise missile system for the U.S. Air Force.

The company will disassemble, clean, inspect, maintain, reassemble, test and revert the element to mint condition as part of the indefinite-delivery/indefinite-quantity contract, the Department of Defense said.

USAF is using fiscal 2020 operations and maintenance funds to cover the initial \$21.5M task order under the sole-source IDIQ,

Contract work will primarily take place in Salt Lake City and is expected to be finished by Sept. 3, 2024.

Enter Air to Purchase up to Four Boeing 737-8 Jets

Boeing and Enter Air announced the Polish airline is expanding its commitment to the 737 family with a new order for two 737-8 airplanes plus options for two more jets.

An all-Boeing operator and Poland's biggest charter carrier, Enter Air began operations in 2010 with a single 737 airplane. Today, the airline's fleet includes 22 Next-Generation 737s and two 737 MAX airplanes. When the new purchase agreement is fully exercised, Enter Air's 737 MAX fleet will rise to 10 aircraft.

Raytheon Technologies Awarded \$92.5M Air Force Munition Datalink Radio IDIQ

Raytheon Technologies will provide datalink radios for the U.S. Air Force's standoff precision guided munition system under a one-year, \$92.5M contract.

The company will help the service branch integrate, test and operate weapons data link communications technology to support situational awareness efforts, the Department of Defense said in early September.

Raytheon will receive \$1M at the time of award and perform work in Fullerton, California.

Sylmar, CA. Company Wins NATO Sonar Contract

L3Harris Technologies has won a contract to build two sonar systems for an undisclosed member of the North Atlantic Treaty Organization, or NATO, at its ocean systems manufacturing plant in Sylmar.

The contract requires L3Harris to build two low-frequency active towed sonar, or LFATS, systems for a military ally. Such systems are used on ships to detect and track submarines. L3Harris designs its systems to perform at a lower operating frequency, making them effective against quiet diesel-electric submarines as well as nuclear submarines.

L3Harris said in a statement it was "a multi-million-dollar contract," but didn't disclose its exact value. Under terms of the contract, which was awarded by the Defense Department, the company will build and deliver the sonar systems over the next 26 months.

General Atomics to Supply Belgium Remotely Piloted Aircraft

General Atomics' aeronautical systems business has received a \$188.9M sole-source contract from the U.S. Air Force to provide four MQ-9B SkyGuardian unmanned air vehicles to Belgium as part of a foreign military sales transaction.

The undefinitized contract action also includes the procurement of ground control stations, support equipment and spares, the Department of Defense said in late August.

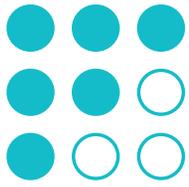
The AF Life Cycle Management Center is the contracting activity and will obligate \$94.3M in FMS funds at the time of award.

Work will take place in Poway, Calif., through March 31, 2024.

Phat Scooters Plans to Move Manufacturing From China

By the first quarter of 2021 the company plans to have its products made only in the United States in a Phoenix building they leased near Sky Harbor Airport.

Continued on page 88...



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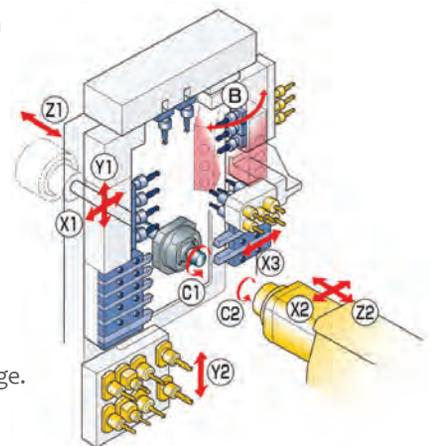
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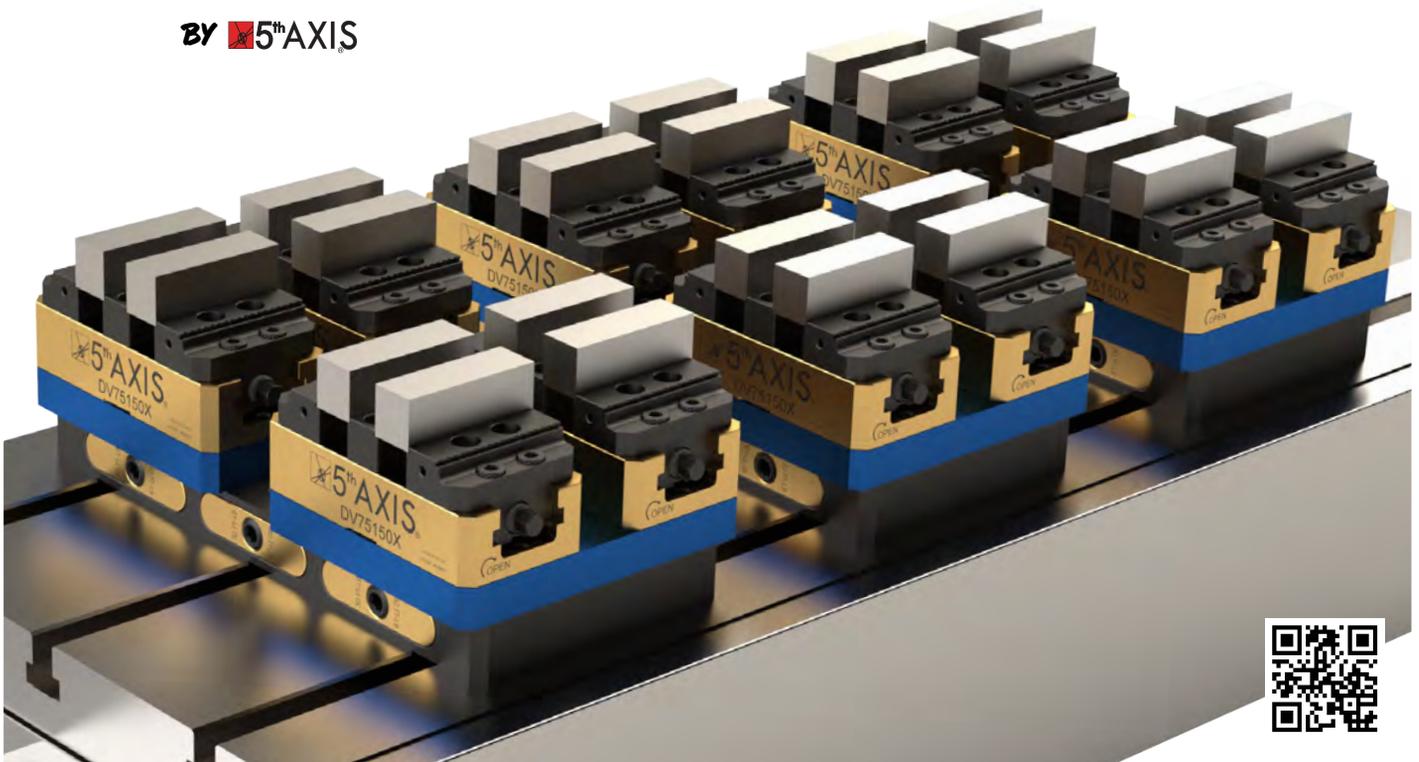
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| 6" | .312 | .499 | 3/8 | 1.500 | 2 | TG-6200F | \$ 41.64 | 6" | RTG-6200A | \$ 76.66 |
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| 8" | .312 | .499 | 3/8 | 1.750 | 2 | TG-8200F | \$ 22.15 | 8" | RTG-8200A | \$ 103.80 |
| | | | | | | 3 | TG-8300F | \$ 64.44 | 10" | 10-RTG-8300A |
| 10" | .501 | .749 | 1/2 | 2.125 | 2 | TG-10200F | \$ 23.83 | 12" | 12-RTG-10200A | \$ 184.94 |
| | | | | | | 4 | TG-10400F | \$ 75.33 | 15" | 15-RTG-10400A |
| 12" | .501 | .749 | 1/2 | 2.500 | 2.5 | TG-12250F | \$ 72.22 | 15" | 15-RTG-12250A | \$ 494.11 |
| | | | | | | 4 | TG-12400F | \$ 102.35 | 18" | 18-RTG-12400A |
| 15" | .501 | .749 | 5/8 | 3.000 | 2.5 | TG-15250F | \$ 87.22 | 21" | 21-RTG-15250A | \$ 908.09 |
| | | | | | | 4 | TG-15400F | \$ 113.74 | 24" | 24-RTG-15400A |

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| Model | Chuck Size | Groove Width | Screw Size | Hole Space | Hgt Inch | ALUMINUM | | |
|---------------------------|------------|--------------|------------|------------|----------|-------------|------------|-----------|
| | | | | | | Part Number | Set Price | |
| Kit B206 N206 HS-06 | 6" | 0.472 | 10MM | 0.787 | 2 | RKT-6200A | \$ 72.61 | |
| | | | | | | 3 | RKT-6300A | \$ 104.86 |
| | | | | | | 4 | RKT-6400A | \$ 118.88 |
| Kit B208 N208 HS-08 | 8" | 0.551 | 12MM | 0.984 | 2 | RKT-8200A | \$ 85.36 | |
| | | | | | | 3 | RKT-8300A | \$ 134.30 |
| | | | | | | 4 | RKT-8400A | \$ 159.83 |
| Kit B210 HS-10 | 10" | 0.630 | 12MM | 1.181 | 2 | RKT-10200A | \$ 126.28 | |
| | | | | | | 4 | RKT-10400A | \$ 193.60 |
| | | | | | | 3 | RKT-12200A | \$ 184.71 |
| Kit B12 HS-12 | 12" | 0.709 | 14MM | 1.181 | 2 | RKT-12300A | \$ 245.72 | |
| | | | | | | 3 | RKT-12208A | \$ 184.71 |
| Kit B212 BBM 315 | 12" | 0.827 | 16MM | 1.181 | 2 | RKT-12308A | \$ 278.56 | |
| | | | | | | 3 | RKT-12308A | \$ 278.56 |

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|-------------|-----------|-------------|---------------|
| B-206, HS06 | 6" | KT-60HJ2 | \$355.56 |
| B-208, HS08 | 8" | KT-80HJ2 | \$420.66 |
| B-210, HS10 | 10" | KT-100HJ2 | \$500.80 |
| B-12, HCH12 | 12" | KT-120HJ2 | \$540.84 |
| B-212, HS12 | 12" | KT-128HJ2 | \$540.84 |

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| Model | Chuck Size | Groove Width | Screw Size | Hole Space | Hgt Inch | STEEL | | ALUMINUM | | |
|-----------------------------|------------|--------------|------------|------------|----------|-------------|-----------|-------------|------------|----------|
| | | | | | | Part Number | Set Price | Part Number | Set Price | |
| Kit B206 HO27M6 HS-06 | 6" | 0.472 | 10MM | 0.787 | 2 | KT-6200F | \$ 34.37 | KT-6200AF | \$ 31.59 | |
| | | | | | | 3 | KT-6300F | \$ 44.99 | KT-6300AF | \$ 41.12 |
| | | | | | | 4 | KT-6400F | \$ 95.71 | KT-6400AF | \$ 86.08 |
| Kit B208 ZA6-8 HS-08 | 8" | 0.551 | 12MM | 0.984 | 2 | KT-8200F | \$ 40.70 | KT-8200AF | \$ 38.56 | |
| | | | | | | 3 | KT-8300F | \$ 46.82 | KT-8300AF | \$ 50.90 |
| | | | | | | 4 | KT-8400F | \$ 61.00 | KT-8400AF | \$ 62.11 |
| Kit B210 HS-10 | 10" | 0.630 | 12MM | 1.181 | 2 | KT-10200F | \$ 45.84 | KT-10200AF | \$ 46.66 | |
| | | | | | | 4 | KT-10400F | \$ 76.14 | KT-10400AF | \$ 67.46 |
| | | | | | | 3 | KT-12200F | \$ 72.00 | KT-12200AF | \$ 74.05 |
| Kit B12 HS-12 | 12" | 0.709 | 14MM | 1.181 | 2 | KT-12300F | \$ 107.96 | KT-12300AF | \$ 90.10 | |
| | | | | | | 3 | KT-12208F | \$ 72.00 | KT-12208AF | \$ 74.05 |
| | | | | | | 4 | KT-12308F | \$ 107.96 | KT-12308AF | \$ 90.10 |

*For Pointed Soft Jaws, replace the "F" with "P" & add \$4.00 (6"-10")/\$7.00 (12" & above) per set.

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|-----------|-------------|------------|
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| 6" | JBR-06 | \$ 184.25 |
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| 10" | JBR-10 | \$ 255.67 |
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| Chuck Model | Chuck Dia | GRIP-RITE OEM STYLE | | XTRA BITE | |
|-------------|-----------|---------------------|---------------|-------------|---------------|
| | | Part Number | Price Per Set | Part Number | Price Per Set |
| B206, HS06 | 6" | KT-60HJ2-U | \$245.75 | KT-60HJ2-X | \$256.55 |
| B208, HS08 | 8" | KT-80HJ2-U | \$294.53 | KT-80HJ2-X | \$312.71 |
| B210, HS10 | 10" | KT-100HJ2-U | \$336.60 | KT-100HJ2-X | \$370.44 |
| B-12 | 12" | KT-120HJ2-U | \$391.99 | KT-120HJ2-X | \$415.42 |
| B-212, HS12 | 12" | KT-128HJ2-U | \$390.92 | KT-128HJ2-X | \$416.29 |
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| Machine | Thread | Head Dia | Angle | Coolant | Part Number | Price EA |
|------------------|---------|----------|-------|---------|-------------|----------|
| Fadal BT40 | M16-2.0 | .740 | 90° | No | B40-4501S | \$ 17.72 |
| HAAS BT40 | M16-2.0 | .590 | 45° | Yes | B40-4500H | \$ 22.80 |
| HAAS CAT40 | 5/8-11 | .589 | 45° | No | C40-4501S | \$ 17.72 |
| Fadal CAT40 | 5/8-11 | .740 | 45° | No | C40-4500S | \$ 15.20 |
| Okuma CAT40 | 5/8-11 | .589 | 60° | No | C40-6000S | \$ 17.72 |
| Mazak CAT40 | 5/8-11 | .740 | 45° | Yes | C40-4500H | \$ 15.75 |
| Mori Seiki CAT50 | 1-8 | .905 | 90° | No | C50-9000S | \$ 21.85 |



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|--------|-------|------------------------|------------|------------------------|------------|
| | | KINGSTON Part Number | Price Each | SPIN TRU Part Number | Price Each |
| 1/8" | 1.75" | C40-01EM175-K | \$ 49.95 | C40-01EM175-KB | \$ 69.99 |
| 3/16" | 1.38" | C40-18EM138-K | \$ 49.95 | C40-18EM138-KB | \$ 69.99 |
| 1/4" | 1.38" | C40-25EM138-K | \$ 49.95 | C40-25EM138-KB | \$ 69.99 |
| | 1.75" | C40-25EM175-K | \$ 53.85 | C40-25EM175-KB | \$ 69.99 |
| 5/16" | 1.38" | C40-31EM138-K | \$ 53.85 | C40-31EM138-KB | \$ 69.99 |
| | 3/8" | C40-37EM138-K | \$ 49.95 | C40-37EM138-KB | \$ 69.99 |
| 3/8" | 2.50" | C40-37EM250-K | \$ 53.85 | C40-37EM250-KB | \$ 69.99 |
| | 1/2" | C40-50EM175-K | \$ 53.85 | C40-50EM175-KB | \$ 69.99 |
| 1/2" | 4.00" | C40-50EM400-K | \$ 53.85 | C40-50EM400-KB | \$ 69.46 |
| | 5/8" | C40-62EM175-K | \$ 53.85 | C40-62EM175-KB | \$ 69.99 |
| 3/4" | 3.00" | C40-62EM300-K | \$ 53.85 | C40-62EM400-KB | \$ 73.02 |
| | 1.75" | C40-75EM175-K | \$ 53.85 | C40-75EM175-KB | \$ 69.99 |
| 1" | 3.00" | C40-75EM300-K | \$ 53.85 | C40-75EM300-KB | \$ 69.99 |
| | 1.75" | C40-10EM175-K | \$ 53.85 | C40-10EM175-KB | \$ 69.99 |
| 1-1/4" | 6.00" | C40-10EM600-K | \$ 60.45 | C40-10EM600-KB | \$ 74.47 |
| | 2.00" | C40-12EM200-K | \$ 53.85 | C40-12EM200-KB | \$ 69.99 |

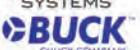


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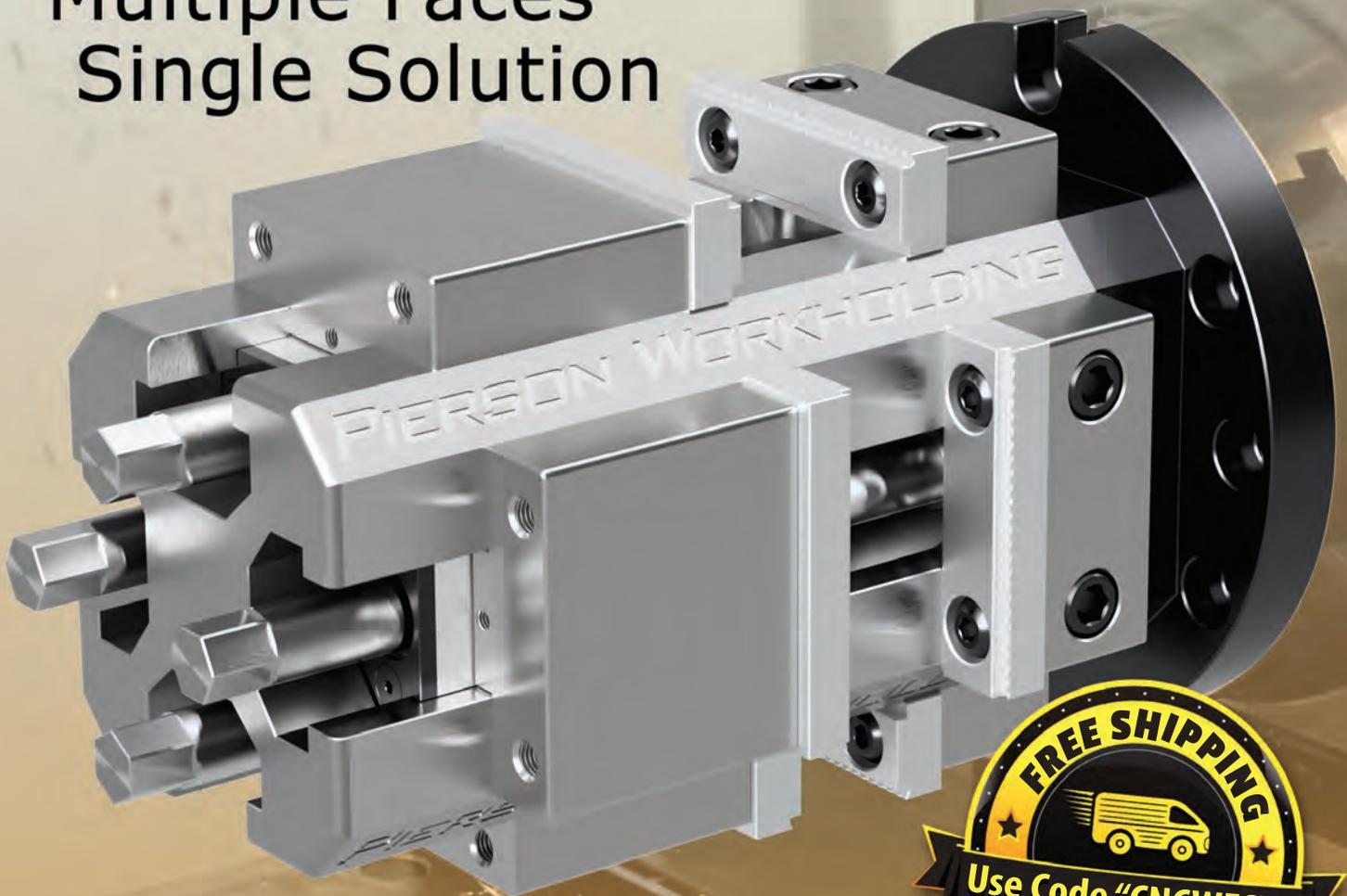
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Optomec Receives Air Force Contract for Metal Additive System to Repair Aircraft Engines



Next Generation Automated Machine will enable production repair of Titanium Turbine Blades.

