

CNC WEST

Volume 38 - Issue 1

THE MAGAZINE FOR WESTERN METAL WORKING MANUFACTURING

TOOLING & WORKHOLDING

- **SMP FINDS ADVANTAGE WITH MICROCONIC SYSTEM**
 - **MX TROPHIES - LOOKING OUT FOR #1**
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AX Series are available for field installation & some models can be configured to load multiple machines. Contact your local Selway solutions expert for more information or email us at connect@selwaytool.com.





CNC West

October/November 2019 • Volume XXXVIII No 1

Feature Stories

San Diego Swiss Shop Unique Advantage
Superior Machined Products Uses Microconic System 22

U.S. Cutting Tool Consumption up in July.....28

Guided by God, Powered by Hurco
Driven by their faith a company relies on Hurco products to get jobs..... 34

Looking Out For #1
MX Trophies in Carson City, Nevada uses CNC Lasers to Make Unique Trophy's42

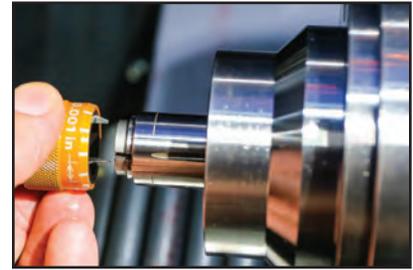
Programming is Elementary in San Bernardino, California
A San Bernardino, California elementary school is teaching students Mastercam..... 48

Theme for IMTS 2020 is 'Digital Manufacturing. Implemented.....52

Industry 4.0: New Digital Tool Management System from HAIMER60

Departments

4	Publisher Editorial	62	Industry News
8	Executive Hotline	73	New Products



Superior Machined Products Stays Busy With Help of Masa Tools.....Page 22



Miguel and Alfredo Acosta and their Hurco.....Page 34



STEM instructor Beverly Sayson works with student Gabriel Tinajero (age 13) in the school's CAD/CAM lab.....Pg.48

Coming in Dec 2019/Jan 2020

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
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Ad Space: Nov 26 2019
Ad Material: Dec 2, 2019



VOL. XXXVIII NO.1

October/November 2019

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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38 Years and Counting

In this day of electronic media it is pretty satisfying and amazing that not only will we start our 38th year of a print magazine, but this will be our LARGEST October/November issue in 8 years. CNC WEST can also be read each issue online which only adds to it's value. Local newspapers and national consumer print magazines are falling by the wayside but most of the print magazines in this industry and holding their own.

I am told the excellent western region articles that we provide make western region metalworkers look forward to each issue. That along with advertising from some of the leading machine tool builders, tool manufacturers and metalworking software companies in the industry keep us plugging along. I would like to thank all of the people who support us by either reading or advertising with us because without you, there would not be a CNC WEST.

This issue is our annual Workholding and Tooling issue. Our cover story is about a San Diego area company that specializes in medical and dental parts on their Star Swiss machines. With the help of Masa Tools microconic collet system they are able to speed up production, which is huge in the micro part world. This interesting story begins on page 22.

Brothers Miguel and Alfredo Acosta bought a Hurco and started a company but had no work. While it may have seemed backwards you can read beginning on page 34 how it worked out more than OK.

Another story is one we all should pay attention to. Most shop owner complain about the lack of qualified workers in this industry. And rightly so. Metal shop has been taken out of numerous high schools and while this is an exciting and possibly well paying industry that is not what kids are hearing from our educators. In San Bernardino, California an elementary school that has a STEM program not only teaches computer programming but they also teach CAD/CAM programming. One current project for the 6th graders is to design a solar car, employing SOLIDWORKS for the basic design and then using Mastercam Art for the more intricate components. Mastercam Art is a single software package that lets a student bring a project from a 2D drawing on screen to a beautifully sculpted 3D object completed on a CNC machine. This article begins on page 48.

MX Trophies in Carson City is a full service trophy maker. With the help of some CNC laser machines they have been able to up the game and produce better looking trophy's than what people are used to. Read this story on page 42.

There is much, much more in addition to these stories. Thanks for reading and once again thanks again for your past support and CNC WEST looks forward to providing you current western region news for many more years.

Sincerely,

Shawn Arnold

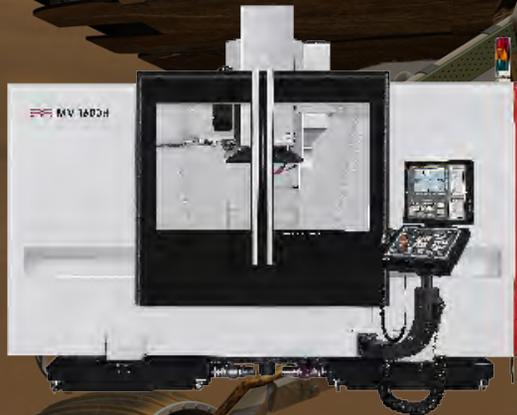
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EXEC HOTLINE

Major Cast Iron Maker Acquires Portland Startup

Lodge Manufacturing Company has acquired Portland's FINEX Cast Iron Cookware.

Founded in 2012 by Mike Whitehead and Ron Khormaei through two wildly successful Kickstarter campaigns, FINEX today makes cast iron skillets, grill pans, Dutch ovens and other cookware in Portland, Oregon.

Lodge is the largest cast iron cookware manufacturer in the county. It was founded in 1896 in South Pittsburg, Tenn., where it still has two large foundries.

Northrop Grumman Contract

Northrop Grumman Systems Corp., Woodland Hills, California, has been awarded, a contract for Embedded GPS Inertial Navigation System Modernization (EGI/EGI-M) follow-on production and sustainment. This contract provides for production, sustainment and engineering technical services in support of the EGI/EGI-M system. Work will be performed at Woodland Hills, California; and Salt Lake City, Utah, and is expected to be completed by Sept. 26, 2032.

Raytheon Tucson Work

Raytheon Missile Systems, Tucson, Arizona, has been awarded a indefinite-delivery/indefinite-quantity contract for Small Diameter Bomb II Life Cycle Support Contract III. This contract provides lifecycle support includes, but is not limited to, all efforts related to the SDB II and variants in various support efforts for the Engineering and Manufacturing Development integration, production, sustainment, testing, obsolescence analysis and management, logistics support, testing, training, upgrades, and software updates. Additionally, studies and analysis related to current and future expansion of system performance, simulations, modeling, test hardware, technical support, aircraft integration activities, and procurement of all associated test hardware to support the activities and repair of non-warranted assets will be procured using this contract

vehicle. Technical support for the SDB II system provides for engineering, management fielding and logistical tasks required to ensure technical baselines remain current and effective and that future growth requirements remain feasible. Work will be performed at Tucson, Arizona, and is expected to be completed by Sept. 30, 2024.

Platinum Equity Buys Wesco Aircraft for \$2B

A portfolio company of Beverly Hills-based private equity firm Platinum Equity has paid \$1.9 billion to buy Wesco Aircraft Holdings Inc., a Valencia, CA-based aerospace parts and supply chain services provider.

Platinum Equity plans to combine Wesco with its U.K.-based portfolio company Pattonair Ltd., a provider of supply chain management services for the aerospace and defense industries.

Lockheed Martin's Expertise In Hypersonic Flight Wins New Army Work in California and Colorado

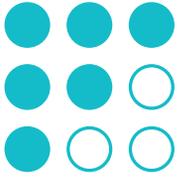
The U.S. Army awarded Lockheed Martin a contract at an estimated value of \$347 million as part of a multi-year hypersonic weapons development in support of the Army's focus in long-range precision strike missiles.