The US Air Force has awarded Albuquerque, New Mexico based Optomec a \$1 million contract to deliver a high volume production machine for refurbishing turbine engine components, including titanium parts. The equipment will include a range of state-of-the-art capabilities, including an automation system for batch processing, an oxygen-free controlled atmosphere, and an adaptive vision system. This automated additive repair system will be capable of processing tens of thousands of repairs per year, with an initial focus on tip refurbishment for turbine blades. Optomec will also assist the US Air Force in developing optimal process parameters for a range of target repairs. The solution will be installed at Tinker Air Force Base, in Oklahoma City, which already hosts a world class comprehensive aircraft engine overhaul capability.

The US Air Force spends billions of dollars annually servicing the engines of its military aircraft, an activity referred to as MRO (Maintenance, Repair and Overhaul). More broadly, there is a \$50 Billion a year global market for Aircraft Engine MRO across all commercial and military aviation combined. A large part of the expenditure is tied to the replacement of worn or damaged components with newly made parts. In contrast, Optomec's Metal Additive Repair solutions enable restoration of the existing parts, with a demonstrated cost savings of up to 70%. In addition to significant cost savings, the Air Force will benefit from shortened, more predictable lead times and reduced supply

chain dependencies, which translates to improved readiness for our military.

Optomec's metal additive repair solution is based on its proprietary LENS technology, which was first commercialized more than 20 years ago. LENS uses a process called Directed Energy Deposition (DED) in which a highly concentrated stream of metal powder is jetted into a molten pool created by the focus of a laser beam. By precisely controlling the melt pool and the powder flow, a high performance metal structure

is built up, either in the form of a fully printed part or as a local deposit onto an existing component to repair it.

Optomec has delivered more than 200 LENS/DED machines, with nearly 100 being used in production to repair turbine blades in the commercial aviation and power generation markets.

"Optomec is proud to be serving our military. We have been processing titanium for years, but not in high-volume, oxygen-free production cells, although Optomec has developed automated, high-volume production cells for other alloys," said Jamie Hanson, VP Business Development at Optomec. "The challenge given to us by the Air Force was to provide a system based on commercially proven capabilities that meet their production and technical requirements. We will be providing a first of a kind machine with automation that enables virtually uninterrupted production in an oxygen-free environment. This capability will help enable the broader aerospace industry by meeting its cost-reduction goals going forward. We would like to thank the Air Force Rapid Sustainment Office and AFWERX for the opportunity and the streamlined process that enabled this contract."

AFRL and AFWERX have partnered to streamline the Small Business Innovation Research process in an attempt to speed up the experience, broaden the pool of potential applicants and decrease bureaucratic overhead. Beginning in SBIR 18.2, and now in 20.1, the Air Force has begun offering 'Special' SBIR topics that are faster, leaner and open to a broader range of innovations.

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EXPEDITE PRECISION WORKS INC.

Article by LSean Buur Photos Supplied by Expedite Precision Works Inc.



Orlando and Martin Teixeira

CONVERTING CHALLENGES INTO OPPORTUNITIES FOR 28 YEARS

Expedite Precision Works Inc. in San Jose, California started out in Orlando Teixeira's garage with the hope of adding some extra money to his bank account. He had nothing more than a manual mill, manual lathe, surface grinder, saw, and a dream. Over the last 28 years, Expedite has evolved into a high complexity, tight tolerance, precision manufacturing center with 5 axis milling and Swiss turning.

Orlando got into the business almost by mistake. After taking classes for electronics technology and coming to the conclusion he didn't like it, he got a job at a local machine shop sweeping floors and deburring parts. "I thought I would make a little money while I figured things out," says Orlando Teixeira, founder, and president of Expedite Precision Works Inc. "I must have done a good job because they kept asking me to do different things, moving me up to more important roles. I knew then that this was the job for me, I loved it, and I focused on learning as much as I could at every place I worked. Luckily, I worked for companies that were willing to train

me. That aspect of teaching those who want to learn is a key element I brought into my own business. I worked for one of the best machine shops in the Bay Area, and at that time they were desperate for machinists, not as desperate as we are now, but close. They took the time to train me because they needed people who could do the job, but also because they saw potential in me that I hadn't yet realized. I remember that feeling, knowing that as long as I was willing to learn there were people willing to teach. That is also a fundamental part of Expedite Precision Works." The first two months Orlando went out to the machines every day and polished and oiled them because he had no work. His break came when a local semiconductor OEM gave him random overflow parts to machine. As the OEM grew, Expedite grew, and six months later Orlando had rented a small building to house his growing enterprise. "My original goal was to make some extra money, but right away I found great satisfaction in keeping the customer happy. To this day a happy customer still brings me joy knowing we did a good job. Happy customers breed happy

customers, and everything else just fell into place.”

Yousuff Habibullahkhan has been with Expedite for 21 years, not since the beginning, but pretty close to it. His official title is director of operations at Expedite Precision Works Inc., but as a small company with only 30 employees Yousuff, along with the rest of the management team wear a lot of different hats depending on the needs of the day. Orlando credits him with wearing the most hats, while operations support, Martin Teixeira, claims to wear only one less hat than Yousuff. The takeaway from the extensive hat collection is companywide adaptability. “When Orlando started the company making odds and ends for a single customer, it is important to recognize that the semiconductor industry is a very volatile industry,” explains Yousuff. “Pricing is ruthless, things change pretty quickly. From that starting point in the garage to where we are now is impressive. Over the last 28 years we’ve adapted and evolved. Most of our customers now come from the medical and aerospace industries. We still do the odds and ends, along with R & D and pre-production, but our main focus is on production runs. We’ve designed the business around our customer’s needs. If there is a piece of technology we need to pursue

and incorporate into our business practices, we have done that. We acquire the latest machine tools as well as maintain all items needed to excel in these industries like ISO certifications. We are ISO9001, ISO13485, and ITAR certified. All these things came about because we saw a need at the time and for the future. The semiconductor business is very cyclical; some years are very good, and others are very bad. We knew diversification was a way to avoid pitfalls and grow the business. Orlando decided that medical was the next growth opportunity for us and we made an effort to attract medical device customers.



Expedite Precision Works Inc. added their YCM FX380A 5-AXIS vertical machining center a year and a half ago to handle the complex designs and tight tolerances required of the medical, defense and aerospace industries.

We were able to parlay our knowledge and craft into Aerospace after that.” “Everything we do, and every machine we buy is to support our customers now and into the future,” adds Martin. “A lot of our machining centers are under 5 years old, and we have pretty extensive capabilities that include 5 axis milling, Swiss turning, EDM, surface grinding, and even laser welding. Every year the designs get more complex. To keep up with that demand we are in a constant state of investing in new equipment and software to best support our customers. Everything from our ERP software to the three Mitutoyo CNC CMMs are operating with the latest specs to best



Expedite has two Sodick wire EDM machining centers they use in production as well as support equipment for the shops manufacturing capabilities. Because of the versatility and quick setup, the EDM department could be running customer parts one day and make tooling for an upcoming job the next.

support our customers. Our E2 Shop System is an end to end solution capturing everything from the RFQ stage up through accounting. We utilize the latest in CAD/CAM software as well, running MasterCam, GeoPath, FeatureCam, Part Maker, Solid Works and SurfCam. We have all the bases covered and can utilize as much or as little as needed. We have 5-6 really good programmers, but at least ten guys can program as needed.”

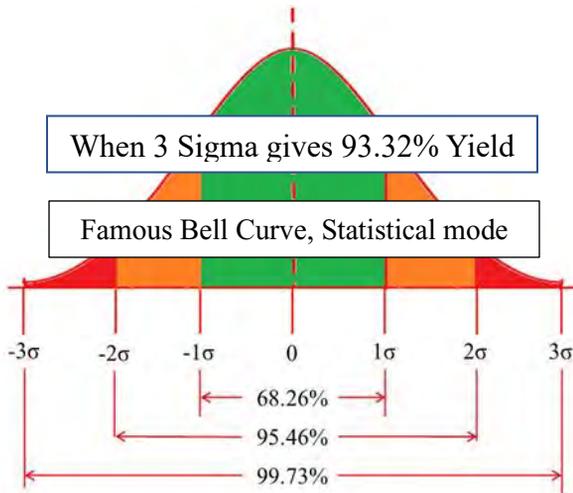
Expedite Precision’s milling department consists of one Matsuura horizontal H-Plus-405 10 pallet cell system with 240 tools, one YCM FX380A 5-AXIS vertical machining center with glass scales on all axis: X, Y, Z, A, C and Renishaw spindle and tool probing, three YCM vertical machine centers, one MATRIX XR510, high precision/high speed vertical machining center, three Haas Super VF-2, one standard VM2 and a single Fadal VMC 4020. Turning is accomplished by Kia and Hyundai lathes that include: KIA Turn 21, KIA Super Turn 21, KIA KIT 450 and two Hyundai WIA machines. Expedite got into Swiss turning the second their customers had a need, after that there was no turning back. The Swiss department is made up of six Star machines and a single Nomura. The Stars all have live tooling with full C axis, but their Star SR20RIV-B takes things even further with full B axis with 3 front milling and 3 rear milling units, live tooling, full C axis with sub spindle and broken tool

detector. Orlando and his team learned long ago that the more processes they control in house the better the parts and the happier the customer. “We have PO’s that require us to do all the manufacturing in house,” tells Orlando. “Even the ones that don’t mandate in-house manufacturing still like that their job is under our complete control. In-house manufacturing is always less money than sending it out, and we are able to pass that savings along to the customer.” “Not only do they get a better part, but they get it at a better price,” adds Yousuff. “That’s how we got into wire EDM machining. We had a part that required EDM and we would have lost the job if we sent it out. So, we purchased a SODICK AQL325L and the next week ran the part. Wire EDM’s are super versatile machines and we added a larger SODICK VL 600Q not long after. We use it for manufacturing as well as making our own tooling.” “Next up for us is a cryogenic deburring machine” continues Martin. “We were manually doing it for years, then it became an outside process, but we’ve reached a point where we need to have it back under our control again. It is a very efficient way to deburr parts and should be on our shop floor very soon.”

Orlando can’t think of a single piece of equipment that wasn’t purchased because of a direct need. They don’t buy machine tools in the hope that someday it will get used. If there is a better, faster, more efficient way to do

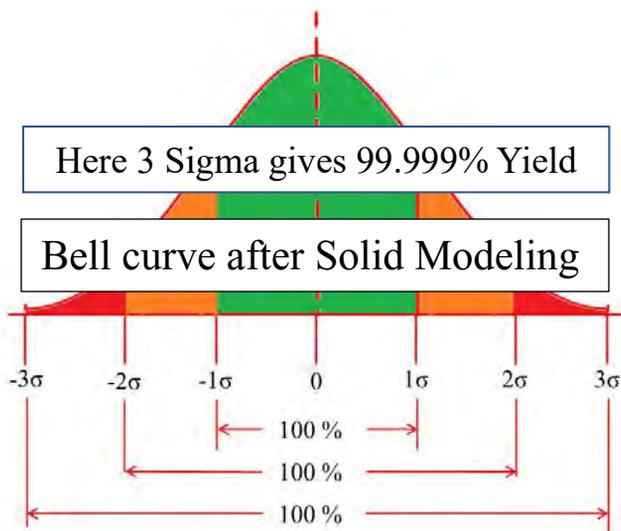
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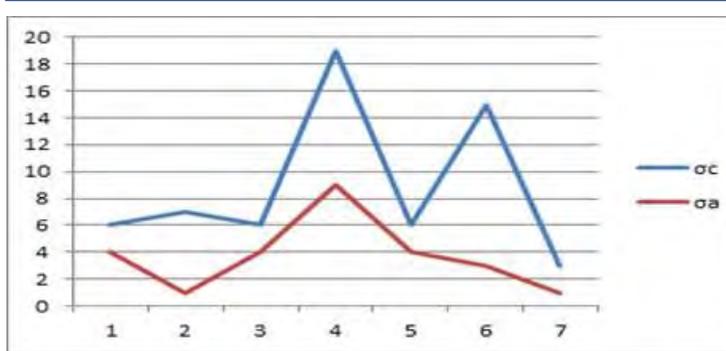
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| CORRELATION ANALYSIS | |
|----------------------|------------|
| σ_c | σ_a |
| 6 | 4 |
| 7 | 4 |
| 6 | 4 |
| 19 | 9 |
| 6 | 4 |
| 15 | 4 |
| 3 | 4 |
| 4 | 4 |
| Average | 8 |
| CORRELATION | 1 |

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Expedite's milling department ranges from standard to high speed vertical mills. Their Matsuura H-Plus-405 horizontal is a 10-pallet cell system with 240 tools.

things they find it. If the numbers make sense, they buy it straight away. When they saw the trend of more and more complex parts coming from their customers, they knew adding a YCM 5th axis machining center was the best way to adapt to the new challenges. "Adding the YMC 5 axis machine a year and a half ago gained us a lot of capabilities," tells Martin." But, as the guy who wears the HR hat, it also left us scrambling to find good people to program and run it. When it comes to the talent pool we have to compete locally with companies like Apple and Tesla." So instead of watching them take who they want, Expedite began to implement their own extensive in-house training program focusing on the 5-axis and Swiss machines. They've found enough similarities between the 5 axis and the Swiss machines to successfully cross train on a variety of machine tools. "First we invest in good equipment, then we invest in our employees," continues Yousuff. "Our employees are as important as our customers and having them trained and educated in the latest advances in machine tools and software is a big part of our success. Everyone has a different skill set, but everyone can improve on what they do. By cross training and educating, employees grow as we grow. It increases value to us as a company, increases value to our customers, and increases value to them as individuals." "Training was a big part of my career," adds Orlando. "My past employers helped me to achieve more as a machinist. I ate up the opportunity to learn and so do our employees. Employees are our biggest asset. Our employees keep our customers happy by making great parts, offering great service and so forth. They are the first and last line of defense and the more they know the better we are at servicing our clients. Martin has played a big part in the decision to really put forth time, effort and dollars into employees we see with great potential. He is a lot younger than Yousuff and having a fresh outlook and younger perspective really enhances our management team." The frequency of training has improved drastically

recently. What once might be annually is now quarterly and so forth. With the information fresh in everyone's minds, employees retain it much better. The biggest aspect of their in-house training as of late is as simple as trying harder. "We laugh about trying harder, but it's true," explains Martin. "How you go about continued education makes a big difference. They see management's commitment and effort and that is reciprocated back to us." "We also really listen to our employees," tells Yousuff. "They know where we need improvement, and they come to us with aspirations of advancement. Having the best trained, most versatile employees is a win for everyone. A perfect example of how our cross-training program paid off is one of our medical customers manufactures Covid test kits. We were able to shuffle people around who don't normally run the Swiss machines into that department and add extra shifts. Added production helped our customer help us as a country. If we didn't cross train, then this wouldn't have been possible."



Orlando - Yousuff - Martin - All via Zoom during a self-imposed Covid lock-down

Covid hit Expedite Precision Works Inc. right out of the gate with an employee's relative testing positive for the virus. Even though they are an essential business, they shut down for 2 weeks so everyone could be tested before returning. After self-quarantine and negative test results, employees could come back to work. CNC West Magazine conducted this interview via Zoom during that time with Yousuff, Martin and Orlando all in different locations. It was early in the lockdown, and admittedly Orlando's first Zoom meeting. "Initially, as a company we looked at the



Expedite's turning department utilizes tradition lathes by Kia and Hyundai as well as 6 Star and one Nomura Swiss screw machines.

best ways to keep our people as safe as possible,” details Yousuff. “One of the first things we did was control access to the facility. Everyone now enters via the lobby, so we know when and who is coming in at all times. Visitors are restricted and encouraged to reach out with technology instead of coming in.” Expedite are staggering shifts and breaks whenever possible, minimizing the number of essential people on site at any given time. They follow all the guidelines set forth by the CDC regarding masks, cleanliness and suggested distancing. They continue to monitor the guidelines closely and try to remain as nimble as they can in case there is a change in protocols. “Another option we’ve been implementing is working from home,” tells Yousuff. “Obviously, that isn’t possible company wide, but we’re finding ways to do it. Orlando started the business from his garage, so we figure it is ok to work from home when possible. We see every challenge as an opportunity for improvement and Covid19 is no different. There are takeaways from the pandemic that have helped us become better.” “Flu season has an impact on us every year,” adds Orlando. “With new protocols in place I am hoping we will eliminate some of the flu infections come winter. Take cleanliness for example, we always had a clean work environment, but now it has improved. Our new level of clean has become the baseline moving forward. There is no going back, only forward.”

Expedite Precision Works Inc. thrives in a volatile industry where challenges come at them often. “We don’t see anything as an impediment,” touts Yousuff. “We see things as challenges that we can overcome, challenges we want to overcome, and challenges we will overcome. Dot com busts, housing bubbles bursting, and now this pandemic. Each one of those challenges has made us a better company. We adapt, we learn, we improve.” That mentality comes from the top down. Management leads the way when it comes to adaptation. Take ISO for example. Management embrace it, so their employees embrace it. “Many companies look at ISO as being restrictive, and

don’t want to be told how to do their job,” tells Orlando. “We see it as a way to guarantee repeatability and provide the best part possible for our customers.” “Not all our jobs require our certifications, but those practices are part of our shop-wide culture,” continues Yousuff. “Every job benefits from the standardization that ISO dictates. Orlando believes in constant improvement and that mentality is companywide. Just look at how far we’ve come as a manual garage shop to an ISO9001/13485 company.”

Expedite Precision’s goal is to establish and maintain long term relationships with their customers. Their partnerships might start in the development stage, the design for manufacturability stage, or at the time of production, but it is a partnership through and through. “We want to provide a cost-effective solution for our customers,” concludes Orlando. “We work with many multinational companies and see ourselves as an extension of their manufacturing team. Our long-term customers see us that way as well. They should, because we are with them beginning to end. Our customer’s core competency is in designing parts, our expertise is in manufacturing parts and managing the supply chain. Having us as a single point of contact makes it easier for them to concentrate on what they do best. That makes the customer happy, and we like happy customers.”



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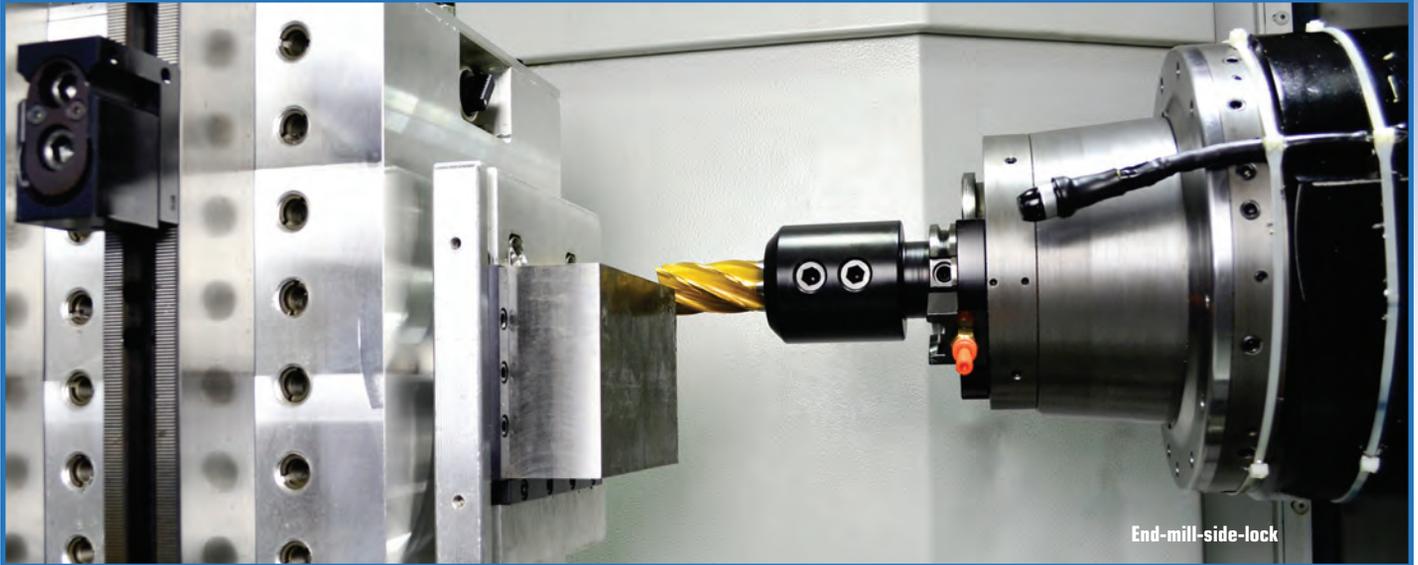


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IMPORTANT ADVICE FOR MILLING HOLDERS

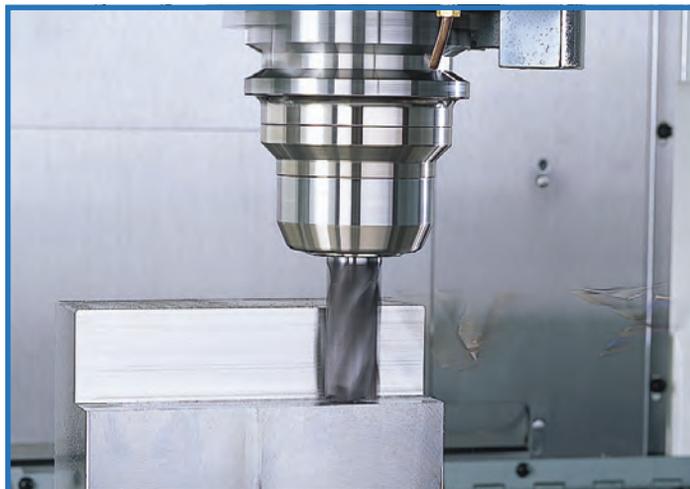
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Milling is a core operation in all kinds of manufacturing environments. There are five different kinds of milling holders, each with their own strengths and weaknesses. Here is some information to help you choose with the breakdown and top recommendation for using each.

MILLING CHUCKS

Let's start with the jack of all trades in the world of milling holders. Milling chucks' high retention force combined with a simple twist-to-lock operation makes them ideal for general purpose operations. These chucks grip a tool shank by means of mechanical deformation of rows of needle bearings. These holders provide substantially more gripping force than a collet. Runout, however, is reduced compared to collet chucks, but is still better than double the performance of side lock systems. Their large bodies help dampen vibration and chatter. The



Mega-d

option for high-pressure coolant delivery through the tool is also useful.

TOP TIP

The bigger the milling chuck, the more the clamping force. Larger size chucks have a higher starting potential clamping force. When paired with a reduction collet the final gripping force is higher than a direct clamping size chuck.

HYDRAULIC CHUCK

Hydraulic chucks are often more specialized because of their slim body shape, higher cost and moderate gripping strength—about half that of a milling chuck and about double that of collet chucks. The main differences between the holders, in terms of performance, are the superior vibration damping and simpler handling of hydraulic chucks. They are most often used for finish milling, reaming and drilling. They are extremely easy to handle. A simple clamping screw activates hydraulic chambers that allow the holder to clamp down on the tool.

TOP TIP

Never exceed a hydraulic chuck's rated rpm; fluid is pulled away from the holder's internal gripping gland, causing loss of clamping force.

SHRINK-FIT HOLDERS

Often compared to hydraulic chucks because they can also have very slim bodies, shrink-fit holders share similar gripping force as well. Handling is much more involved, but from an engineering perspective, shrink-fit holders



HDC-machining

are, fundamentally, the perfect tool holder. There are no moving parts, they are naturally symmetrically round and they use the properties of the holder itself—with the help of heat—to grip the tool. But as we know, a manufacturing floor is not a perfect environment. Variables must be considered when choosing equipment.

Best for moderate to heavy milling, shrink-fit holders are excellent at high speeds and are especially useful in low clearance, tight work envelopes because of their relatively slim design. Gripping power varies based on the tolerance of the cutting tool shank and outside body diameter: the heavier the wall, the higher the gripping force.

TOP TIP

Shrink-fit holders have very tight-tolerance bores. They should be cleaned and dried between each tool change. If you're considering shrink-fit holders or already own them, check out these tooling and spindle cleaners.

SIDE-LOCK END MILL HOLDERS

These may be a bit simpler in terms of how they clamp than hydraulic and shrink fit, but these rugged holders definitely have their place. A flat in the tool engages with a Weldon screw on the holder that locks the assembly in place, all but eliminating the risk of pullout, even in the toughest metals. They are most effective when heavy roughing at low speeds. What side-lock end mill holders achieve in security, they often lack in precision. Avoid high speeds and cuts with higher risks of vibration unless you're using high-performance tooling like the MEGA Perfect Grip.

TOP TIP

Never use tools with homemade, hand-ground flats in a side lock end mill holder.

COLLET CHUCKS

From a low-speed specialist to high, collet chucks work best at elevated rpm. This makes them excellent



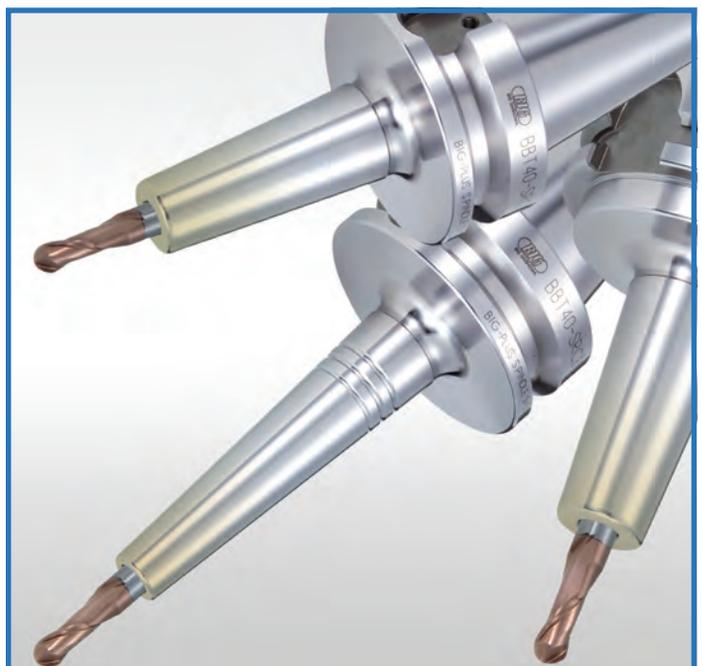
Mega-e-drill

for delicate and precise work like drilling, reaming and finish milling. The collar-like gripping is tightened by way of wrenching a collet nut. This allows for more points of contact for the tool when compared to other chucks. Collets are most useful in repetitive work where the clamping requirement does not vary significantly.

They also are versatile because the number of segmentations on a collet can vary. More segments mean greater flexibility and a larger gripping range at the cost of some of the concentricity and stability of more rigid collets.

TOP TIP

High-performance bearing race nuts offer the highest gripping strength combined with stable runout accuracy. The bearing keeps the race from sliding against the surface of the collet. The friction of a solid nut sliding across the collet face twists the collet and increases runout as well as increases the clamping torque required.



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DESERT VIEW HIGH SCHOOL

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Desert View student Versemi Moore

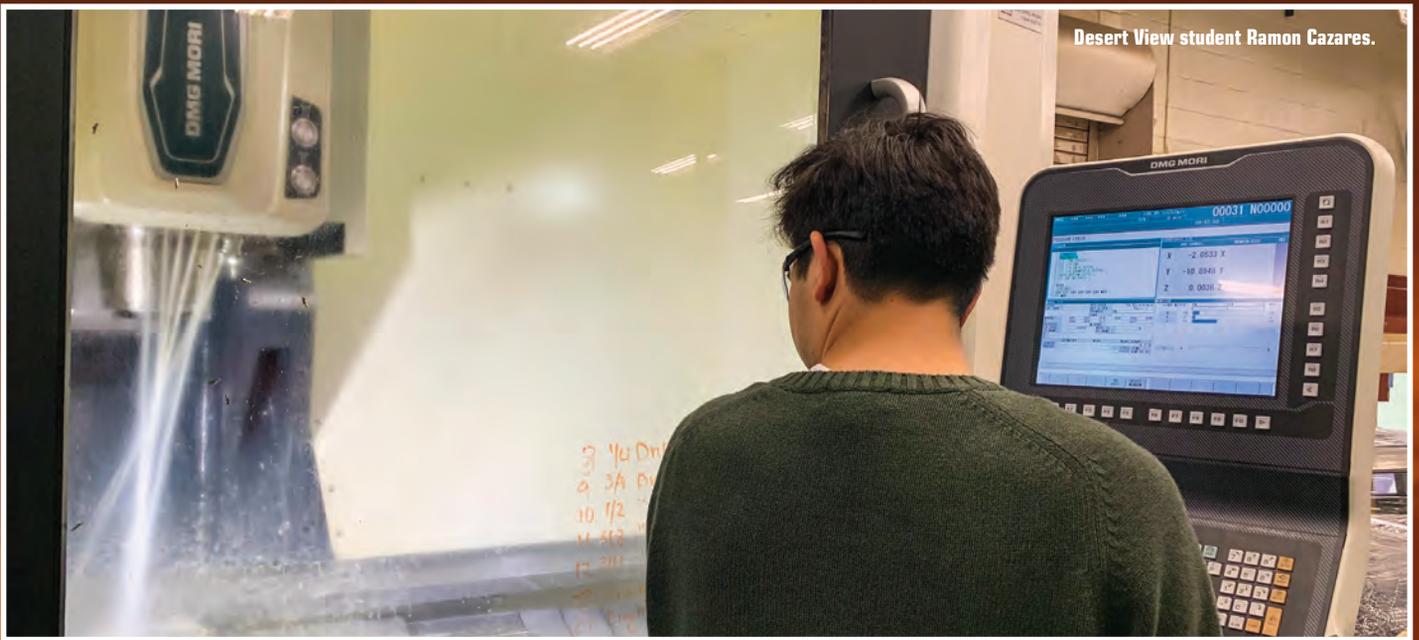
MANUFACTURING COMES TOGETHER AT DESERT VIEW

Located in a peaceful Tucson, Arizona suburb, Desert View High School has distinguished itself as a means for the area's teenagers to obtain not just a quality education, but also to take the first steps toward a rewarding career in advanced manufacturing. While not seeming especially interesting at first, because many high schools across the country value their progressive curricula, it should be noted that the Desert View is rooted in a primarily low-income Hispanic community where both parents work to sustain the household. Until recently, opportunities for the area's youth were served from a menu of questionable activities. Jobs beyond those considered minimum wage were few and far between.

Today, Desert View serves as a model for high schools, leading students step-by-step into a high paying workforce. One person is most responsible for this Arizona "awakening." His name is Cesar Gutierrez, the school's Precision Manufacturing teacher, who set about over four years ago to create a CAD/CAM program designed to attract students and hold their interest through graduation and beyond.

There is a popular saying about it taking a village to raise a child and in Gutierrez's case, it has taken a manufacturing community to raise his students' capabilities to the point where they have a productive future. "There are forty-two manufacturing companies in Arizona's Pima County area that came together as Southern Arizona Manufacturing Partners to promote their industry among students, teachers, and parents," says Gutierrez. "They found that senior employees were retiring, with many more planning to retire in the near future, and there was not enough of a potential labor force to replace them." Their solution was to be proactive with the Pima County Community College and the local high schools, Desert View among them. Their mission is to produce a highly trained, nationally accredited workforce to fill today's manufacturing jobs.

"The very first time I met with the Partnership representatives, I knew we were going to have a good future together," says Gutierrez. "I could tell they were serious about challenging our kids to follow a path to a rewarding career, while at the same time, assuring their own business future. One of the first things they did was introduce



Desert View student Ramon Cazares.

me to a program developed by NIMS (National Institute of Metalworking Skills).” The NIMS organization has developed a whole series of manufacturing-related courses, including CNC machining, Industrial Technology Maintenance (ITM), and CAM (Computer-Aided Manufacturing) programming for CNC mills and lathes.

“I was assured that by using Mastercam® (CNC Software, Inc., Tolland, CT) for the CAM courses, I would be exposing our students to the software programs they would most likely encounter in industry,” says Gutierrez. “Our local Partnership owners and managers also advised me as to the operating functions to look for when obtaining CNC machine tools for our school’s shop.”

Beginning freshmen are introduced to the program in a summer session, where they become familiar with the operation of manual machines,” he says. “I want them to be comfortable with how different tooling cuts different metals. I want them to touch and feel and even smell the experience of metalworking.” At the end of the summer session, students are ready to begin learning the basics



Desert View student Lucas Noriega.



Desert View student Kadence Moore.

of programming for CNC machining.

"I love the way Mastercam works with SOLIDWORKS® CAD software," says Gutierrez. "In the first year, students learn how to design an easy project with SOLIDWORKS and then how to download the design to Mastercam to program the tool paths. They learn how to program basic tool paths for contours and pockets and how to set up a part the correct way, according to Mastercam. In the second year, they get into Mastercam's High Speed Machining. They are soon also learning how to 'trick' the machine, how to cut different arcs in different planes. In the third year they are learning how to program in four axes for the CNC mill. Next, they will be learning how to program up to four axes for the CNC lathe and in five axes for the CNC mill." Although the CAM lessons are in Mastercam, all the basic projects are determined by NIMS. The students earn NIMS proficiency certification in various operations as they advance in the program. "Mastercam, SOLIDWORKS, and NIMS are the three basic ingredients for the success of this program," says Gutierrez.

"In addition to all the help our program has received from member companies in the Southern Arizona Manufacturing Partners," he says, "Keith Butzgy, Mastercam's corporate training manager, and David Morgan, senior advisor at NIMS, have always been available to help me as our program expands to cover a wide range of projects for our CNC machines. Because

of the faith in our program by our principle, our CTE (Career and Technical Education) coordinator, and by our district, we have been funded with nearly two million dollars for equipment that includes seven CNC mills, four CNC lathes, twelve 3D printers, a coordinate measuring machine, and forty seats of Mastercam in our CAD/CAM lab, as well as more than a dozen manual machines. A great deal of the tooling for the machines, and literally tons of materials for student projects, come from the generous donations of the Partnership members."

Because the older students have become so skilled, the school has established a contract business with many of the Partner businesses. These companies assign contracts to Desert View's Precision Manufacturing department, much as they would do business with any contract machining shop. "The students earn money to cover the expenses of the field trips we take to colleges, universities and manufacturing companies all over the country," says Gutierrez. "Some of the part runs are in the hundreds, a few even in the thousands. We have even delivered assemblies after machining the parts on our CNC mills and lathes and then joining them with our shop's press."

The school has now begun an internship program that provides seniors with a paycheck for work they contract. "It's run as an actual business," says Gutierrez. "They have to become involved in sales in order to get the business from outside sources. They also have to handle invoicing and keep the books. By having a hands-on approach to

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Precision Manufacturing teacher Cesar Gutierrez with student Brianna Rodriguez, who wrote the letter below to Mr. Gutierrez

subjects beyond programming and machining, they are becoming even more valuable to prospective employers who look for young people who can advance into positions ranging from operations management to sales engineering.”

Mr. Gutierrez is proud of the accomplishments of his students. “These are kids who would normally be spending their time being passionate about high scores in video games. Instead, they are excited about programming increasingly complex tool paths in Mastercam.” The school’s Precision Manufacturing program has not only captured the attention of the district’s teenage boys. There are also girls mastering the programming of the CNC mills and lathes. This is attested to in a letter Gutierrez received from Brianna Rodriguez, one of his graduating seniors. She says, in part, “Over the past three years, there have been many boys that I’ve surpassed in rank in my classes because I was determined to be my own absolute best. I became unafraid to assert myself in competitive situations and take charge of a project all by myself. And if it wasn’t for this program or instructor who motivated me when I was without courage or inspiration, I wouldn’t be the confident young woman I am today. This program has made my high school years the best they could have been. I’ve paved a future for myself, and not just on a

road to college but a road to a successful career and so much more. I have earned work experience, confidence, troubleshooting skills, business, and management skills. I have learned to network with people.