The Army also awarded a contract to DTS at an estimated value of \$352 million to produce the first commercially manufactured set of Common-Hypersonic Glide Body (C-HGB) systems. DTS selected Lockheed Martin to support integration and prototyping of this new C-HGB.

The Army LRHW prototype will leverage the C-HGB and introduce a new class of ultrafast and maneuverable long-range missiles with the ability to launch from ground mobile platforms. The LRHW system prototype will provide residual combat capability to soldiers by 2023.

LRHW program work will be performed at Lockheed Martin's Alabama, Colorado, California and Texas facilities.

Continued on page 96.....

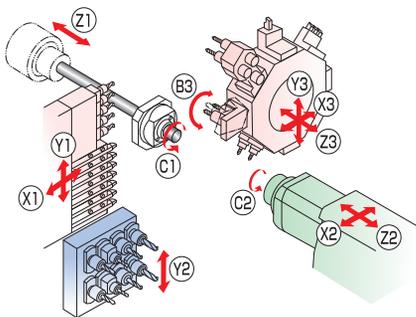


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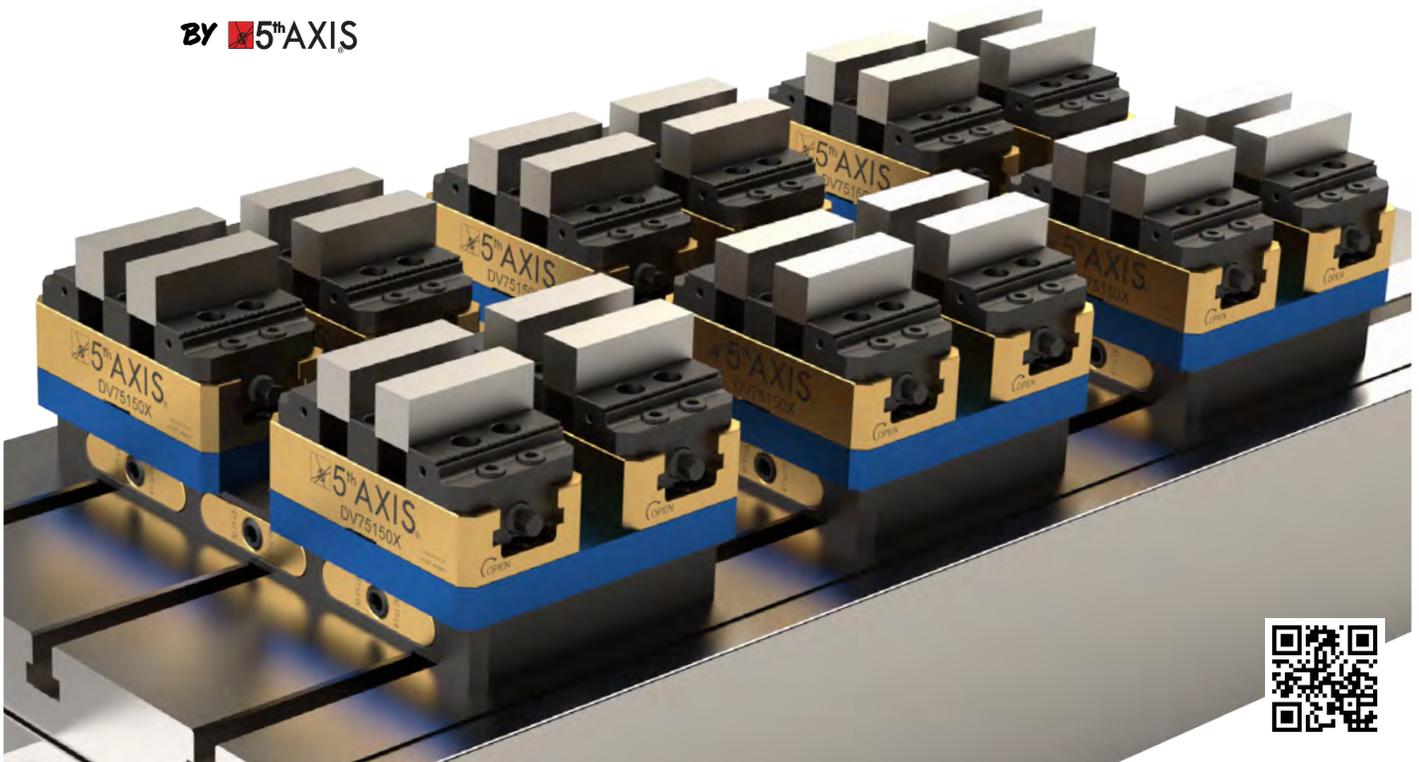
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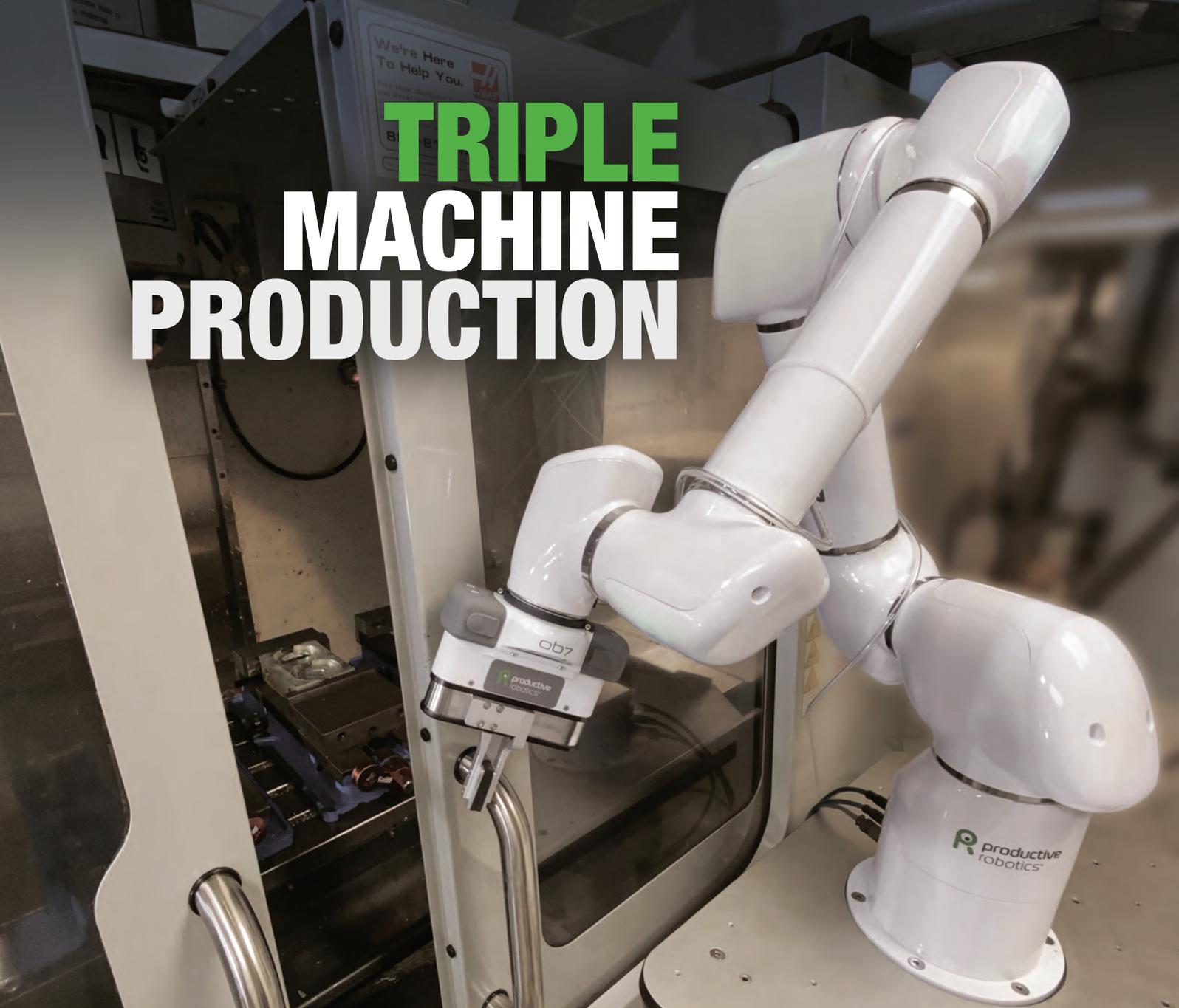
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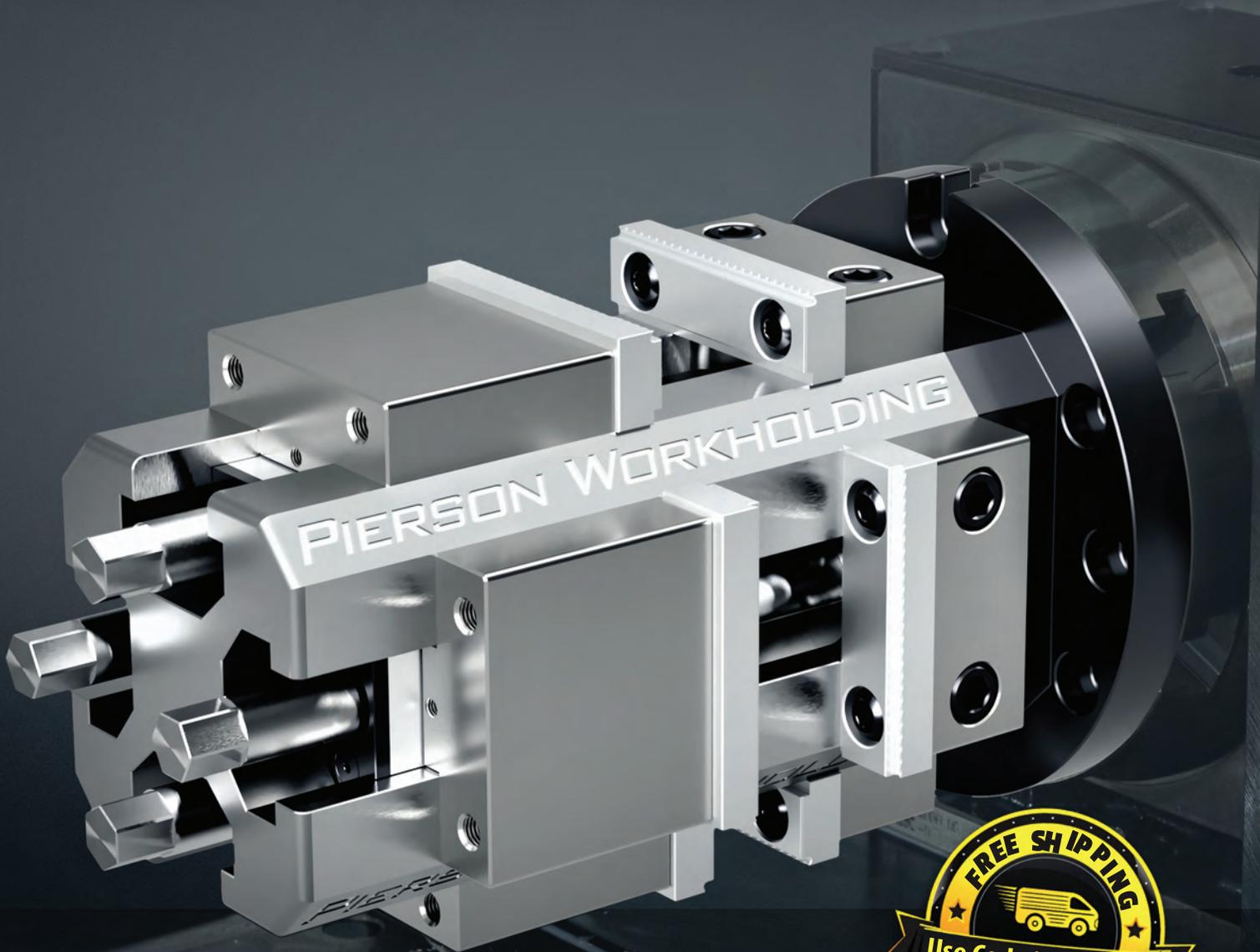
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						Part Number	Set Price	Part Number	Set Price
Kit B206 HO27M6 HS-06	6"	0.472	10MM	0.787	2	KT-6200F	\$ 34.37	KT-6200AF	\$ 31.59
					3	KT-6300F	\$ 44.99	KT-6300AF	\$ 41.12
					4	KT-6400F	\$ 95.71	KT-6400AF	\$ 86.08
Kit B208 ZA6-8 HS-08	8"	0.551	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
					2	KT-12200F	\$ 72.00	KT-12200AF	\$ 74.05
Kit B12 HS-12	12"	0.709	14MM	1.181	3	KT-12300F	\$ 107.96	KT-12300AF	\$ 90.10
					2	KT-12208F	\$ 72.00	KT-12208AF	\$ 74.05
					3	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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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
					2	RKT-12200A	\$ 184.71
Kit B12 HS-12	12"	0.709	14MM	1.181	3	RKT-12300A	\$ 245.72
					2	RKT-12208A	\$ 184.71
					3	RKT-12308A	\$ 278.56