“This program has also given me the opportunity,” she continues, “to break the cycle of low income in my family and to prove to myself and to others, that it never really matters where you grow up, or if you’re a boy or a girl. Many students in this program have been given the chance to make use of their talents and abilities. It’s helped build me up into the confident, strong young woman that I am today and instilled a strong sense of hope in my heart for a better future for myself, for my family, and for my community.”

Many of the students go directly into industry from Desert View, others continue working part-time while they are in college. They wind up with a college degree, their NIMS certifications, and a great career. “So far, every single one of our graduates have gone on to college or into terrific jobs they secured while in our program,” says Gutierrez. “As a result, our local manufacturers are assured of a steady flow of new, highly skilled, employees and the entire community benefits.”



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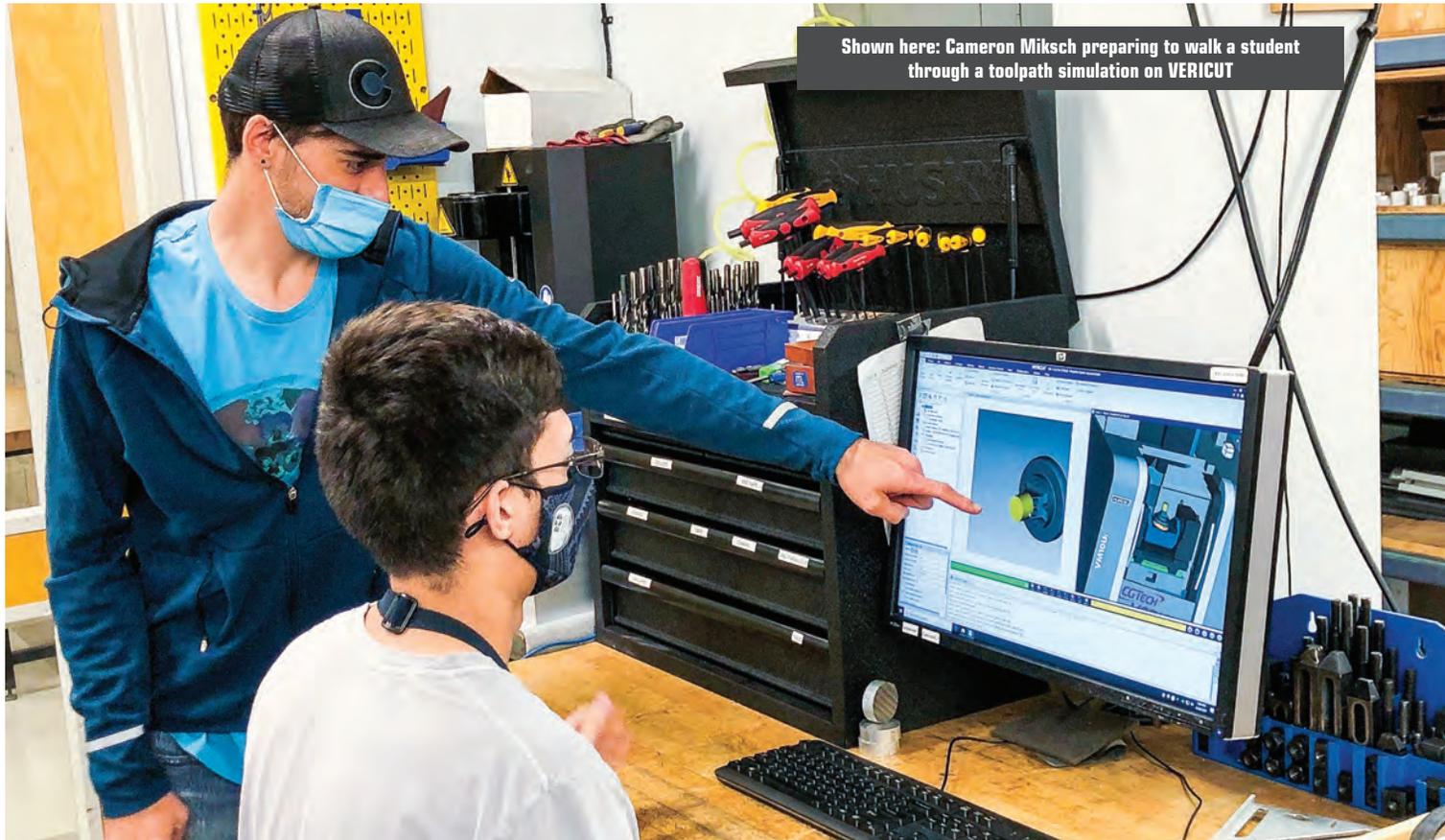
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MOVING MOUNTAINS

Article Supplied by CG Tech. All photos courtesy University of Colorado Boulder.



CU BOULDER'S COLLEGE OF ENGINEERING AND APPLIED SCIENCE USES VERICUT TO IMPROVE STUDENT OUTCOME.

The tail end of the 2019/2020 school year was challenging for students and teachers alike, but with a little luck and continued social distancing, the bad times will be gone for all of us by the fall semester. If so, Cameron Miksch and the rest of the faculty at the University of

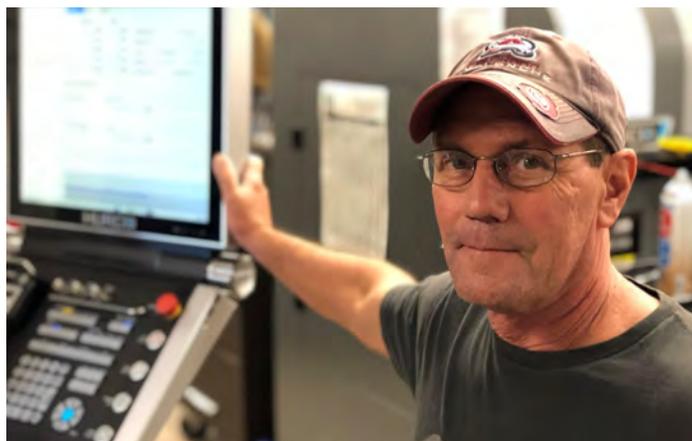
Colorado Boulder will be ready to pick up the academic pieces and get back to work.

Meet the ITLP

A manufacturing specialist for the College of Engineering and Applied Science's Integrated Teaching and Learning Program (ITLP), Miksch and machine shop manager Mark Eaton are responsible for teaching engineering students the inner workings of manufacturing. This includes CAD/CAM, 3D printing, materials science and product design principles, and CNC machine tool operation. Especially the latter.

One of the tools the ITLP uses to accomplish this? VERICUT toolpath simulation and optimization software from California-based CGTech Inc.

"Our program supports students enrolled in four-year engineering degree programs," he said. "These could be freshman-level projects where they're tasked with designing and then manufacturing a product, all the way up through post-graduate research and development activities. We also work with the school's instructors and professors on various manufacturing-related activities, some of which are driven by corporate sponsors."



Mark Eaton is the machine shop manager at CU Boulder. Among other things he teaches engineering students about the inner workings of manufacturing.

Bridging the skills gap

The skills learned in the ITLP go far beyond learning how to operate manual milling machines and engine lathes. Yes, the wood and metal sides of the shop have the usual complement of drill presses, bandsaws, and the like, but there are also CNC routers, CNC knee mills and lathes, and the two stars of the show, VM10i 3-axis and VM10Ui 5-axis vertical machining centers from Hurco. It was this second machine that led Micksch to VERICUT.

“We acquired the Hurcos in 2017, and it quickly became clear that our CAM software was fine for basic 3+2 positioning work, but didn’t really cut the mustard when it came to five-axis simultaneous programming,” he said. “That, and since there was no way to verify the actual G-code, we felt we needed a better tool to visualize the machining process and simulate what would happen before pushing cycle start.”

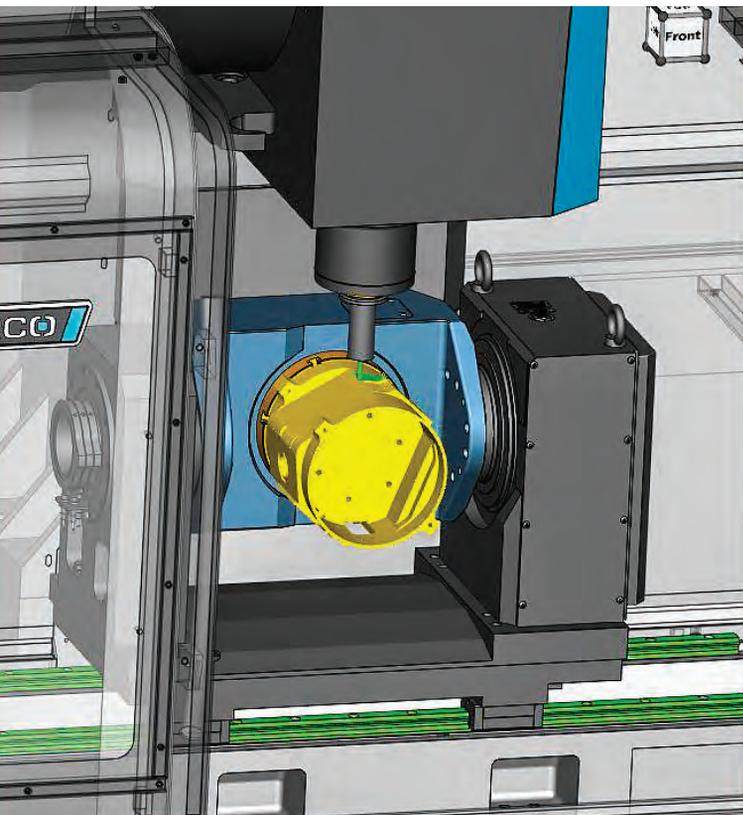
Because most of the people coming through the ITLP have little to no experience in machine operation, let alone CAD/CAM or toolpath simulation and optimization software, VERICUT is more for Micksch’s use than that of the students. Still, he works one-on-one with them to generate the CNC programs, then runs the resulting toolpaths through VERICUT to check their work.

“A fair share of the students entering this program have the impression that CNC machining is like an Easy-Bake oven, and all they have to do is write a program and let the machine tool do the rest,” he said. “VERICUT



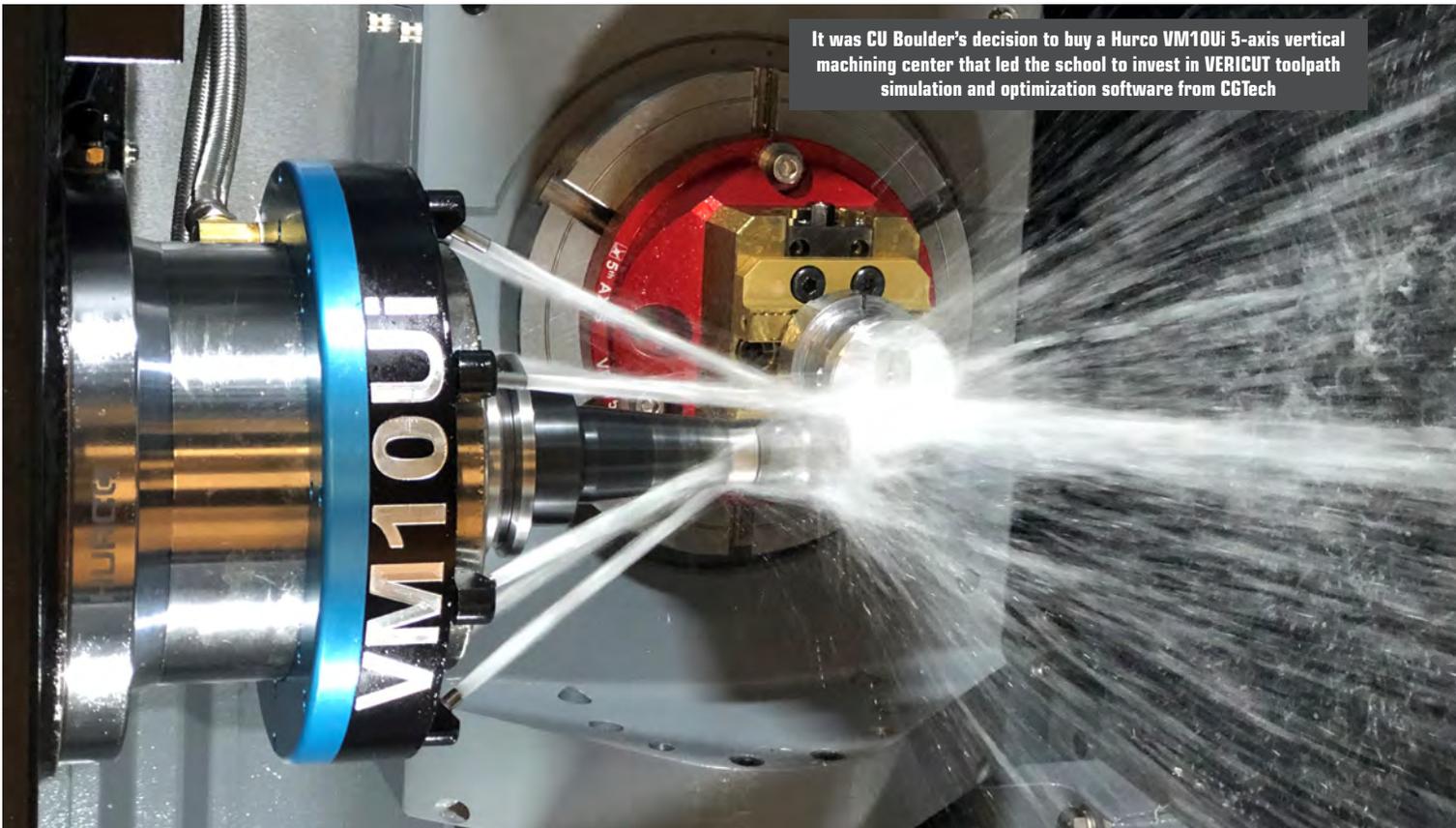
Parts like these make Cameron Micksch and machine shop manager Mark Eaton thankful for VERICUT’s ability to spot interference and other potential problems in the machining process

gives them a chance to see the entire process and learn how machining works. They can learn what went wrong and how to change it and identify any opportunities for improvement. And from my side, VERICUT eliminates any concerns that they’ll inadvertently damage one of our Hurcos.”



Because students are able to step through their CNC programs one line at a time, they can not only gain a better understanding of how machining works, but also avoid expensive collisions.

It was CU Boulder's decision to buy a Hurco VM10Ui 5-axis vertical machining center that led the school to invest in VERICUT toolpath simulation and optimization software from CGTech



Cameron Micksch, manufacturing specialist for the College of Engineering and Applied Science's Integrated Teaching and Learning Program (ITLP) at CU Boulder.

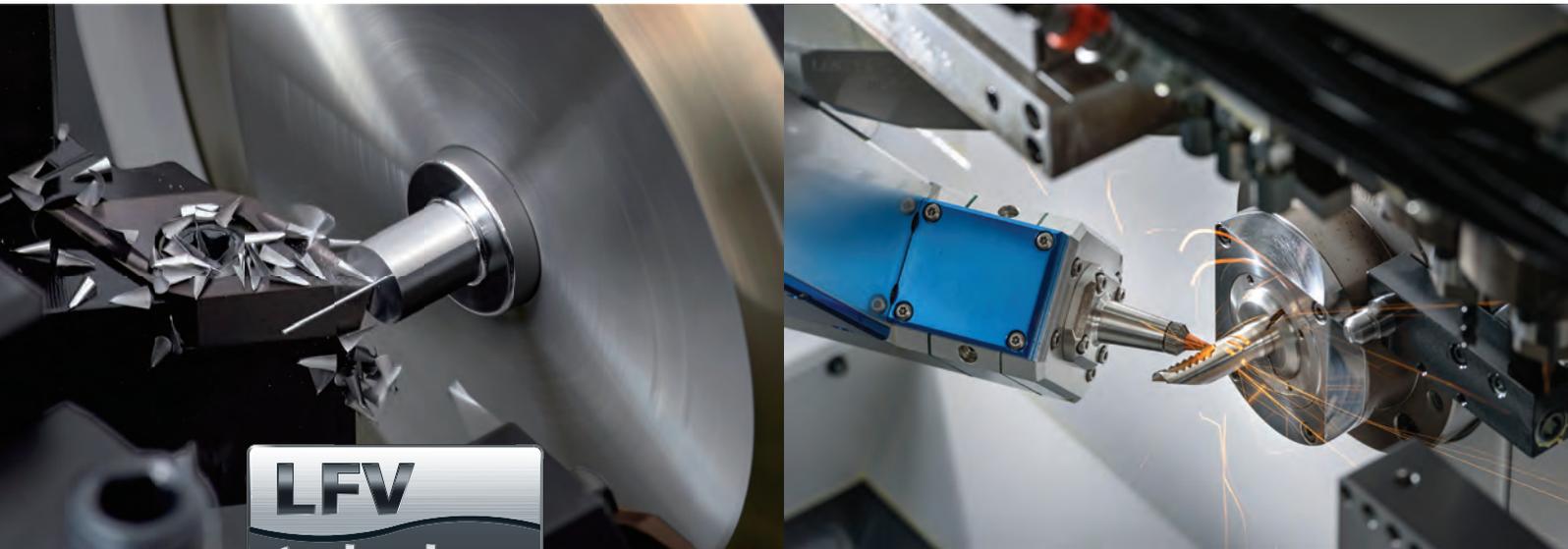
Counting the successes

To date, roughly 300 students have graduated from the ITLP's CNC courses, but Micksch is quick to point out that 700 or more use the shop each academic year for other reasons. There are numerous student-run engineering groups, such as the school's rocketry club (CUSRL) and Formula SAE, an international competition where students have the opportunity to design, build, and drive Formula-style race cars. "We helped make some crazy steering knuckles for them on the five-axis last summer, which was pretty cool," he said.

The school also does research work with grant money from local and national businesses. These might be specialized medical devices for one of the area's hospitals, enclosures for reading radioactivity, or components produced for leading aerospace companies. "One of our clubs is called Space Grant, which is funded in part by NASA, and one of my students went on to work with one of their subcontractors," said Micksch. "Granted, our use of VERICUT had very little to do with that success story, but a large portion of our students get hands-on experience on the Hurcos, and my job would be much more difficult without VERICUT. That, and it's a great teaching tool."

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"WERKBLiQ allows machine operators to visualize all structures and processes of the maintenance organization digitally and independently of manufacturer. This also includes the internal and external interaction channels and the entire contract and documentation management," explained Dr. Tim Busse, managing director of WERKBLiQ.

As a consequence, WERKBLiQ optimizes the entire service process for all machines and equipment with quantifiable benefits. Even machines without a network connection can be integrated and managed in WERKBLiQ via mobile end devices. According to the company, incorporation into existing IT systems can be effected quickly and without any great effort on the shop floor. Implementation takes just 48 hours on average.

Employees record and document all activities and processes on the machinery during their day-to-day work. They are supported by customizable and interactive input masks. All it takes is the press of a button to alert internal maintenance directly from the machine in the event of a breakdown and to trigger the saved service process.

My DMG MORI users can upgrade their account to WERKBLiQ. All DMG MORI machines are then transferred to WERKBLiQ, where they are integrally expanded and managed together with third-party machines and objects. The integral networking of WERKBLiQ and DMG MORI SERVICE is engineered to provide high customer benefit because all functions available in the my DMG MORI account are also part of WERKBLiQ.



Users benefit from integral functions for managing and optimally controlling the entire maintenance process, allowing full control at all times. Because individual challenges require individual solutions, a number of possible customer-specific configurations were integrated during the development of WERKBLiQ, which can then be used by each user to develop his or her own solution.

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Article & Photos Supplied by Robert Mooreers

ENGINEERED MACHINING SOLUTIONS (EMS) STREAMLINED MEASUREMENT AND INSPECTION WITH COMMON MODEL-BASED SOFTWARE PLATFORM

Consistency tells a lot about a company, who they are, what they are good at, and what they stand for. As a job shop in today's highly competitive manufacturing industry you need to stand for something customers can relate to, whether that's good quality, great quality, low price, fast turnaround, or a myriad of other attributes. Customers need to know they will receive a consistent deliverable, based on their own profile of your company's capabilities.

From humble beginnings in 2011, EMS founders Balazs Ormai and David Szabo envisioned a manufacturing

company that could consistently produce complex high-quality, close tolerance machined parts for the aerospace industry. The pair shared a passion for solving problems through teamwork, a culture that continues to drive the Orange, California company, today. "We have developed a strong sense of teamwork here, there is no room for big egos, everybody pulls together and at the end of the day we turnout great parts," said Szabo. In just nine years EMS has grown from a two-man shop with one machining center to a 20,000 sqft. shop with a team of 30 cross-trained machinists, manufacturing engineers and metrologists, running three shifts. "Throughout our growth we have never stopped challenging ourselves, we are constantly looking at process improvement and quality to see how we can be more efficient and continue to raise the bar on turnaround and customer satisfaction," said Ormai.

Consistency is what validates commitment and competency in each of EMS's overall customer satisfaction and success. It is easy to see why the company placed an emphasis on this attribute when planning for and evaluating automated inspection solutions. Their requirements included: a consistent measurement software platform; consistent hardware device interface and operation; consistent database; consistent processes; consistent training and support



Engineered Machining Solutions partners, David Szabo (left) and Balazs Ormai.



EMS uses Verisurf software to run three different CNC CMMs, each with different controllers, as well as trackers and arms, as part of its 'consistency in metrology' strategy.

CONSISTENT QUALITY INSPECTION AND REPORTING

Quality verification and reporting is extremely important to EMS customers with most jobs requiring 100% inspection. As the company grew the inspection lab became a bottleneck and needed to be rethought. Like every other initiative EMS engages in, they first looked to their team, workflow, current technologies in place and software being utilized in the quality lab and throughout the shop.

EMS had two legacy CNC CMMs in place, a Mitutoyo CMM and Wenzel CMM, both operated by different controllers and running unique software. This caused inefficiency in the quality lab and added to training and support costs. Following a full assessment, the team came up with the following criteria for an enterprise wide inspection and reporting solution:

- If possible, a single measurement application software must drive all metrology processes for the company.
- Software needs to be model-based on a CAD platform to allow flexibility in managing files and easily accessing datums within the design authority.
- Measurement software must import and export ALL CAD files and models seamlessly.
- Software must be able to import and allow annotation of intelligent GD&T data.
- Solution must be capable of interfacing with and controlling all existing and future measurement hardware devices.

- Software must have the flexibility and embedded tools to handle the range of inspection data, from manual contact probing to non-contact point clouds.

VERISURF SOFTWARE PROVIDES DIGITAL CONSISTENCY

Verisurf Software was selected to support EMS's quality inspection and reporting objectives based on its open CAD-based architecture and model-based capabilities. Many software programs and hardware measuring device manufacturers want to lock customers into their platform. Contrary to this approach, Verisurf software serves as a common platform and communicates openly with all CAD software and all metrology devices, across the manufacturing enterprise. This includes portable and fixed measuring devices as well as new and legacy equipment.



In just seven years EMS has grown from a two-man shop with one machining center to a 20,000sqft shop with a team of 30 cross-trained machinists, manufacturing engineers and metrologists, running three shifts.

Verisurf automatic inspection routine being initiated on Coord3 CNC CMM.



VERISURF UNIVERSAL CMM

Case in point, EMS' Mitutoyo and Wenzel legacy CMMs did not support the open I++ protocol to facilitate integration. Verisurf Universal CMM software was able to provide an open standard communication protocol,

allowing EMS to continue using the legacy CMMs while gaining the consistency of interface, operation and reporting with Verisurf. By incorporating the Verisurf CAD-based metrology platform across their manufacturing enterprise, EMS gained the flexibility to choose the right measuring device for each job, while realizing increased efficiency and reduced training, data management and support costs.

"Verisurf is our quality inspection and reporting platform, we use it to control all of our measurement devices, process measurement data, and generate custom reports," said Szabo.

VERISURF SOFTWARE SUPPORTS THE GROWTH OF METROLOGY AT EMS

Since implementing the software solution, a Coord3 CMM, which uses the open standard I++ protocol, has been added along with two Faro portable CMMs a Faro scanner and laser tracker. This has further improved capacity in the quality lab and allowed for in-process inspection on the shop floor. "Integrating new hardware into our measurement toolset is easy, the team is already



The quality team at EMS use Verisurf software to run all digital measuring and inspection devices, whether in the quality lab or on the shop floor. (Left to right) Brian, Isaac, Tyler and Eddie, lead inspector.



Verisurf automatic part inspection running a legacy Wenzel CNC CMM. Verisurf model-based inspection software allows EMS to quickly program each of their CNC CMMs using a consistent interface, tool-set and visual cues.



Legacy Mitutoyo CNC CMM being driven by Verisurf software. The Mitutoyo, Wenzel and Coord3 programmable CNC CMMs are all driven by Verisurf software which reduces training costs while improving consistency in the inspection and reporting process.

familiar with the interface and can be quickly trained on any nuances associated with an added device,” added Szabo.

The addition of a laser tracker has allowed EMS to inspect larger parts, support assembly guidance and aid in toolmaking jobs undertaken by the company. Verisurf software supports each of these applications, along with reverse engineering to determine ‘best fit’ scenarios, capture missing features or complex surface profiles directly to CAD and much more.

“Now that we have a solid metrology strategy in place, creativity and innovation is showing itself in the process. Our metrology capabilities are an arsenal of problem solving tools,” said Ormai.

For EMS, inspection and reporting used to be isolated in the quality lab. Today it is much more integrated with the production floor through in-process inspection using Verisurf, open CAD-based measurement software. Model-based inspection has helped close the digital loop; it feeds back to the CAD data authority, making inspection results more valuable and easier to attain, and eliminates interpretation and ambiguity concerning the design intent. Standardizing on Verisurf inspection software across the manufacturing enterprise has provided consistency of operation, quality reporting, data management, and reduced training and support costs.

Industry News



New SGS Round Solid Carbide Tool Libraries Available for Mastercam

CNC Software, Inc., developers of Mastercam has announced a new partnership with Kyocera SGS Precision Tools (KSPT) to provide tool libraries to the Mastercam user base. KSPT is an ISO 9001:2015-certified manufacturer of round solid carbide cutting tools and pioneered some of the world's most advanced cutting tool technologies.

“CNC Software is proud to partner with Kyocera SGS Precision Tools. We're excited to offer ten specialty series tool libraries of SGS tools in a native Mastercam tool library format for download,” said Stas Mylek, partnership program manager, CNC Software, Inc. “As a result, Mastercam users gain fast, seamless access to the latest high-performance SGS round solid carbide cutting tools,” Mylek continued.

With this collaboration, Mastercam users can download both inch and metric SGS round solid carbide cutting tool libraries from the Mastercam Tech Exchange. The native Mastercam 3D tool databases are fully compatible with Mastercam 2020 and subsequent releases. These offer the latest KSPT innovations and SGS product introductions, including their latest Z-Carb HPR roughing line and H-Carb end mills for Dynamic Milling. The native libraries represent more than 12,000 tools including ferrous and non-ferrous cutting tools ranging from end mills, routers, micro tools, and drills, to reamers and countersinks.



TITANS of CNC and Haimer USA Join Forces

Haimer USA announces a new partnership with TITANS of CNC, an organization that uplifts students, educators and the manufacturing workforce in over 170 countries worldwide.

Titan Gilroy, CEO and founder of TITANS of CNC is focused on developing and delivering high-level manufacturing education through the TITANS of CNC: Academy and Aerospace Academy. Over the past few years, TITANS of CNC has reshaped the way manufacturing education is approached and delivered. With its free, online, video-based, step by-step, training system, TITANS of CNC continues to provide real solutions to real manufacturing problems.

As part of the collaboration, Haimer USA introduced various industry leading products to Titan so he can implement the HAIMER technology into his academies and teach his students about how HAIMER products provide consistent solutions for machinists to increase their productivity. “We are excited to be working with Titan and his team,” president of Haimer USA, Brendt Holden stated, “Through the TITANS of CNC: Academy, together we will be able to educate operators on why our system solution of balancing, presetting, shrinking and measuring are so important to implement in machine shops.”

“TITANS of CNC is proud to partner with HAIMER who is a world leader in the area of shrink fit, balanc-

ing, and presetting technology,” Titan Gilroy – CEO of TITANS of CNC stated, “We are excited to introduce our audience to these incredible products and solutions and we look forward to using them to help teach the trade at the highest level.”

Jergens, Inc. Receives AS9100:2016 Rev D Single Site Certification,

Jergens, Inc. announced that it has received a new certification that will expand the company's engineering and design capabilities in the aerospace, space and defense sectors. The certification is designated for Jergens specialty fastener products, including quick release pins, threaded inserts, spring plungers, spring loaded devices, handwheels, and adjustable handles and knobs.



The AS9100:2016 certification is an invaluable component to the design and manufacturing of specialty fasteners, lifting solutions, and workholding solutions. The new certification will further enable Jergens Inc. to customize and design components offering rigid quality standards and mil-specs, with tight tolerances and high precision.

“This certification is a game changer for Jergens and separates us from our competitors in terms of efficiency and service response time,” said Matt Schron, general manager for Jergens, Inc. “Our many customers in the aerospace sector, both military and

Industry News

commercial, are seeking our heavily engineered expanded design services, customer solutions and standard and special configuration all while maintaining our shorter lead times. This certification will allow us to better serve our clients with premium products more quickly.”

Fastems Will Host Online Open House & Conference November 4, 2020

Fastems Group will host an online



open house & conference entitled “Productivity Beyond Machine Tending” on November 4, 2020, starting at 11:00 EST. The virtual event will showcase the latest developments in automation and surrounding technologies to all metalworking manufacturers. The company’s aim is to educate machine shops on how to improve their efficiency and quality in a manageable, methodical, and practical manner. The scope of automation includes more than tending machines; it also includes evaluating the surrounding processes such as cutting tool management and other manual work functions to reveal the key bottlenecks that should be addressed first.

The online open house & conference will gather people in manufacturing industries across Europe and North America with informative and educational webinars, video demonstrations, and Q&A sessions on several productivity-related topics, such as: automation possibilities now that go beyond traditional machine tending,

building optimal cutting tool management practices, step-by-step production planning and control software for manual work cells and standalone machines. Other topics will include

inspiring FMS advancements based on real customer success stories and a next-generation load handler for machines without automatic pallet changers and new innovations and

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If registrants cannot participate on the scheduled date and time, they can return to view and download all of the free materials at a more convenient time.

For more information and to register, visit <https://www.fastems.com/event/seminar-productivity-beyond/>.

Clark Manufacturing Adds Rep for Idaho and Oregon

Clark Manufacturing announce that they have added EJ Fisher to the Clark Manufacturing team. He will be covering the Southern Idaho and Eastern Oregon territory, bringing his 20 plus years of manufacturing expertise to his clients.



Matt Clark said, "I really believe that if you are doing well as a rep, you

owe it to the companies that support you, to increase your staff and territory coverage with quality agents. Welcome aboard, EJ!"

IMCO Carbide Tool Joins The IMC Group

IMCO Carbide Tool Inc. now operates as part of the IMC Group, an international family of metalworking companies and part of Berkshire Hathaway Inc., the company announced. While details of the August agreement were not disclosed, company leadership said most aspects of IMCO's operations and product portfolio will remain unchanged.

IMCO will continue operating from

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its Perrysburg site, producing end mills and other machining products under the IMCO brand, Perry Osburn, president, said. The staff and management team, skilled tool grinders, sales and customer support teams will remain the same. Any differences will occur in the product development assets now available to IMCO, he said.

“IMC Group is the second-largest metalworking business in the world,” Osburn said. “Like us, they’re known for innovation and product excellence. And they have technologies and other resources that can help us bring new products to market faster.

“As part of Berkshire Hathaway, we’ll be able to draw on their finan-

cial resources to maintain continuous improvement in manufacturing and pursue new challenges and opportunities.” Those opportunities include plans for plant expansion, he said, to be announced soon.

Heidenhain Corporation, Precision Measurement and Control Technology Leader, Joins OMIC R&D

The Oregon Manufacturing Innovation Center Research and Development (OMIC R&D) recently welcomed Heidenhain Corporation as

its 33rd member. Heidenhain, whose U.S. subsidiary is headquartered in Schaumburg, Illinois, is a world-leading provider of encoders, machine controls, touch probes, digital readouts and metrology solutions. For over 125 years, they have been empowering engineers facing demanding applications that require nanometer-level precision and unyielding reliability with trusted precision measurement and motion control solutions.

Heidenhain’s products enable everything from improved manufacturing processes to safer, more reliable medical diagnostics.

Craig Campbell, executive director of OMIC R&D said, “I have been



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excited about the possibility of having Heidenhain as a member since we first started the discussion at IMTS in 2018. Heidenhain is providing OMIC R&D with immediate data gathering capability, but their ability to assist OMIC R&D as we grow is tremendous. We also look forward to opportunities in the area of training and workforce development due to Heidenhain's investment in that area."

Gisbert Ledvon, director business development of Heidenhain stated, "I am very excited that Heidenhain Corporation has become a member of OMIC R&D, as this collaboration aligns well with our dedication to research and development aimed

at manufacturing technology. Our partnership will most definitely benefit the manufacturing sector in North America."

Heidenhain joins thirty-two other OMIC R&D industry and university members in this unique collaboration.

Chiron Group Acquires Mecatis, Expanding Range of High-Precision Machining Centers

On August 1, 2020, the Chiron Group, Tuttlingen, Germany, acquired Mecatis SA with headquarters

in Iséables, Switzerland. Mecatis specializes in small, high-precision, high-speed 4- and 5-axis machining centers and complementary automation, used mainly in the watch and jewelry industry.

Mecatis, founded in 2007, designs, builds and maintains machining centers for the high-speed cutting of micro technical components. The highlight of the product range is the Micro5, launched in 2017, a compact machining center with 4 or 5 axes, which customers use for the rapid, high precision production of components for the Swiss watch and jewelry industry. The Micro5 offers very high static stiffness

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Mecatis machining centers will be sold worldwide by the Chiron Group. The entire service network of the corporate group will also be available to Mecatis customers. On the other hand, the Chiron Group is expanding its technology base with the acquisition.

Bob Nugent New VP at Eurotech Elite

Eurotech Elite announces Bob Nugent has come on board as vice president. Bob will be overseeing the west coast (U.S.) As Euro-tech continues to grow, Bob will step into his leadership position, implementing Eurotech's core values and mission of delivering the fastest technology with the best ROI.

Born and raised in Southern California, Bob is a graduate of the University of Southern California School of Business, where he also enjoyed playing on the water polo team. Bob has become a leader in the machine tool industry after several years of sales management in the LA/Southern California market; Houston, Texas; and in the Silicon Valley/Bay Area - with great success.

With his wife of 32 years, Kelli, they have raised two boys, 28 and 26, who now live and work in Southern California. Bob is happy to be back



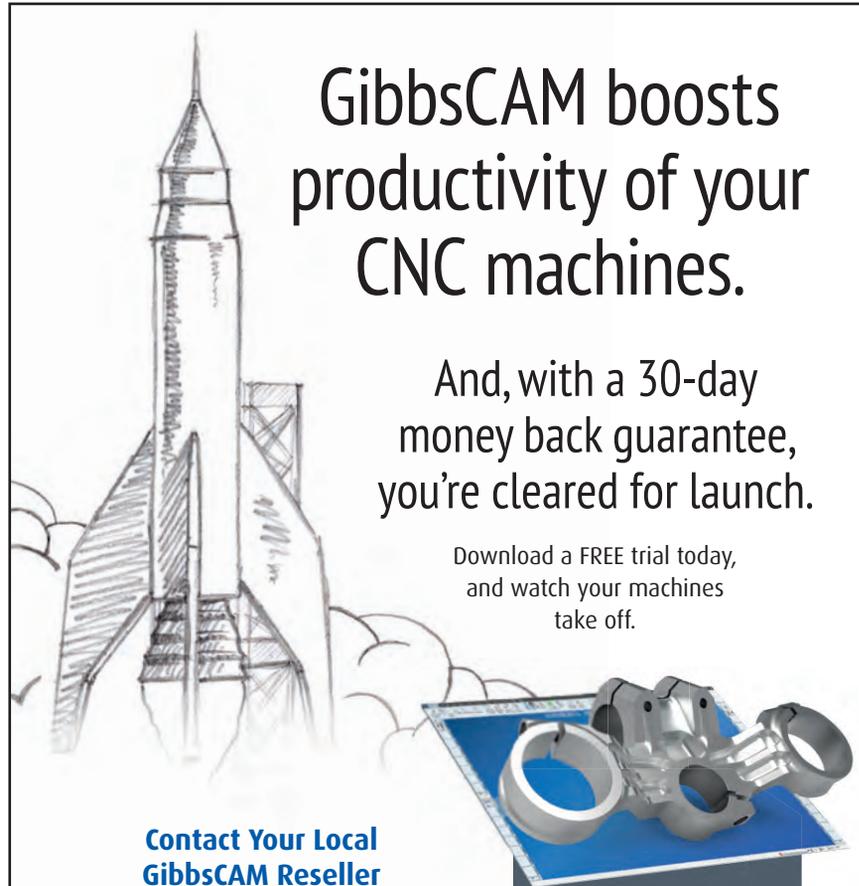
home in Costa Mesa, with friends and family and is excited to work again in

his old stomping grounds and grow the Eurotech business on the west coast.