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6,8,10"	4.92	7.9	JBR-TL6-10	\$439.00
8,10,12"	6.30	9.8	JBR-TL8-12	\$519.00

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Chuck Dia	Part Number	Price Each
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5"	JBR-05	\$ 162.00
6"	JBR-06	\$ 184.25
8"	JBR-08	\$ 226.48
10"	JBR-10	\$ 255.67
12"	JBR-12	\$ 284.23
15"	JBR-15	\$ 427.06

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Chuck Dia	Chuck Reference	Part Number	Set Price
6"	140/165/175/170	GBK-160-A	\$ 290.00
8"	200/210/215/225	GBK-200-A	\$ 320.00
10"	250/265/275	GBK-250-A	\$ 360.00
12"	315/340	GBK-315-A	\$ 445.00
15"	400	GBK-400-A	\$ 455.00
20"	500	GBK-500-A	\$ 915.00

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Chuck Size	Groove Width	Tongue Width	Screw Size	Hole Space	Hgt Inch	STEEL SOFT JAWS		ALUMINUM ROUND JAWS		
						Part Number	Set Price	Part Number	Set Price	
6"	.312	.499	3/8	1.500	2	TG-6200F	\$ 41.64	6"	RTG-6200A	\$ 76.66
					4	TG-6400F	\$ 71.66	8"	8-RTG-6400A	\$ 158.83
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	\$ 240.33
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	\$ 607.05
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	\$ 851.69
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	\$ 1,550.55

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10"	2.992"	BI-7866-1000	\$ 1,443.42	\$ 1,312.20
12"	4.055"	BI-7866-1200	\$ 2,143.35	\$ 1,948.50
16"	5.354"	BI-7866-1600	\$ 4,349.07	\$ 3,953.70

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4 MT	4,500	750	4,990	ROY-10854	\$358.15
5 MT	4,500	750	4,990	ROY-10855	\$402.80