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Platinum Tooling President Presents Product Lines in New Video

Platinum Tooling Technologies, Inc., recently created a video highlighting the products they would have

shown in their booth at IMTS this year. Preben Hansen, company president, presented the various product lines Platinum Tooling offers and highlights the areas of expansion since the last IMTS show in 2018.

Hansen demonstrated the u-tec® flexible changing system for live tools offered from their flagship brand, Heimatec. The tool featured was an ER 32 output cross-working tool for a BMT style turret. While standard ER 32 collets can be used in this tool, Hansen explained the beauty of the built-in changing system designed to receive a variety of adapters for different applications.

In addition, Heimatec offers

a wide range of static tools to complement their live tools. This includes boring bar holders, facing holders, standard and half index turning tools as presented. Other new developments include CAPTO output tooling and live and static tools for Citizen machines.

The last tool highlighted from the Heimatec line was a machining center angle head weighing 12 pounds with an ER 25 output that can hold a 5/8" cutter. The tool can be used with almost any automatic tool changers on the market.

The Tecnicrafts line is another area of expansion featured by Platinum Tooling. Collets and guide bushings for Swiss type CNC Lathes, specialty

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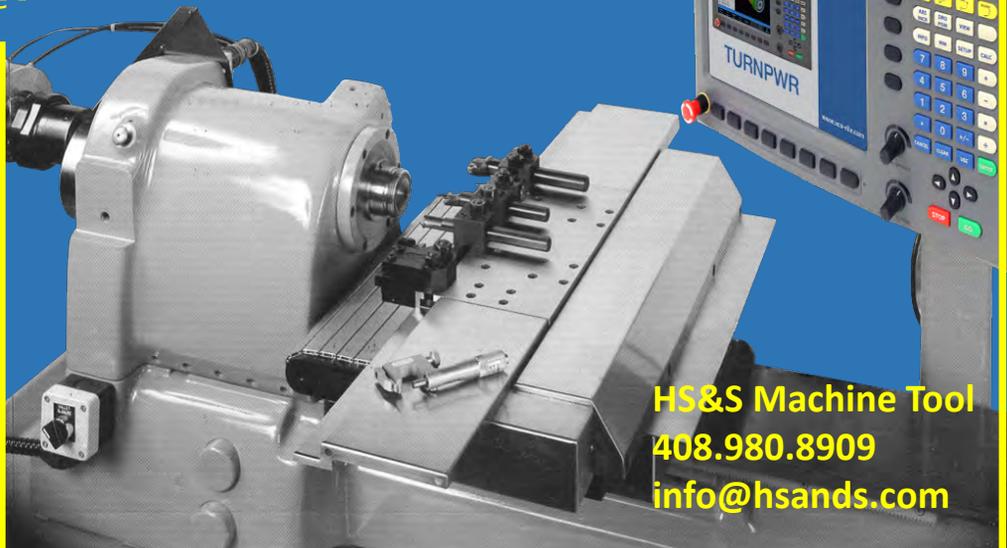
Cycle Select

Select a cycle to be created. In this case, a shoulder turn cycle. Once the data has been entered into the form press the USE Hard key.

3D Graphics

Tool paths are also displayed in 3D graphics that can be rotated and manipulated. The program is ready to run. Simply press "GO."

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collets for CNC cutter grinders as well as 5C & 16C Collets are included in their selection. These are offered in a wide variety of styles and sizes in inch and metric sizes.

Speed Increaseers and Custom Angle Heads from Henninger are also offered through Platinum Tooling. Speeder types include mechanical, air, and motor driven. Mechanical driven speed increaseers provide rpm up to 50,000, while air and high frequency speeders offer rpm up to 80,000.

Lastly, Hansen introduced the cleaning and part marking tools supplied by AMF. Typically used in toolholders utilizing ER collets or Weldon clamping systems, these tools can be used independently or in conjunction

with each other during the machining process. The high-speed marking tool will permanently mark the workpiece while the cleaning tool washes away unwanted chips.

Index Corporation Names New President and CEO as Tom Clark Announces Retirement

Index has named Cris Taylor as the new president and CEO of INDEX Corporation, effective January 1, 2021. Mr. Taylor will be taking over for Tom Clark, who has announced his retirement at the end of 2020. Mr. Taylor will be joining the Index Group in October

to ensure a seamless transition for the organization and its customers.



Chris Taylor

Mr. Taylor has over 30 years of experience in the machine tool industry, both in Europe and the United States. Having grown up in the United Kingdom, Mr. Taylor spent most of his working career in Germany. This includes 27 years at Chiron, where he held positions of increasing responsibility. He established the Chiron

Boom Aerospace Relies on Verisurf Software



“When you are designing and building a supersonic commercial aircraft, precision and quality verification of every part is critical.”

Todd Wyatt
Metrologist, Boom Aerospace

“Verisurf software works with all our measuring devices and CAD files, and those used by our supply chain. Using Verisurf as a common measurement platform has improved quality and efficiency in inspection, reverse engineering, tool building and assembly guidance at Boom.”



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UK's sales and service and engineering operations, then built Chiron's used machinery division in Germany. Mr. Taylor spent five years with Chiron

America in Charlotte, NC and, most recently, served for eight years as managing director of Stama, Chiron's sister company.

FABTECH 2020 in Las Vegas Cancelled

SME, FMA, AWS, PMA and CCAI, FABTECH event partners, have announced that FABTECH, scheduled for November 18-20, 2020, in Las Vegas, has been cancelled due to the ongoing COVID-19 pandemic.

"The metalforming, fabricating, welding and finishing industries are vital to manufacturing and to the economy, and FABTECH is proud to serve the companies and professionals of these industries," said Ed Youdell, president and CEO of Fabricators & Manufacturers Association, International. "It is important that FABTECH is executed to a standard worthy of the industry's expectations; while we looked for viable alternatives, unfortunately we simply do not have a path forward in 2020."

"We explored every option to find a way to produce this event in 2020," said Sandra Bouckley, executive director and CEO of SME.

"Unfortunately, COVID-19 has created an environment that makes it impossible to hold the event. Our top concern is always the safety of our exhibitors, attendees, speakers, sponsors and employees, along with supplier partners and venue staff. While we did not want to have to make this decision, we have found that we have no choice."

FABTECH will return as a face-to-face event in 2021, taking place September 13-16 at McCormick Place in Chicago, IL. More than 1,700 exhibiting companies and more than 48,000 attendees are expected to participate.

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Industry News

GWS Tool Group Announces General Manager for GWS-Arizona

Chris Schulte has filled the position of General Manager for GWS Tool Group's Arizona facility. In this role, Schulte will be responsible for overseeing all operations and production at the Arizona manufacturing facility. The 60,000 sq. ft. facility located in Surprise, AZ, produces custom holmaking and finishing tools for the aircraft industry, and houses local inventory as well as production, engi-

neering and customer service teams.

This role will create new synergies with aerospace customers, allowing Senior Aerospace Specialist Rich Rogers the ability to dedicate



his time exclusively to developing solutions for key aircraft manufacturers.

"Chris's extensive and well-rounded management background make him an ideal fit for leading our Arizona location," said Rick McIntyre, CEO.

"His background in both carbide cutting tools and operational business leadership, coupled with sales and custom business models, will immediately add value to our customers."

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Industry News

Mastercam Retains Top Ranking Worldwide

More shops and schools invest in Mastercam than any other CAD/CAM software package in the world. According to CIMdata, an independent research firm specializing in the NC industry, Mastercam is the number one CAM software used worldwide for 26 years in a row. In the latest report, Mastercam retained the top spot for CAM software in three categories: industry, education, and support network.

Mastercam topped the list in both the educational and industrial categories, with nearly twice as many installed seats as the nearest competitor*.

Mastercam is developed based on evolving technology, industry trends, and feedback from customers.

Haas Multigrind Relocates US Headquarters

Haas Multigrind LLC, a provider of CNC grinding centers, has announced the relocation of its U.S. office from Indiana to Charlotte, North Carolina, effective August 1, 2020. The 6,500-square-foot facility includes office, classroom and conference space, a machine demonstration area and spare parts warehouse.

“This move represents an exciting development for Haas Multigrind, and it demonstrates our strong commitment to existing and prospective customers and strategic partners in the Americas,” says Harry Schorner, general manager. “We are pleased that the new location will enable us to better serve our customers, with better proximity to

a major airport and better access to talent to fill key positions within the organization.”

Kitamura Announces New VP of Sales

Kitamura Machinery has announced that Dave Lucius has joined its leadership team as vice president of sales for the Americas.

“Dave brings with him more than 20 years of manufacturing experience to Kitamura,” Dr. Akihiro Kitamura, president and CEO of Kitamura Machinery. “In addition, he brings tremendous expertise and a proven growth track record in overseeing machine tool distribution networks and leading product development teams.

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Industry News



“I look forward to working closely with the Wheeling, Illinois team,” Lucius says. “The opportunity to work with Dr. Akihiro Kitamura and Ted Asano, along with an engineering team that has more than 355 industry patents to develop products for the North American and world markets is extremely exciting.”

Lucius will work closely with executive vice president Ted Asano to accelerate Kitamura’s next stage of growth in America, Canada and Mexico. “Dave brings a wealth of knowledge and fresh ideas to our management team and we are delighted to have him on board,” Asano says.

Mark Fordyce, Vice President of Hydromat - RE Announces Retirement

After nearly four decades of experience in Hydromat engineering and remanufacturing, Mark Fordyce, now vice president of Hydromat-RE has announced his retirement. He officially

stepped down from his position as of September 25th, 2020.

Mark began his career as a Hydromat machine set-up/design production supervisor in a small shop in Rockford, IL in 1981. After applying to Hydromat, Inc for a technician position he was hired as a project engineer working in the Hydromat engineering department. In the 18-1/2 years with Hydromat Inc, he worked his way through the Hydromat engineering department in various roles, eventually being the engineering manager. In 2006, Mark joined Component Bar Products, where he led both the engineering department and the rebuild, repair parts, and machine repair division. After the 2019 JV of Hydromat-RE and Component Bar Products’ Rebuild Division, Mark continued to service Hydromat users as the vice president of Hydromat-RE and led the team from the O’Fallon, Missouri facility.

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New Products



Roughs and Finishes Press Dies in One Setup —Okuma

Okuma America Corporation has announced the debut of the new MCR-S double column machining center (DCMC). Okuma's MCR-S roughs and finishes press dies in one setup and is

designed for heavy duty machining of process-intensive press dies. It features full 5-face and 5-axis machining and is excellent for die repair work.

The MCR-S accommodates a wide range of stamping die requirements making it an ideal fit for the automotive and aerospace industries. It can easily handle hardened cast iron, nonferrous and exotic materials.

Newly Enhanced Chucker-Convertible Swiss CNC Lathe- —Tsugami

Tsugami/Rem Sales, the exclusive North American importer of Precision Tsugami machine tools, has introduced

the newly enhanced Tsugami SS327-III-5AX, 32 mm, B-axis, chucker-convertible Swiss CNC lathe.

The SS327-III-5AX's servo-driven modular B-axis allows for the cutting of complex parts, complete in a single set-up, while applying the capability for through hole thread whirling or high-speed spindles for small surfacing end mills. The B-axis contains live tools (four front, two rear) that can machine in coordination with the C-axis, providing the ability to cut precise angles and sculpted contours. The B-axis functionality transforms this Swiss-type lathe into a multitasking turning center that can drill, tap and end mill any angle.

The modular tool zone is engineered to make it easy to change cartridge-

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type live cross and face tools on the B-axis and the sub side, decreasing changeover time. Multiple angle cuts by the same tool also decreases the total number of tools required. “For machining complex shapes, this is the ultimate Swiss-type lathe,” said a company spokesperson.

Enhancements to the Tsugami SS327-III-5AX include larger linear guides, increased ribs in the already solid base casting, a 4 GB data server

Series include 3+2-axis machining and volume cutting (structural components) in the aerospace, automotive, pump and valve, mechanical engineering and job shop industries.

Access Series 5-Axis Machining Centers —GroB Systems

“GROB Systems has announced its new Access Series 5-axis machining centers. The Access Series machines, featuring basic models G350a and G550a, are designed to provide high productivity and modular expandability with automation solutions.

The G350a and G550a are made for milling applications and remain flexibly adaptable to suit a variety of requirements,” according to a company spokesperson. “Both models include a rigid horizontal spindle axis positioned close to the operating point for enhanced accuracy and precision. The unique upside-down machining allows excellent chip fall and reduces the heat load in the component.”

The models offer a long Z-axis stroke and large swivel range. The linear guidance system of the reference axis can be optionally equipped with a temperature-controlled cooling function, and a wide-opening work area door provides safe access and ergonomic working with enhanced machine safety. A large safety glass provides a view of the machining process. The Access Series is compatible with SIEMENS and HEIDENHAIN control systems.

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New Products

New 2020 Software Released —Verisurf

Verisurf Software, Inc. announced its new Verisurf 2020 release. Enhancements in the 2020 release include an array of reverse engineering tools with new Quick Surface modeling option, expanded device support to keep up with emerging measurement and data capture technologies, added productivity features, based on ongoing customer feedback, and many features designed to support efficient measurement workflows.

“Our new 2020 release provides customers with complete measurement solutions that are powerful and easy to use, delivering excellent price/performance,” said Ernie Husted, president

and CEO of Verisurf. “We are proud to say, with Verisurf software you can finish the job, from managing CMMs, to 3D scanning and data collection, to 3D CAD modeling, Class-A surface modeling, and verification of finished parts,” added Husted.

Verisurf is dedicated to Model-Based Definition (MBD) and built on a CAD/CAM platform. Highlights of the new software include a new quick surface option for Verisurf Reverse that quickly creates high-quality surfaces from scanned meshes or STL files. Quick Surface maintains curvature continuity between adjacent surfaces and is ideal for creating smooth, free-form CAD surfaces, ideal for high-speed tool-paths.

Also new mesh editing hotkeys

enable rapid selection and switching between powerful edit tools and improved power mesh settings can quickly merge, clean up, refine, smooth, extend, fill holes, and create meshes in one step.

Assure Mesh Continuity with New Stitch Mesh connects mesh edges and vertices within a user-settable tolerance, making it easy to mesh multiple CAD surfaces then stitch them together into a single, watertight mesh.

Quad Mesh produces highly-uniform, triangular or quad-type smooth meshes prior to surfacing that are aligned with the surface’s flow of curvature.

Optimize Mesh reduces the size of any polygonal mesh without compromising form integrity.

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New Products

Improved sketching on meshes tool and an improved project grid option for mesh construct tool projects are now available.

The addition of Analysis Projection settings to Ops Manager streamlines workflows.

KCFM™ 45 Face Milling Cutter Introduced —Kennametal

Kennametal has introduced a new face milling platform for cast iron applications, the KCFM 45.

With fixed and adjustable pocket seats, the new milling cutter provides the option for semi-finishing as well as fine-finishing applications, exceeding

the highest surface quality requirements. It offers carbide, ceramic and PcBN inserts.

Carbide inserts are ideal for machining at lower RPM, or in thin-walled workpieces and less stable conditions, while ceramic inserts (KY3500 grade) provide elevated surface speeds resulting in higher productivity. Both offer excellent performance. For fine finishing operations, PcBN inserts will deliver the best possible surface finish, tool life, and throughput.

“With the KCFM 45 face milling cutter, users can mix and match different insert options to suit the application requirements and machining conditions,” says Michael Hacker, product manager, Kennametal. For example, you might use PcBN finishing inserts

in the adjustable pockets and ceramic or carbide inserts in all other pockets for wet machining or lower volume applications.

Regardless of the configuration, the KCFM 45 exceeds the highest surface requirements.

The inserts are positioned at a positive axial angle, but with a slightly negative radial angle for better tool life. That creates significantly lower machining forces than competing cast iron face mills, helping to eliminate chatter and further improving surface finishes.

“The KCFM 45 with its adjustable pocket seats can generate surface finishes of 0.8µm Ra (32 µin.) or better, and waviness lower than 10µm Wt (400 µin.),” says Hacker.

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New Products

Hi-Tech 750A YMC Precisely Turns Large Parts —Hwacheon

Hwacheon's newly introduced Hi-Tech 750A YMC is designed to machine high-precision, heavy-duty parts. The machine's extensive range of specifications can benefit numerous industries.

The turning center was designed to easily handle large parts, so whether users are machining hefty oil and gas parts or sizable heavy transport components, it is said to maintain precision and accuracy throughout the entire machining process. The company reports that accuracy is enabled by a high-torque, built-in, gear-driven

spindle that can reach 1,800 rpm. The gear-driven spindle not only reduces machining time, it also enhances productivity when combined with the machine's y-axis and live tooling functions.

While the Hi-Tech 750A YMC is equipped with an 18" chuck, the Hi-Tech 750 B series comes with a 21" chuck. Both the A and B series can handle chucks as large as 24", with maximum cutting lengths ranging to 4,250 mm and a maximum cutting diameter of 760 mm. Other features of the Hi-Tech 750A YMC include a wide door window for better visibility when machining large parts, rigid built-in tailstock, wide disc turret and milling function.

Modular Workholding System Offers Two-Jaw Module for Square Shapes —Hainbuch

Hainbuch's modular workholding system, which consists of chuck and jaw modules, now features a two-jaw module for holding square parts. According to the company, changeover from round parts, which are held in collets or the three-jaw module depending on size, takes less than 2 minutes.