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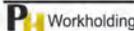


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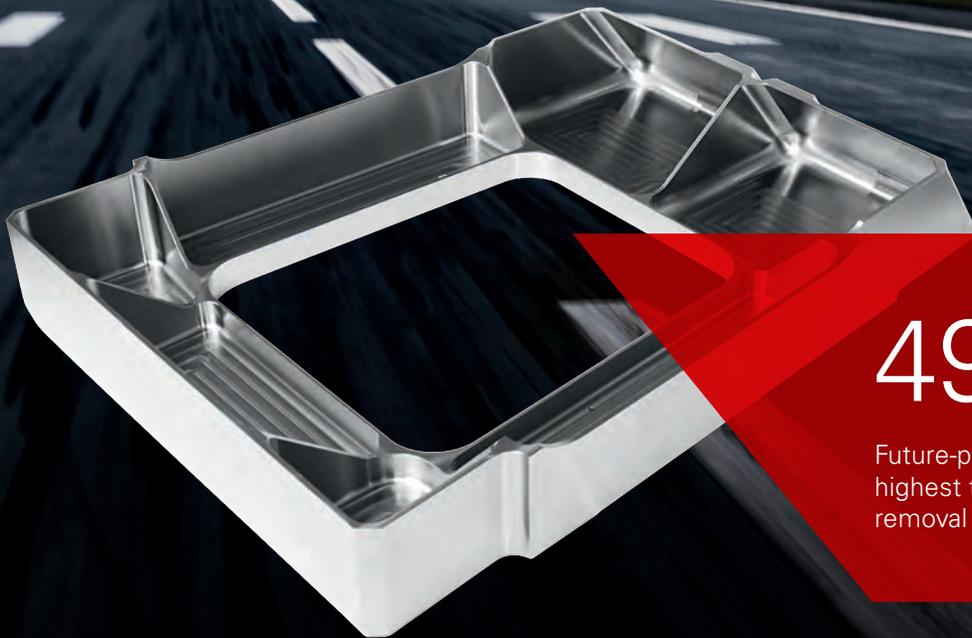
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Northrop Grumman Breaks Ground in Utah



Northrop Grumman Corporation celebrated the groundbreaking of a new facility in late August near Hill Air Force Base, to serve as a future headquarters for its workforce and nationwide team supporting the Ground Based Strategic Deterrent (GBSD) program, with the opportunity to add 2,500 jobs in the state of Utah.

Kathy Warden, Northrop Grumman chairman, chief executive officer and president, was joined by Senator Mike Lee, Senator Mitt Romney, Rep. Rob Bishop, Rep. Chris Stewart and local community leaders to break ground on the facility and demonstrate the company's commitment to supporting the U.S. Air Force's strategic deterrence mission.

"Modernizing the current ICBM system is a national security priority, and we are proud to be here today to reinforce our commitment to the U.S. Air Force on GBSD and our readiness to deliver on this critical mission," said Warden. "For more than 60 years, Northrop Grumman has supported the Air Force's ICBM programs, from our nation's earliest missile systems to today's sustainment work, much of which is performed here in Utah."

Warden added, "We look forward to this facility serving as home to a diverse and talented workforce, dedicated to developing this next-generation capability that will advance the strategic deterrence mission for the U.S. Our world-class, nationwide team is ready to support the GBSD program through the 21st century."

"It was an honor to take part in today's groundbreaking ceremony for Northrop Grumman's GBSD program office," said Senator Lee. "Northrop Grumman has long played a vital role in providing one of our country's most important deterrent programs, and in contributing to a thriving economy and a significant source of jobs in Northern Utah. This new GBSD office will not only further benefit the state of Utah, but will strengthen the security of our nation as a

whole."

"By standing up the Ground Based Strategic Deterrent Program at Hill Air Force Base, we are making the modernization of our nuclear deterrent a high priority, which will be critical for meeting the national security challenges of the coming decade," said Senator Romney. "We are also bringing 2,500 high-skill, high-paying jobs to Utah, which will have a lasting and positive impact on our state's economy. I appreciate the commitment of Northrop Grumman to modernizing the United States'

nuclear triad and their continued support of Hill Air Force Base."

"Utah has a long history of contributing to our nation's defense. Those contributions are thanks in no small part to the partners involved in advancing the tactics and technologies of the United States military," said Rep. Bishop. "Utah has played a key role in supporting ICBM programs dating back to the 1950s. The groundbreaking of this Northrop Grumman facility marks the start of a brand-new chapter in Utah's support of the nuclear triad. As threatening technologies advance in nations around the world, particularly amongst our would-be adversaries, it is crucial that these programs advance here at home. There is no better place than in Utah for the hard work to be done."

"Utah and Hill Air Force Base play a vital role in the defense of our country. This project will add thousands of jobs to Utah's economy while developing crucial national security technology. I welcome Northrop Grumman's addition to our great state," said Rep. Chris Stewart.

Northrop Grumman is currently the largest security and defense company in Utah with more than 5,100 employees across the state, primarily located in Bacchus, Clearfield, Ogden, Promontory and Salt Lake. The new facility is scheduled to be completed by mid-2020.

On Aug. 21, 2017, Northrop Grumman was one of two companies awarded a Technology Maturation and Risk Reduction contract for the new GBSD weapon system program. The Air Force released a request for proposals for the next phase of the program in July 2019 and announced it expected final award in the third quarter of 2020.

Northrop Grumman is a leading global security company providing innovative systems, products and solutions in autonomous systems, cyber, C4ISR, space, strike, and logistics and modernization to customers worldwide. Please visit news.northropgrumman.com and follow us on Twitter, @NGCNews, for more information.

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SUPERIOR MACHINED SWISS JOB SHOP FINDS ADVANTAGE WITH MICROCONIC SYSTEM

SMP started out with no pay, no customers and a single STAR SR20R Swiss turning center. Only four years in and they are growing at a fantastic pace.

Article by Sean Buur

Photos by Sean Buur and supplied by SMP and Masa Tool

“Titans of industry and motivation speakers alike all tout the power of building sustainable relationships in business. Nowhere is that connection more pronounced and beneficial than at Superior Machined Products (SMP) in Oceanside, Ca. As the song goes “In this great future, you can’t forget your past.” For SMP, that past all started decades earlier with Wade Prescott and Allied Swiss Machine.

Opened by Taylor Prescott, Robert Swigart and Juan Maravilla in 2015, SMP is a Swiss only ISO1345 certified job shop specializing in medical and dental. They quit their careers and started SMP the old fashioned way,

with no pay, no customers, and a single Star SR20R Swiss turning center. Only four years in and they are growing at a fantastic pace. Now with six machines and plans to add one a year until they run out of space, this startup is on the rise and stacked full of talent. “We are all here in a roundabout way because of my grandfather’s company Allied Swiss,” tells Taylor Prescott, president of SMP. “Our team has a long history together, and even though we don’t all have the same last name we are family.” SMP’s management team all honed their craft together at Allied: president Taylor Prescott, vice president Robert Swigart, quality manager Michael Lyons, and director of engineer-

PRODUCTS



ing Richard Allen. The Allied connection even continues outside of SMP to the next office over of Masa Tool CEO Matt Saccomanno and President Chip Prescott.

2575 Jason Ct. is a unique building, not in the sense that it is visually different, but the 10,000 sq.ft. concrete structure is an incubator for manufacturing. Originally hosting four separate companies, it now houses only two, SMP and Masa Tool. Both companies find their co-habitation to be an advantage. SMP was one of the first shops on the west coast to standardize on the Masa Microconic system for their sub-spindle work holding, and they have many examples of how it has increased their competitiveness. SMP acts as an unofficial test lab and showroom utilizing Masa Tool's Micronics System for Swiss machining. "We love the success we are having with the Microconic System," tells Robert Swigart. "One of our best advantages is our partnership with Masa Tool. We've always been confident in our skill level and workholding, but the Microconic System allows us to utilize the sub spindle in the same way we would machine with the main spindle. We have such faith in Matt and Masa Tool that we look at every part under 10mm with the philosophy of what else can we put on the sub."

Masa Tool focuses on micro work holding in Swiss type machines. The Microconic System was born out of a need to maximize the machining ability on the sub



Left to right: Richard Allen - Director of Engineering, Paul Patnode - Lead Machinist, Mike Lyons - Director of Quality Assurance, Juan Maravilla - Shop Foreman, Robert Swigart - General Manager, Taylor Prescott - President, Maria Madriles - Quality Manager, Wyatt Patnode - Machinist, Manny Garcia - Operator.



SMP is an ISO 1345 certified Swiss turning job shop. Their specialty is medical and dental. They routinely run parts as small as a 1/4 of a piece of short grain rice. Bone screws, dental tools, orthopedic, and brain implants are all in a day's work at Superior Machined Products.

spindle. As the machines have gotten more and more sophisticated the sub spindle has become more and more capable. It is a fully functional CNC machine independent from the main spindle. Successful Swiss machining is about maximizing productivity and minimizing cycle time. To do that you want both spindles working as hard as they can throughout the entire machining process. "On average the sub spindle is waiting 70-80% of the time for the main spindle to finish," explains Matt Saccomanno, CEO of Masa Tool and inventor of the Microconic System. "That is a huge waste of a spindle time. The more work you shift from the main to the sub greatly improves your cycle times. The sub works away at the same time as the main for simultaneous machining. Any machinist will tell you the more that gets done simultaneously the better your profit margins. You always try and balance the load between the two spindles, but as more duties are shifted to the sub spindle work holding becomes your biggest issue."

The same collet system invented over a hundred years ago for the main spindle is being used in the sub. The main is feeding a nice clean piece of round bar stock, it is an easy chucking situation that you can grab with some force and you are good to go. The same system is used in the sub, but that part can look like anything by the time it gets to the sub spindle. It is a far more delicate, more difficult work holding application. Most shops use an extended nose collet in the sub to allow room for tooling and coolant and so forth. Now you telescope out the worst characteristics; the holding force is bad; the concentricity is worse and all these other issues that derive from the traditional collet from 100 years ago. Seeing that problem Masa Tool developed the Microconic System. It is a collet system that fits in an existing machine just like a traditional collet. It is a two piece system with a cartridge and a collet. "The cartridge fits in the machine without modification," details Sachin Joshi, director of engineering at Masa Tool. "Our cartridge replaces the traditional collet, and our collet goes into the cartridge. The Microconic System provides extreme concentricity, incredible accuracy, fantastic rigidity, and has a unique micrometer style locking system so you can clamp on the most delicate part without crushing them. You can hold a fragile part solidly in place allowing the sub to do things like broaching or heavy drilling that isn't always possible. The closing force is applied throughout the part. It liberates you from a lot of the hassles of work holding on the sub spindle."

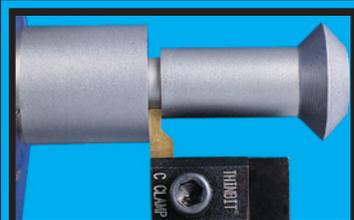
SMP is building their business one customer at a time. From the beginning they worked hard to get their ISO1345 certification to drive business their way. "As a job shop we will produce any Swiss part you need, but our expertise lays in medical and dental," tells Taylor. "Bone screws, dental hand tools, orthopedic, brain implants, we

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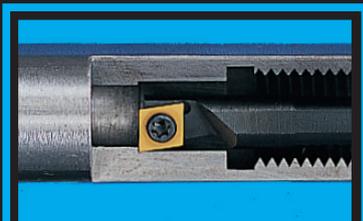
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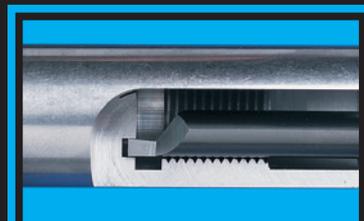
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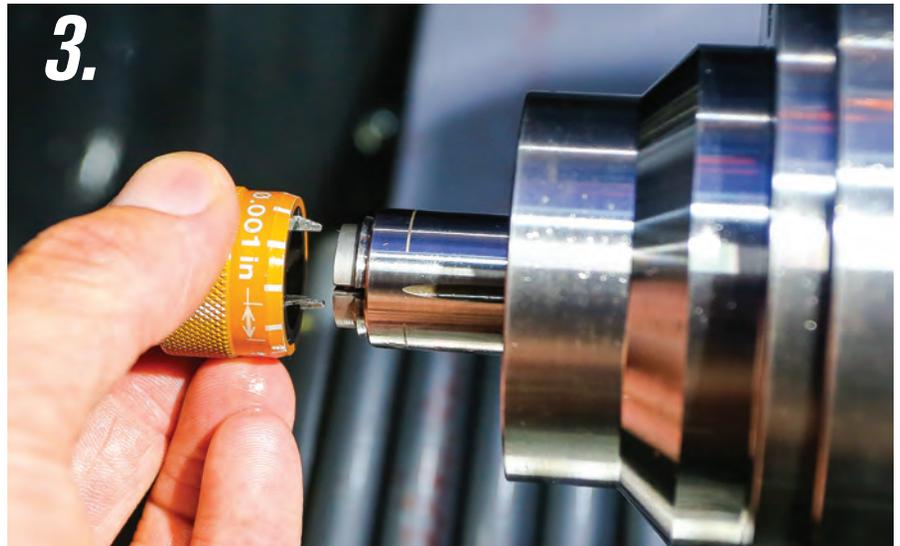