The two- and three-jaw module both use the Hainbuch collet chuck as their base. The Centrex quick-change interface enables changeovers without removing the collet chuck and realignment. The company adds that the two-

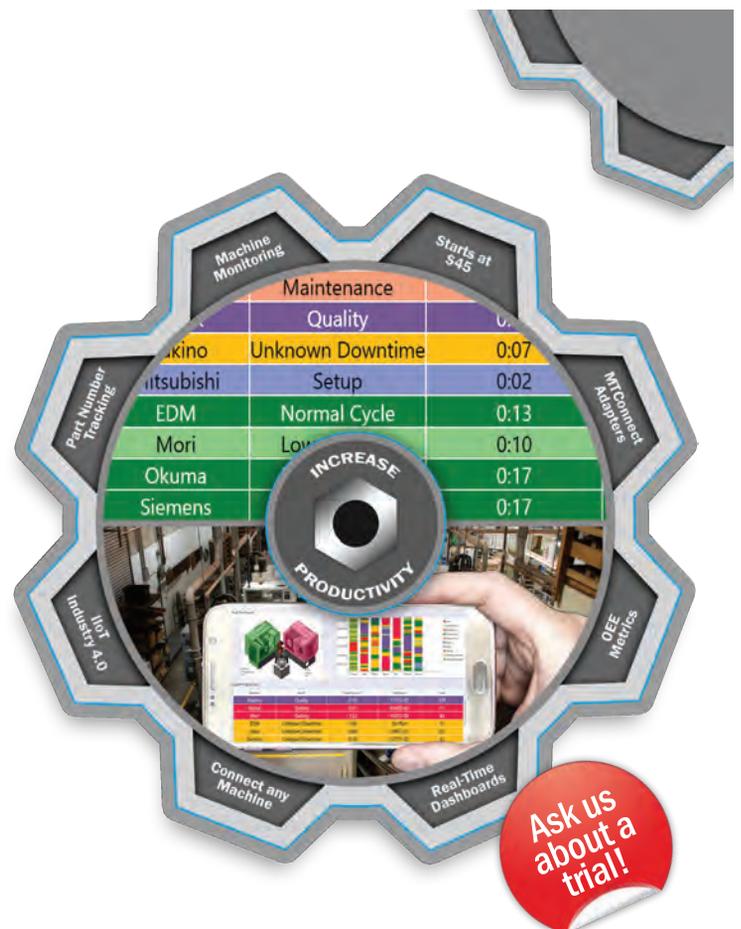
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jaw module's compact profile makes it a good alternative for large and heavy centric vises. The new module can handle turning operations at speeds as fast as 15,000 rpm, and, like the three-jaw module, uses the Hainbuch collet chuck as a base and a Centrex quick-change interface for change-

overs. Overall, the system is designed as an alternate choice in applications that require long tools and taking care to avoid interference because the work-holding is larger than the parts.

CSD-300II Twin-Spindle Lathe Upgraded—Fuji Machine

Fuji Machine's CSD-300II front-facing twin-spindle lathe offers faster robot traverse and turret indexing speeds than its predecessor, the CSD-300. Turret index times are as low as 0.19 sec., with loading times of 4.8 sec.

The CSD-300II also features an improved custom human-machine in-

terface and a single integrated FANUC control panel to ease operation and setup of the machine and robot. A clamp/unclamp switch are included for the robot chuck and the robot's centralized lubrication system.

The CSD-300II accurately manages heavy parts (5+5 kg) up to 200 mm in diameter and 100 mm in length. The lathe also features a hydraulic clamping loader and 8"- to 10"-capacity chucks. An optimized bed design with a grooving width of 14 mm provides rigidity.

Available as an option, Fuji's Lapsys desktop software reads scanned laser etchings to trace the origin of a part, including machine and spindle, and to facilitate predictive maintenance and remote operation.

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New Products



New Drilling System to Launch This Fall — Allied Machine

Allied Machine and Engineering announces their new high-penetration

drilling system, the T-A Pro.

Allied Machine's team of engineers developed technology that takes The "go-to" solution for general purpose holemaking to what they report is a performance level previously unachievable by a spade insert.

The T-A Pro drill combines material-specific insert geometries, a redesigned drill body and a proprietary coolant-through system to allow penetration rates which run at fast speeds. Coolant outlets are designed to direct maximum flow to the cutting edge providing quick heat extraction where it is most critical - even at significantly higher speeds. Material-specific insert geometries produce impeccable chip formation and the drill body incorporates straight flutes redesigned for

maximum coolant flow and excellent rigidity. These design elements combine to extend tool life, create consistent quality holes, and provide superior chip evacuation.

The T-A Pro drilling system will be available in diameters ranging from 0.4370" – 1.882" and is ideal for holes ranging in stub, 3xD, 5xD, 7xD, 10xD, 12xD, and 15xD depths. The drill will be stocked in both imperial and metric shanks, with flat and cylindrical variants. The carbide insert geometries offered initially will cater to the following ISO material classes: Steel (P) with AM300 coating, Cast iron (K), with TiAlN coating and Non-ferrous (N) with TiCN coating.

Product manager, Sal Deluca, states, "The T-A Pro drill is designed

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for use in applications ranging well beyond general purpose drilling. It truly will target all industries, offering phenomenal tool life at high penetration rates, especially in situations where the balance of chip formation at high penetration is critical.”



Jergens Inc. Announces its New Three- and Four-Sided Pyramid — Jergens

Jergens Inc. announces its new three- and four-sided pyramid risers that permit multi part load and provide greater access for five axis machining applications. Part of the Fixture-Pro® line of quick-change modular work-

holding solutions, Jergens pyramids feature a 30-degree mounting surface to ensure maximum clearance for spindle and cutting tool paths resulting in more machining per setup

The engineered solutions offer three versatile mounting options. Direct-to-table uses t-slots, center pin and timing key, and is secured using

t-nuts and Socket Head Cap Screws (SHCS). QLS accurately locates and clamps the pyramid to a base element, such as subplates, using a combination of QLS shoulder screws and SHCS. Quick-Loc™ pallet systems use pull studs (spaced at the industry-standard 96mm pattern) to locate and clamp in a single step.

The light-weight aluminum risers are compatible with virtually all five axis CNC machining centers and ensure the fastest change over and setup times possible. Available in both three-position and four-position configurations, Jergens pyramid risers mate with many top tooling choices including self-centering vises, dovetail vises and ER collet fixtures.

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Updates to Gantry Tool Storage and Manufacturing Management Software —Fastems

New releases of the Gantry Tool Storage (GTS) system and Manufacturing Management Software (MMS) from Fastems are designed to significantly increase manufacturing efficiency, enhance ergonomics and

improve overall user experience. The company reports when applied within a Fastems Flexible Manufacturing System (FMS), the GTS system and MMS can achieve machine utilization levels above 95 percent.

In the GTS system, pick-and-place and traveling gantry robots provide access to centralized storage of up to 4,000 cutting tools and perform just-in-time tool delivery to individual machines. MMS software commands automatic cutting tool changes based on specific NC program scheduling requirements and real-time cutting tool life status.

The GTS system enables cutting tools to be shared among multiple machines, minimizing redundancy and eliminating the need to reserve a

cutting tool for a single machine. This generates cutting tool cost savings and minimizes operator interaction with cutting tool changes. Cutting tool sharing also permits reduction in the size of machine tool magazines.

Improvements to MMS software include a more ergonomic interface and improved user experience, faster cutting tool information search functions, improved view of NC programs, and upgraded response in the case of unexpected machine stoppages.

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New Products

Revamped 5-axis Vise Lineup —Kurt Workholding

Kurt Workholding announced the launch of its new Precision Force 5-Axis MaxLock™ vise lineup featuring three new models with three available jaw options. Robot-ready Kurt PF-series vises offer new user-friendly features including easy-to-adjust lash and 52mm spacing for automation-ready mounting systems to adapt to competitors' zero-point systems.

The company reports the new quick centerline adjustment makes centerline TURNPWR was developed to satisfy the wants and needs of lathe machinists where manual and automated operation

are both useful and needed. TURNPWR promises to enable the user to maximize throughput by significantly reducing set-up time, scrap and other non-productive operations, thereby increasing efficiency, productivity and profitability.

The well-known ACU-RITE conversational programming format for controls is a user-friendly method of writing part programs and included in the TURNPWR, however G-code (ISO) programming can also be used. Basic editing of G-code programs is also possible.

On the new TURNPWR, a 12.1" high-resolution display boasts a screen layout that is clearly arranged and user

friendly. Preview graphics in the editor illustrate the individual machining steps for programming the contour as well as corresponding tool path generated using only dimensions pulled from a production drawing. It also accepts DXF files.

TURNPWR is a closed-loop system with positioning feedback provided by rotary encoders inside the motor assemblies. When fitted with the (optional) ACU-RITE precision glass scales (1 μm/0.00005" resolution), TURNPWR also includes Position-Trac™, an advanced unique feature that enables the user to easily, quickly and accurately re-establish work piece zero after shutting down or power loss.

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New Products

New PUMA SMX5100L

—Doosan

Doosan Machine Tools presents the PUMA SMX5100L, the latest addition to the company's twin-spindle, multi-tasking turn-mill centers. The PUMA SMX Series is specifically designed to complete complex parts in a single setup, and this new model joins the PUMA SMX2600ST (10" chuck) and PUMA SMX3100ST (12" chuck) models in the lineup.

The PUMA SMX5100L is the largest machine in the series, with a maximum turning diameter of 32.7" and maximum turn length of 120.1".



Chuck sizes of 15", 18" and 21" are available for the standard main turning spindle, which features a 49.6 horsepower built-in motor that spins at 2,400 r/min.

The B-axis milling head features a Capto C8, powered by a 49.6 horse-

power motor that rotates at 10,000 r/min. The roller gear cam mechanism that drives the B-axis is backlash-free and highly rigid, outputting B-axis torque of 1,991 ft-lb.

"With its built-in size and strength, the PUMA SMX5100L is ideal for aerospace applications such as landing gear components as well as housings for large shafts like those found in the agriculture or oil field industries," said Jim Shiner, director of sales and marketing at Doosan Machine Tools America.

All PUMA SMX models have highly rigid machine construction.

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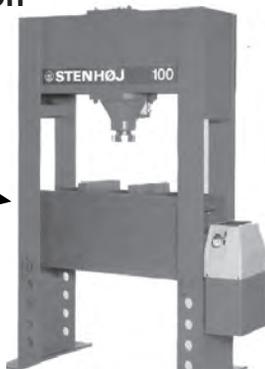
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New Products

Minimized thermal deformation is achieved via strategically placed sensors throughout the machine, which offer real time measurement and adjustment of the axes. For added stability and speed, the Z-axis, in which the carriage moves, is supported by three rows of cross roller linear guideways.

Along with a large machining space, the PUMA SMX line comes standard with ergonomic features and efficient maintenance. FANUC 5-axis machining software.

New Carbinite Coating —Dillon Manufacturing

Dillon Manufacturing introduces Carbinite, a wear-resistant textured carbide coating which the company reports reduces or eliminates slippage. Improving the grip on workpieces enhances mill performance and can reduce cycle times. The company said in clamping tests, Carbinite has been shown to nearly double the gripping strength at equal clamping force. Utilizing a process called Electro Spark Deposition (ESD), Carbinite can be

added to hard or soft jaws after they are milled to customer requirements. The wear resistant carbide alloys display exceptional bond strength without annealing or distortion.

Like all Dillon products, Carbinite is made in the USA in ISO 9001:2015 registered facilities.

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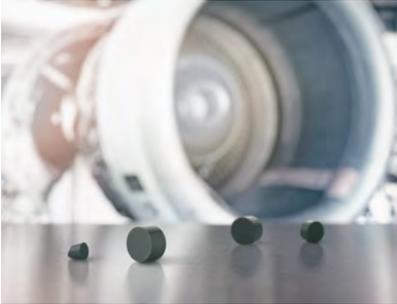
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New Products



CW100 Ceramic Insert Grades Introduced —Seco Tools

Seco Tools has expanded its line of Secomax™ CW100 ceramic insert grade. Featuring new geometries for

whisker-reinforced ceramic, this line of ceramic solutions offers superior performance for challenging aerospace, oil and gas and power generation applications involving Inconel 718, Hastelloy, Waspaloy, MAR, Nimonic, Rene, Udimet and other HRSA.

The CW100 grade expansion encompasses four new round insert formats with two geometries, E-01020 and T-01020, and four grooving insert geometries with widths of 0.125", 0.25" and 0.312". An aluminium-oxide-based grade with silicon-carbide whiskers (Al₂O₃-SiC), the Secomax™ CW100 grade not only boosts machining speeds in advanced HRSA materials, but it ensures stable and predictable tool life.



New Drill & Boring Sleeves —GenSwiss®

GenSwiss® coolant-thru drill and boring sleeves are a new product designed and manufactured by GenSwiss®. GenSwiss® drill and boring sleeves feature precision ground inch

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New Products

and metric shanks and are a robust method for holding drills and boring bars to tight tolerances. Each Gen-Swiss® sleeve features coolant-thru holes, enabling coolant delivery to your coolant-thru drills or boring bars.

The absence of an ER collet means each sleeve is sized to the specific tool shank intended for use and therefore removes any errors that can occur with standard ER collet based holders. GenSwiss also reports that coolant-thru drill and boring sleeves also streamline the number of components needed for tool holding, removing the seals required for coolant-thru ER collets.

Each coolant-thru sleeve is designed with a rear coolant input and mates with a 1/8-28 BSPP coolant

fitting. Sleeves are manufactured in several inch and metric shank sizes; 5/8in, 3/4in, 1in, 20mm, and 22mm.

Nominal tool bore sizes range from 3mm to 8mm, however, drill sleeves can be manufactured to custom order. Two set screws are present along the flats on each sleeve shank, providing a simple yet quick way to secure the tools into place.

Dream Drills® Pro Cutting Tools For Higher Performance, Speeds In Steel, Cast Iron —YG-1

YG-1 has beefed up its successful Dream Drills® line-up with the new Dream Drills Pro line optimized for machining in steel and cast iron, the company announced recently.

“The main advantage of this new Dream Drills Pro line is high cutting speeds with longer tool life,” said Steve Pilger, product manager, Holemaking. “Our engineers developed several advances that combine to make these tools faster, more efficient and longer lasting than other comparable tools

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New Products



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New Dream Drills Pro tools are made with micrograin carbide for exceptional core strength and longer tool life. They also feature YG-1’s unique, wave-shaped cutting edge to reduce cutting forces, and an advanced, wide-

flute design optimized for faster, reliable chip evacuation. A self-centering 140° point angle reduces torque and extends tool life.

YG-1’s special Z-Coating (silicon-based, nano-layered) technology gives cutting edges extremely high hardness and greater heat resistance to keep cutting and finishing. The resulting higher machining efficiency means superior surface finishes and more parts per tool.

Dream Drills Pro tools come in drilling depths of 3xD to 5xD, in sizes from Ø1 to Ø20.

Dream Drills Pro is the latest line in the Dream Drills product matrix from YG-1, including general purpose, MQL, high feed, flat bottom,

ALU®, high hardened and INOX®. Each aligns with customers’ various machining demands and applications.

New Line of Cost-Effective Machines

—Hyundai Wia

Hyundai WIA, the largest machine tool builder in Korea and subsidiary of Hyundai Motor Group, releases a total of 22 of new machines.

The company plans to re-establish its position by rebuilding its lineup with market leading products from entry models to premium models by releasing a large number of low and mid-priced products.

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New Products

The line-up of SE2200 series lathes, consists of 6-10" sizes is comprised of 19 models that can process short components to long shafts and models available with live rotary tools, sub-spindles, and Y-axis. In addition, the machining performance exceeds the performance of their previous model by reinforcing the design of the bed, guideways, spindle, turret, and tail-stock which are the basis of machine tool performance. They offer best in class cutting speeds and feeds of up to 1417 in/min.

The KF-II machining center series is the successor model to the KF4600, KF5600, and KF6700 launched in 2016. The biggest feature of the KF-II series compared with previous

generations is that it has significantly improved the performance of the spindle and travel. In the case of the spindle, vibration is reduced through optimization of the spindle weight and structural analysis for greater precision machining.

In order to improve the travel performance, rigidity was improved 1.5 times by designing three (3) rows of ball screw support bearings. In particular, the Z-axis ball screw has increased durability by reducing the spindle weight and improving the bearing cooling mechanism.

All of Hyundai WIA's new products will incorporate the latest controller from Fanuc. The Fanuc 0i PLUS, which will be equipped with a 15-inch

touch screen monitor as standard, and provide various convenience functions such as a dialogue program called Smart Guide i as standard. With the KF-II series, it includes functions to provide high performance and user convenience such as 200 block look-ahead function (AICC), processing condition selection function (HW-MCS), and active feed control function (HW-AFC) as standard.



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New Products



New Presetter Option, SPI —BIG KAISER

The SPERONI SPI (Simple Post Interface) is the newest of BIG KAISER's Industry 4.0 upgrades to its offering of tool presetting solutions. The company reports that the SPI

reduces the time and steps needed to transfer precise and accurate tool measurements to a machine tool.

"For those looking to enhance their return on investment beyond what a presetter already provides, SPI is a great option," Jim Mayer, TMS manager at BIG KAISER, said. "It eliminates a handful of opportunities for human error and reduces set up times even further."

As opposed to measuring, printing a label and punching the data into the control, SPI prints a tool label with a QR code at the presetter that's then read by the SPI module at the machine control. The system can also be configured to send measurements directly into the tool NC's offset table.

While SPI doesn't need to be paired with the INTELLIGO Tool Management solution to work on all BIG KAISER-offered presetters, the combination unlocks more features. It allows for monitoring of tool count going in and out of machines and allows the tooling or setup manager to monitor tool life remotely. Managers can easily identify tools that need attention or need to be replaced for continued performance.

SPI is available for controls such as Okuma®, Fanuc®, Heidenhain®, Siemens® and Mitsubishi®.

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New Products



Advance Tap Line Extended With New, Larger Sizes —Walter

Walter has expanded its TC117/TC217 Advance tap product line with an expanded range of tolerances, enabling these taps to be employed in even more applications.

Like the rest of the product line,

these new, oversized blind and thru hole taps -- H7 (+.003") UNC#6-UNC5/16", UNF#6-UNF5/16", and H11 (+.005") UNC1/4-UNC3/4", UNF1/4 -UNF3/4" -- deliver high threading productivity in a wide range of different materials. The versatile TC117 (blind-hole) and TC217 (thru-hole) taps tackle material ranging from steel and stainless to cast iron and non-ferrous materials (ISO material groups P, M, K and N), and materials with hardness up to 40 Rc (370 HB).

The TC117 blind-hole tap has a 40° helix angle and up to 2.5 x DN with chamfer form C (semi bottoming) or E (full bottoming). The TC217 through-hole tap features a spiral point

for forward chip evacuation and a thread depth capability of 3.0 x DN. Both taps use HSS-E substrate that provides excellent durability due to its cobalt enrichment. The taps feature grade WY80RG for good chip control, good wear resistance and higher cutting speeds and WY80FC, which offers less wear resistance and cutting speed but offers much better chip control for stringy and difficult-to-control chips such as stainless steel. All are offered with DIN length/ANSI Shank (DIN/ANSI standard).



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New Products

New Line of VMCs —Mitsui Seiki

Mitsui Seiki has launched a new series of CNC vertical machining centers called the “J” series for “Jig”, which are ideal to machine medical, optical, mold & die, and aerospace parts.

The line provides positioning accuracy and repeatability of +/- 1µm. A thermal compensation system employs sensors on the machine faceplate and inside the spindle to minimize the effects of temperature changes on part accuracy and cut temperature-generated displacement by 60 percent. This system also reduces Z-axis thermal growth and deflection by 30 percent. Cooling systems for slide way lubrication



and ball screw cores stabilize axis feed precision.