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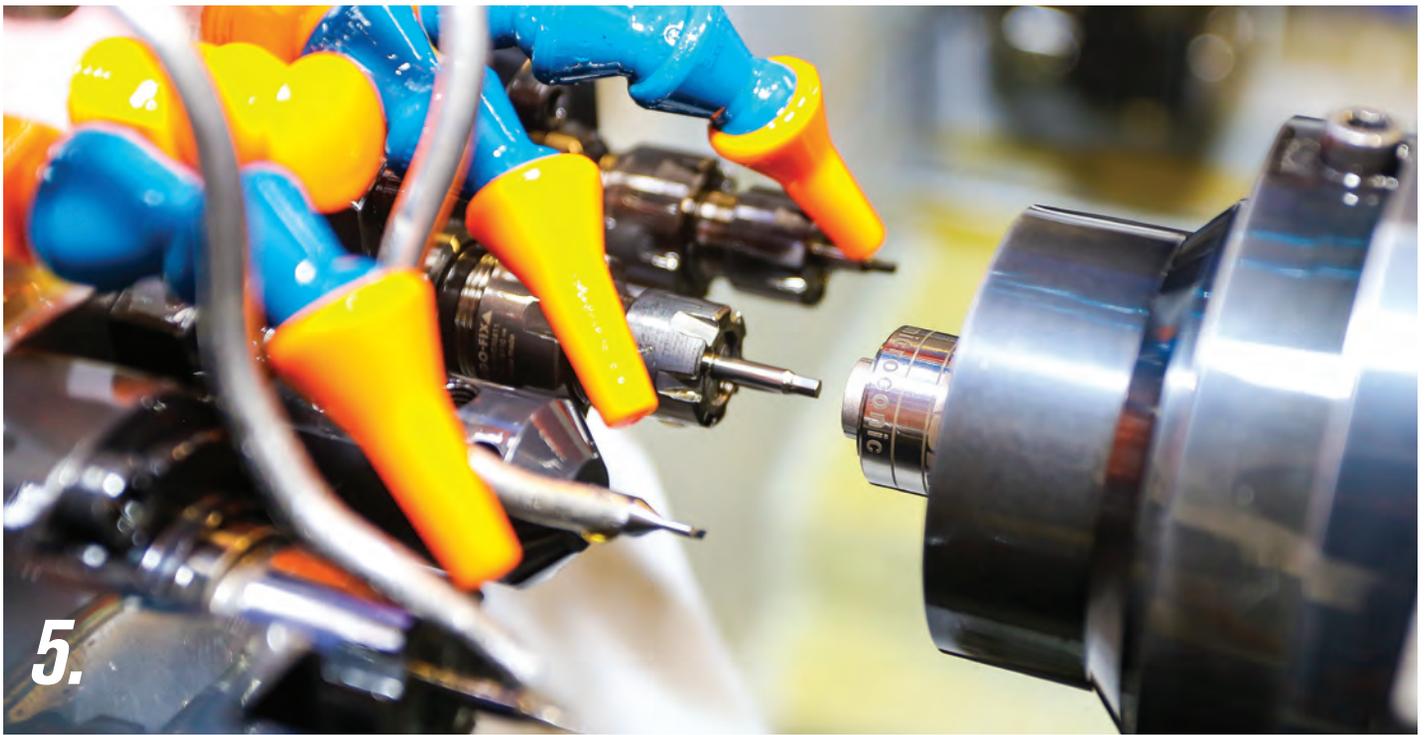
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1. Masa Tool's Microconic System fits in an existing machine just like a traditional collet. It is a two piece system with a cartridge and a collet. The cartridge fits in the machine without modification, replacing the traditional collet. Their collet then goes into the cartridge. **2.** Sachin Joshi of Masa Tool discusses holding pressure adjustments. **3.** The Microconic Micrograd dial wrench allows you to set your clamping force with calibrated precision and repeatable accuracy.

do it all. Regardless of your reputation most companies won't work with you without your ISO cert, so getting ours right away was key to establishing ourselves in the field." SMP utilizes Star Swiss turning centers that range in size between 20mm and 16mm with 12' bar feeders. "Star has been a great machine tool for us over the years and we like to keep things standardized," details Taylor. "Everyone can run all the machines, the tooling is the same, the controls are the same and the programming is the same. It makes life a lot easier for a shop our size." Run quantities vary between a couple hundred to thousands and thousands, but it is not uncommon for SMP to

change setups a few times a day between the six machines. The Microconic Micrograd dial wrench allows you to set your clamping force with calibrated precision in a fraction of the time and with repeatable accuracy. Traditionally there is a feel of how much tension you are putting on your closer. It is a rudimentary style of clamping, grip it and rip it essentially, but the needed finesse requires experience. There is a fine line between the part pulling out of the clamp and being crushed to death. "The Micrograd simplifies the process," explains SMP's director of engineering Richard Allen. "Clamping down the part is like using a micrometer, set the adjustment and away you



5. Without modification to your machine SMP reports that the Masa Tool Microconic System provides extreme concentricity, incredible accuracy, and fantastic rigidity.

6. SMP was one of the first west coast companies to standardize the Microconic System on all their machines. The variety of sizes have them covered on parts up to 10mm in size. **7. & 8.** The Microconic System over-grip collets and regular collets are all precision ground in a 5 step proprietary process. The over-grip collets shown here opens wider than a traditional collet allowing you to reach behind flanges, headed parts, and enlarged features.

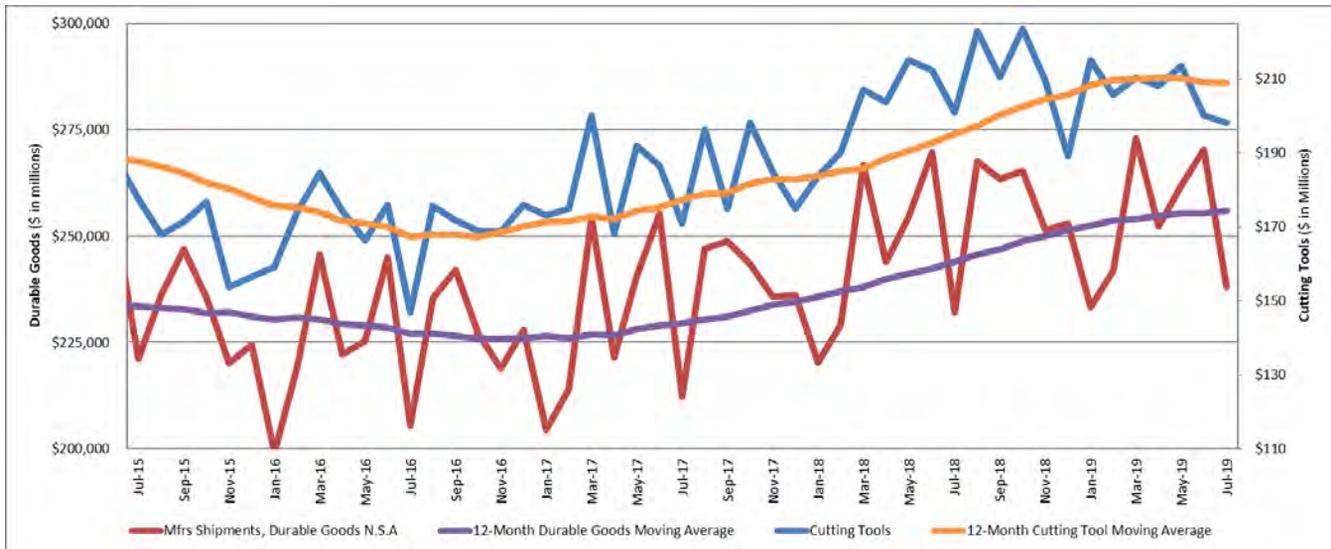
go. Our run sheets have the clamping force spec'd out on them for faster changeover times no matter who is setting up the machine."

Customer service is a huge part of SMP's business model. They've gained more and more work simply off servicing customers better. "We are growing as our customers grow," concludes Robert. "Customers are coming to us because they feel neglected and bullied by some of these bigger facilities. We work with them constantly to provide the best parts and service out of all their vendors. By building trust through communication, the word got out about our service and quality. It's been nonstop

growth." SMP has 12 employees and two shifts right now (removed txt here). "Employing great people has been one of the main reasons for our early success," adds Taylor. "Every member of our staff is as dedicated to the success of SMP as we are."

As a company SMP has a lot of pride in manufacturing. They also have a desire to never stop improving. You can tell right away that their reputation is something they take very personally. After all, they know better than most how today's relationships become tomorrow's possibilities.

U.S. Cutting Tool Year To Date Consumption Up 2.6 Percent In July



July 2019 U.S. cutting tool consumption totaled \$198.4 million according to the U.S. Cutting Tool Institute (USCTI) and AMT – The Association For Manufacturing Technology. This total, as reported by companies participating in the Cutting Tool Market Report collaboration, was down 0.6 percent from June’s \$199.7 million and down 1.3 percent when compared with the \$201.0 million reported for July 2018. With a year-to-date total of \$1.5 billion, 2019 is up 2.6 percent when compared with 2018.