Mechanical design features that maximize machine rigidity and accuracy include hardened and ground tool steel box slideways as well as contact

elements that enhance acceleration, reduce stick-slip, and allow for feed accuracy of 0.1 µm. Another proprietary engineering detail drastically improves the static rigidity of the Z-axis to more than six times that of conventional Z-axis arrangements.

These heavy duty, ultra-precision machines allow for more complete machining of precision components including precision boring, milling, drilling and tapping. Machining center technology and jig borer precision in one machine.

The line includes 4 basic machines to satisfy a broad range of workpieces and all machines offer an ATC of 60, 90 or 120 tools. The PJ812 (PJ for “Profile Jig”) with travels X-1200mm,

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New Products

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MCR-S Double Column Machining Center —Okuma

Okuma America Corporation has debuted its new MCR-S double column machining center that roughs and finishes press dies in one setup. It features full five-face and five-axis machining and is suitable for die repair work and heavy-duty machining of process-intensive press dies.

The MCR-S is designed to accommodate a range of stamping die requirements, making it well-suited for the automotive and aerospace industries. It can handle hardened cast iron, nonferrous and exotic materials.

The machining center achieves maximum productivity and accuracy through various intelligent technologies and innovations. The one-setup process reduces cycle time by using faster cutting feed rates and spindle speeds, and eliminating the process-intensive steps of manual finishing. Innovative die-alignment processing also reduces concave/convex die-alignment times, according to the company.

Okuma's Thermo-Friendly technology reduces heat in the machining process and compensates for any ambient temperature changes, allowing for continuous long runs of cutting without comprising accuracy, while the Hyper-Surface feature detects and

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Shawn Arnold
Publisher
October 1, 2018

New Products

automatically compensates surface disturbances in the part program to eliminate streaks or stripes for a high-quality surface finish.

Single-Flute Gundrills Suitable for Medical Device Machining —Star SU

Star SU's solid carbide gundrills are designed for work in medical-grade materials such as titanium and stainless steel. The single-flute tools meet part print requirements for medical devices and instruments. The company



reports tool life improvement in both titanium (6Al-4V) and 440 stainless steel, driven by selection of carbide grade, surface finish, edge preparation and coating.

The solid carbide gundrills are made in a two-piece design. The tip and body are a single piece of carbide brazed into the driver/shank, while the flute is ground down the length of the head and body. The rigid gundrills are equipped with high-pressure coolant delivery capabilities. The tools provide coolant delivery holes in diameters ranging from 0.028”.

Blue Photon's UV Grippers Now Available in Metric

—Blue Photon

Blue Photon now offers metric-size, high-performance, ultraviolet (UV)-light transmitting workholding grippers. The device is designed with multiple diameters to hold small to large workpieces. The grippers are inserted into a fixture, and the workpiece is secured to the grippers with the company's gel-like adhesive material, BlueGrip. UV light is transmitted through the core of the gripper for 60 to 90 sec. to cure the adhesive, bonding the gripper to the part.

These metric workholding components are said to achieve the same results as inch-size products.

Blue photon workholding is said to improve tolerances and part access, reduce scrap and eliminate extra processes.

Triton Hydraulic Chucks Provide Increased Tool-holding Power

—Technik

Techniks has expanded its line of hydraulic tool holders with the Triton line of hydraulic chucks. The chucks feature a thicker wall construction and more compact hydraulic design that concentrates the clamping force on the tool shank, increasing holding power up. The increased holding power enables Triton chucks to be used for heavy milling applications in addition to more typical operations like drilling, reaming, thread milling and finish milling.

The hydraulic reservoir around the bore provides vibration-damping properties that reduce chatter in the cut, improving surface finish and

New Products



enhancing tool life. Tool changes are performed with a hex wrench. Triton chucks have a repeatable accuracy of under 0.003 micron at 3×D and are balanced to a minimum of 25,000 rpm at 2.5 Gs for high-speed applications. CAT- and BT-tapered Triton chucks can provide through-spindle as well as AD+B flange coolant.

The chucks can hold shank diameters ranging from 1/8" to 1 1/4" by using reduction sleeves. Techniks also offers reduction sleeves treated with its TTG-594 compound, said to increase the holding power. Triton chucks are available in standard and dual-contact CAT 40/50, standard and dual-contact BT 30/40, and HSK 63A/100A.

Power Clamp i4.0 Available

—Haimer

Haimer's Power Clamp i4.0 shrink-fit system is designed to contribute to machine connectivity on the shop floor. The NG coil shrinking station is suitable for all solid carbide and High Speed Steel (HSS) tools ranging from 3 to 32 mm in diameter. The shopfloor-ready 7" touchscreen display can be operated even while wearing thin work gloves. The machine comes with a motorized coil and scanner that reads out shrinking parameters from data matrix codes for reliable, automated shrinking.

The Power Clamp i4.0 series offers various options, including the compact Power Clamp Air i4.0 and the Nano NG i4.0. The Power Clamp Air i4.0

(both Economic and Comfort versions) provides smooth and clean cooling for all kinds of shrink-fit chucks and collets, regardless of the outside contour, using air nozzles and drizzle without dirt and water residue, the company says. An LED temperature control contributes to process reliability. The Power Clamp Nano NG i4.0 was developed for shrink-fit collets and small toolholders ranging to size HSK-A63. With this machine, the shrinking process is horizontal, with a fully automated motor coil and air cooling.

3" Bore Option on HJ Manual Lathe —Kingston

Kingston now offers the option of a 3" spindle bore on its 17" swing HJ model manual lathe.

"The rugged HJ model is the perfect manual lathe for job shop production, repairs, reworking threads and making

fixtures and tooling," said a company spokesperson. "In addition to machine shops, schools also love the HJ because of its ease of operation and ability to withstand abuse."

The 3" bore HJ model features a D1-8 spindle nose and a 2-point bearing support system with taper roller bearings for precision cutting. Like its standard 2.25" bore counterpart, the main spindle, bed way and cross slide are hardened and ground. It features 12 speeds from 35 RPM to 2,000 RPM and a 7.5 HP motor. "The uniquely designed timing-belt-driven gear box offers a comprehensive range of inch and metric threads without the use of change gears.

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...Hotline Continued From Page 8

Boom Supersonic Wins Contract to Develop Concept For Future Air Force One

Boom Supersonic, a Colorado aerospace startup that's building the next generation of supersonic passenger jet, says it has been awarded a military contract to develop a concept for a future Air Force One jet built on its Overture aircraft platform.

Boom said the contract will pay for explorations of an Overture designed for the Air Force's so-called executive transport program, which includes all air travel for the U.S. government's top leaders in the executive branch, including the president and Air Force One.

Boom founder and CEO Blake Scholl said the Overture jet - a scaled prototype of which rolls out next month - will offer the Air Force a unique combination of passenger capacity, speed, and enough space and power to accommodate the requirements of necessary mission systems.

The Overture is proposing to zoom between Seattle and Tokyo in 4 hours and 30 minutes, instead of the usual 8 hours and 30 minutes. A similar trans-Atlantic flight between New York and London could be completed in three hours and 30 minutes instead of 6 plus hours, says the company, which has so far raised over \$160 million.

Arizona Start-up Lucid Unveils Air Sedan To Take On Tesla

Electric vehicle start-up Lucid just unveiled its first production vehicle, the Air sedan.

The company is touting the car as a faster, more efficient and spacious vehicle than the Tesla Model S.

The Lucid Air is expected to be in production early next year at the company's plant in Casa Grande, Arizona.

Lucid also teased its next vehicle in development, a crossover-SUV tentatively named "Gravity."

The company is touting its all-electric Air sedan as a more efficient, faster and spacious vehicle than the Tesla Model S, a car the company's CEO Peter Rawlinson helped develop.

MagniX Teams Up With Universal Hydrogen For Electric Airplane Conversion Project

Redmond, Washington-based MagniX says it's partnering with a Los Angeles startup called Universal Hydrogen to retrofit 40-passenger regional aircraft with carbon-free, hydrogen-fueled electric powertrains.

The partnership opens up a new frontier for MagniX, which is already involved in flight tests for all-electric versions of smaller airplanes such as the de Havilland Beaver and the Cessna Grand Caravan.

This time, MagniX and Universal Hydrogen aim to transform the de Havilland Canada DHC8-Q300, better known as the Dash 8. The Dash 8 is a time-honored twin turboprop traditionally used for commercial regional air service. If the project succeeds, the lessons learned can be applied for the development of retrofit conversion kits for the wider ATR 42 family of aircraft.

Universal Hydrogen's plan for the Dash 8 calls for MagniX to provide an electric propulsion system in the 2-megawatt class for each wing, powered by hydrogen fuel cells. MagniX has previously developed electric airplane motors in the range of 280 to 560 kilowatts.

Raytheon Hiring More than 300 Workers in El Segundo

Raytheon Intelligence & Space is looking to hire more than 300 people at its El Segundo, Ca. facility for roles that address cybersecurity, hardware and systems design and engineering.

Wallis Laughrey, vice president of Raytheon's Space & C2 Systems, said the jobs require a high level of expertise.

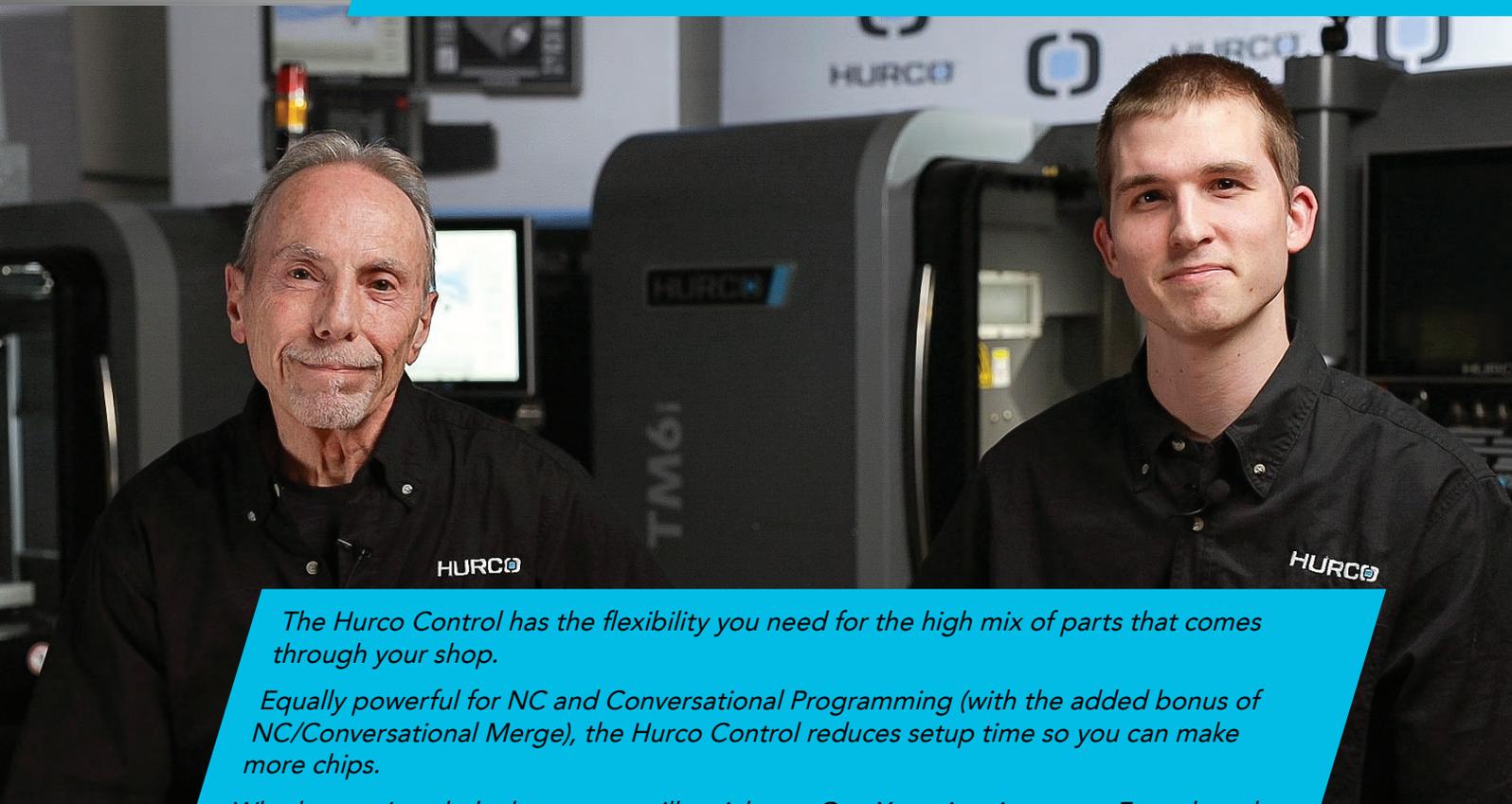
"We have seen continued demand from our customers throughout 2020," Laughrey said via email. "Because of this, we're looking for qualified and driven professionals with a proven track record of working on innovative projects to fill the growing need."

Raytheon's 16-building El Segundo campus, which employs some 6,000 people, is involved in a variety of products including radar systems, sensors and electronic warfare technologies.

Continued to Page 90

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...Hotline Continued From Page 88

BAE Wins Potential \$118M Navy Contract for USS Preble Ship Maintenance Services

BAE Systems' ship repair business in San Diego has won a potential \$117.8M U.S. Navy contract to help the Chief of Naval Operations prepare for a scheduled depot maintenance of the Arleigh Burke-class guided missile destroyer USS Preble.

The company-run shipyard will perform repair, alteration and upgrade work on the vessel as part of the firm-fixed-price contract, the Department of Defense said in mid August.

Naval Sea Systems Command received two proposals for the project, which is expected to conclude in February 2022, and will obligate \$103.6M at the time of award.

USS Preble will undergo modernization as part of the branch's efforts to ensure service life of DDG-51 class ships.

Northrop Tests Aircraft Navigation System

Northrop Grumman Corp. completed the critical design review of an upgraded navigation system for U.S. military aircraft.

The engineering and design work on the Embedded Global Positioning System (GPS)/Inertial Navigation System (INS)-Modernization, or EGI-M, program was done in Woodland Hills, CA.. The navigation system is for the U.S. Air Force's F-22 Raptor and the Navy's E-2D Advanced Hawkeye aircraft.

The critical design review milestone marks the completion of detailed hardware and software design of the EGI-M product line. The EGI-M uses an open architecture that allows for rapid responses to threats and its modern system integrates new M-Code capable of communicating with global positioning systems.

Northrop Wins US Air Force's Contest For Next-gen ICBMs

Northrop Grumman has captured a \$13.3 billion award for the Ground Based Strategic Deterrent competition to build the U.S. Air Force's next-generation intercontinental ballistic missiles, the service announced Sept. 8.

Beginning in 2029, GBSD will start replacing the LGM-30G Minuteman III ICBMs, which were fielded in 1970, Northrop said in a statement.

Northrop's industry team for the program includes Aerojet Rocketdyne, Bechtel, Clark Construction, Collins Aerospace, General Dynamics, HDT Global, Honeywell, Kratos Defense and Security Solutions, L3 Harris, Lockheed Martin, Textron Systems, and other businesses, the company said in a statement. Its own work on the missiles will predominantly be carried out at Northrop's facilities in the cities of Roy and Promontory in Utah.

Record 293,000 Robots In United States' Factories – IFR reports

The new World Robotics 2020 Industrial Robots report presented by the International Federation of Robotics (IFR) shows a record of about 293,000 industrial robots operating in factories of the United States - an increase of 7%. Sales of new robots remain on a high level with 33,300 units shipped in 2019. This is 17% less compared to 2018, but still the second highest sales volume ever recorded.

"The United States are by far the biggest robot market in the Americas," says Milton Guerry, president of the International Federation of Robotics. "The annual number of robots sold is highly influenced by the automotive industry, which is the most important customer. In 2019, the US car market was again the second largest car market in the world, following China, with the second largest production volume of cars and light vehicles."

Boeing Partners with General Atomics, Aerojet Rocketdyne in Homeland Missile Defense Bid

Boeing is teaming with General Atomics Electromagnetic Systems (GA-EMS) and Aerojet Rocketdyne in its bid to build the Next Generation Interceptor (NGI) for the U.S. Missile Defense Agency (MDA). The NGI is a key element of the MDA's missile defense system, which is designed to intercept and destroy incoming intercontinental ballistic missiles.

On Aug. 12, the Boeing-General Atomics-Aerojet Rocketdyne team submitted an NGI offering that will improve performance and enhance the nation's ability to defend against future threats.

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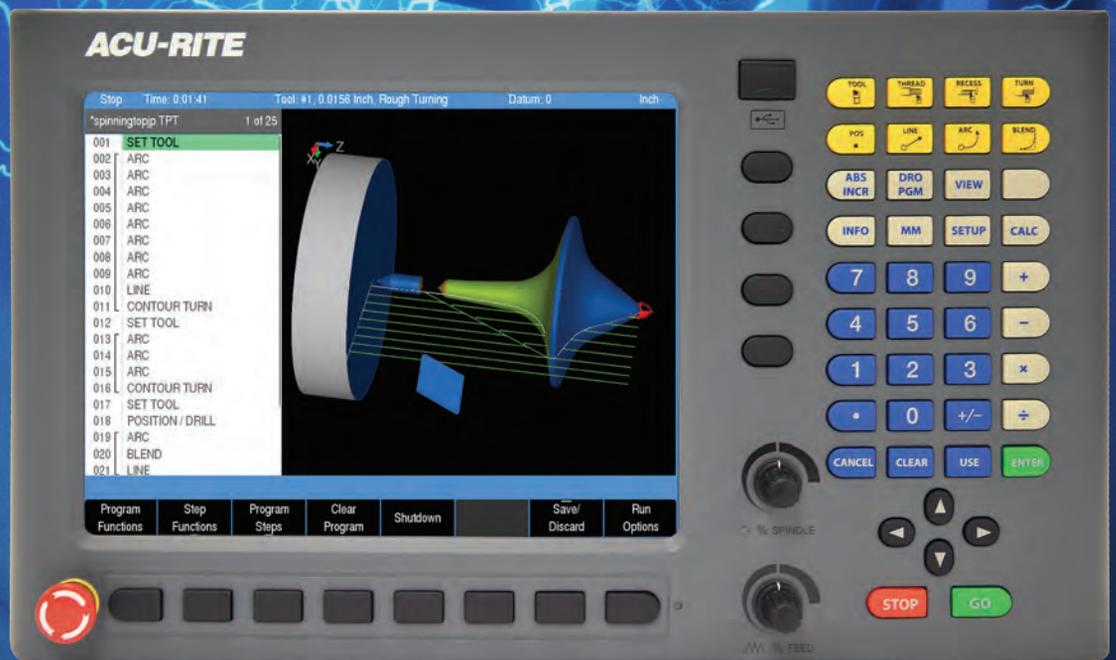
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