These numbers and all data in this report are based on the totals reported by the companies participating in the CTMR program. The totals here represent the majority of the U.S. market for cutting tools.

According to Brad Lawton, Chairman of AMT’s Cutting Tool Product Group, “While orders for production machines are down 12 percent, cutting tool shipments are still holding up in comparison to 2018 figures. The impending downturn in investment is expected to be short and shallow but it is still likely to yield a couple of tough quarters for cutting tool manufacturers.”

“As expected based on trends in the Gardner Business Index, cutting tool orders continued to contract on a month-over-month basis in July. Year-over-year, cutting tool orders will likely start contracting in the fourth quarter of 2019. However, the likely contraction does not appear to be anything out of the ordinary for the industry. My current expectation is that the International Manufacturing Technology Show (IMTS)*, as it typically does, will mark the bottom of this downturn and orders will improve from

there,” said Steve Kline Jr., Chief Data Officer at Gardner Business Media.

“The Purchasing Managers’ Index dip below 50 in July suggests that the year over year growth in cutting tools is likely to turn negative when August shipment levels are published. Still, some industries demand for

cutting tools continues to expand as cautiousness shifted production downstream deeper into the supply chain or into contract machine shops,” said Dave Burns, president of Global Business Advisory Services, LLC.

The Cutting Tool Market Report is jointly compiled by AMT and USCTI, two trade associations representing the development, production and distribution of cutting tool technology and products. It provides a monthly statement on U.S. manufacturers’ consumption of the primary consumable in the manufacturing process – the cutting tool. Analysis of cutting tool consumption is a leading indicator of both upturns and downturns in U.S. manufacturing activity, as it is a true measure of actual production levels.

Historical data for the Cutting Tool Market Report is available dating back to January 2012. This collaboration of AMT and USCTI is the first step in the two associations working together to promote and support U.S.-based manufacturers of cutting tool technology.

The graph below includes the 12-month moving average for the durable goods shipments and cutting tool orders. These values are calculated by taking the average of the most recent 12 months and plotting them over time.



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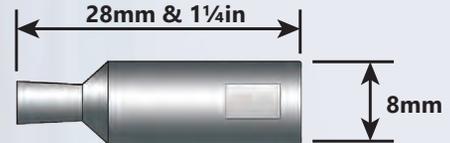
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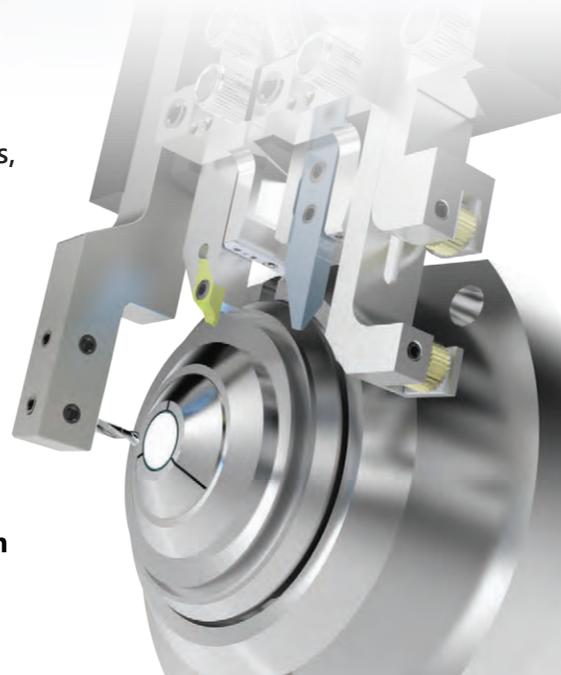
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Z-axis travel : 35.43"

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Control : Fanuc 31i-85 (Full 5-Axis)

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Spindle : 15,000 RPM, CAT40, Big Plus

List Price **\$282,800.**



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Bridge type 5-Axis Machining Center

Control : Heidenhain ITNC 640 (Full 5-Axis)

Travel : 118" x 103" x 39.3"

Spindle : 15,000 RPM, HSK-A100, Big Plus

List Price **\$847,000.**

PHES MACHINING



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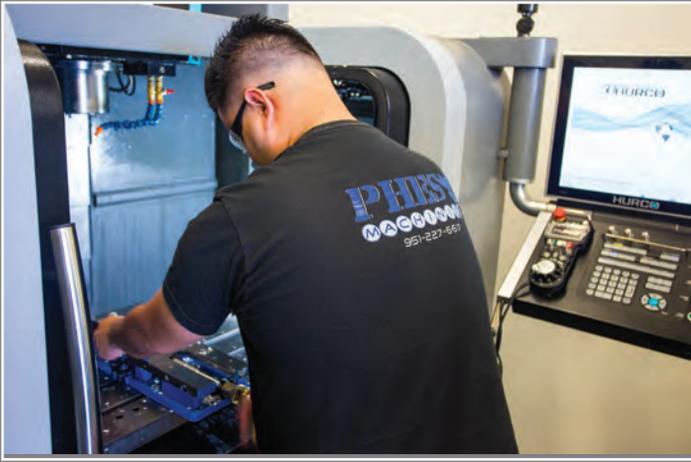


Brothers Miguel and Alfredo Acosta are building the American dream at PHES Machining in Riverside, Ca. Driven by their faith, these first-generation Americans are embracing every opportunity to help grow their fledgling business.

The Acosta brothers grew up witnessing hard work firsthand. Their parents both put in long hours to provide a life better than what was possible in Mexico. “Our dad always told us to at least get a short career,” laughs Alfredo Acosta. “Something where you at least go to school and learn something. He’d tell us that jumping from job to job was no way to live, and that as Americans we had an obligation to embrace the opportunities that we had.” They didn’t put a lot of stock in that ideology until their dad got sick and passed away. It was then that they became closer as a family and closer to the church. It wasn’t until Miguel brought up the idea of going to NTMA to Alfredo that they ever thought of CNC machining as a career. “I was working at a furniture manufacturer running a router and my brother was at an injection molding company,” tells Miguel. “He had never seen anything CNC before, so I showed him videos online.” They saw an ad for NTMA in Ontario and went down to check it out. After getting the tour and meeting with an administrator, they both enrolled in the machinist training program. For almost a year they went to school all day and worked 12-hour shifts at night. Sleeping in parking lots before and after school just to catch a few extra winks was the only way they could rest. The sacrifice paid off when they honored their father’s memory and started new careers as CNC machinists.

The Acosta brothers spent the next few years working at a variety of shops absorbing everything they could. Be it programming, or work-holding solutions, they pounced on every chance to learn. On paper it appeared that they again were bouncing from job to job, but really it was all part of their plan to gain as much experience in as little time as possible. “Sometimes we worked together,” tells Alfredo. “And sometimes we were apart,” continues Miguel. “We are both fast learners and each job helped us progress in our abilities. Unfortunately, not all workplaces were encouraging us to learn. We both had jobs where pushing the button and unloading parts at the most rapid pace was the only thing that mattered.” For them button pushing was no different than the jobs they had before, and certainly not a career. When they reached a point that advancement was no longer possible, they moved on to a place where it was. “We always knew we wanted to open our own place,” tells Alfredo. “The fear that we didn’t have enough experience constantly held us back. It was always let’s wait and learn this, or no we can learn more about this. Then one day we realized that no one ever stops learning in this business. If we wait until we think we know enough then it might not ever happen.” They wrote a business plan and submitted an application for a small business loan. They never thought they would get accepted, but they did. On April 1st, 2019 with no customers PHES Machine was open for business.

As new business owners the Acosta brothers faced the age-old question of which machine tool will be the most beneficial and offer the best bang for their buck. With big ideas and a limited budget, they started the search with brands they had experience on like: Doosan, Haas, Kitamura, and Hurco. All excellent options. Ultimately, Hurco won out because Alfredo and Miguel are both skilled in using Hurco’s WinMax conversational to program. “Up until recently I had never run or even seen a



Above - First generation Americans and first time business owners Miguel and Alfredo Acosta looked to Machinery Sales and Hurco when it came time to buy their first and second vertical mills. Top left and top middle left - Alfredo Acosta fell in love with the Hurco controls right away. His brother trained him in WinMax conversational over the phone and now he is a power user. Middle left bottom, and left bottom - Big brother Miguel Acosta has unofficially claimed the Hurco VM20i as his own. Having a second spindle and a larger work envelope has blown up production and expanded PHES's capabilities

Hurco mill," explains Alfredo. "Miguel was working at a shop that had one and they hired me on for second shift. He said come down early and I will show you how to run it. He gives me five minutes of instruction and takes off. The controls were so easy once I figured out menu placement that he was able to train me over the phone. Honestly, I fell in love with the control and it took me only one day to be proficient. I went from never seeing one before to a life-long fan almost overnight." "When it came time to decide on what machine to buy for our own business a local machine tool distributor Machinery Sales was one of the first calls," adds Miguel. "We were interested in Hurco but didn't know what they cost or what extras came on each model. David Cogswell came out to meet with us. He is VP of sales and brought with him Dave Ahlberg one of his sales engineers. They worked with us everywhere they could to get the VM10i to a price we could manage. We even were able to afford a 12,000 RPM chilled spindle." The Hurco VM10i is one of Hurco's best selling machining centers because of the features offered at an entry level price point. The physical footprint of the VM10i is quite small without sacrificing travel. The table is 30"x16" and all axis sit on linear rails for great speed rates across the 26"x16"x20" of travel in X, Y, and Z.

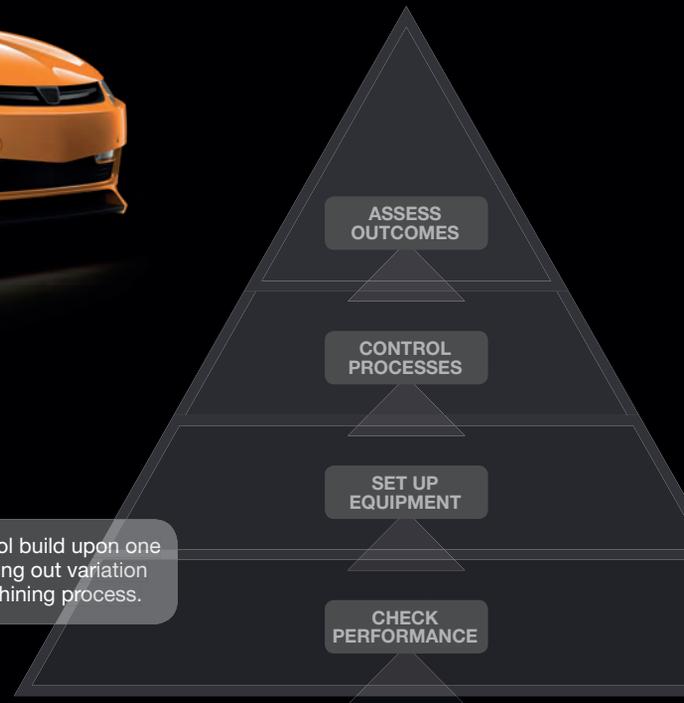
So after getting machines all they needed was work. After hundreds of emails and phone calls in the first few weeks the big break PHES needed came in the form of a local South Bay aerospace facility needing to farm out prototype projects. They were sent two overflowing packets of prints and told to pick the ones they wanted. They

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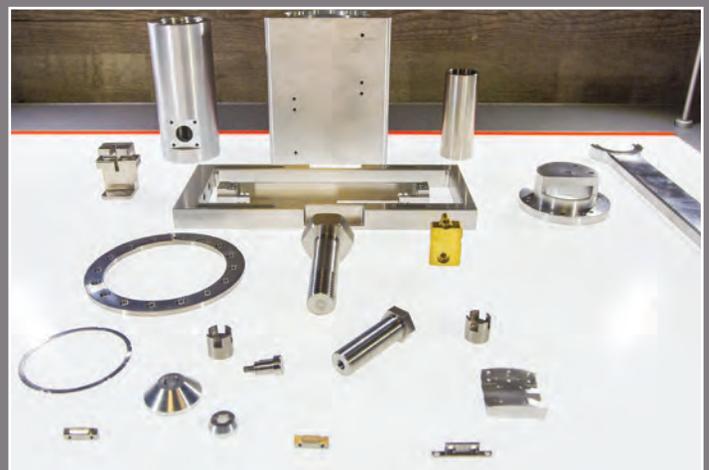


Miguel and Alfredo picked up a used Yama Seiki lathe not longer after they opened PHES. As milling guys they enlisted in their friend Chris to handle the company's turning requirements. Chris also lends an experienced hand in quality control when it comes time to check parts off the lathe and mills.

wanted them all, but discretion is the better part of valor. “We needed cash to flow in, and delivering jobs is the best way to make that happen,” explains Miguel. “They are so backlogged that they needed any help that they could get, so we cherry picked the ones we could complete the quickest and easiest. Their operations manager lives nearby and came over to check out our operation. He said he has enough work to bury us for the next four years if we were up to it.” He wasn’t joking, PHES is slammed with prototype parts. Every week they get sent packets of prints to pick from. They take as many jobs as they can, but that still leaves them passing on more than they take. “We noticed right away there were a lot of prints that needed a bigger machine than our VM10,” tells Alfredo. “We figured a lot of shops our size would have similar problems, and by having a larger machine we could set ourselves up for more and more growth. It was hard to let all the work go out the door, so next time Dave came in we showed him all the specs on work we were turning down. We joke with Dave a lot about needing more machines and more axis, but this time we seriously needed a larger Hurco.” “Alfredo and Miguel started out better than so many others I’ve seen in this business,” tells Dave Ahlberg of Machinery Sales. “I called David Cogswell and said we have to find something to help these guys out. A larger table would give them much more flexibility and be a huge asset to a growing company like PHES. Once my boss got involved PHES was able to get into a VM20i. As a sales guy I see a lot of CNC shops, and these guys are really impressive with how far they’ve come in only six months in business. At this rate they are going to run out of space in the shop before they run out of work.”

Miguel and Alfredo are still scratching their heads on how all of this came to be. They were able to get their second machine on the floor cutting chips in only two weeks.

They got everything they wanted on the VM20i and at a price they could work with. In only a month having the second spindle has made a large impact in productivity for this small operation. Both brothers can now machine larger and smaller parts simultaneously to maximize daily outputs. “We are so blessed to work with Machinery Sales,” concludes Alfredo. “From our perspective they treated our business like it was their own, doing everything they could to help us realize our dream.” “Every part we deliver we want the customer to feel we gave them the highest quality at the best value,” continues Miguel. “We have that same feeling when we buy the Hurco machines.” PHES was named after their church Padre Hijo Espiritu Santo which in English means Father Son Holy Spirit. Alfredo and Miguel agree that having God’s name in their name gives them power. “We are guided by God and everyone we’ve met has been a blessing for us. God has put us with the right people and together we are making PHES a success.”



PHES is gaining a lot credibility as a short run prototype specialist. Most of the aerospace oriented parts they produce range in quantities of one to four.

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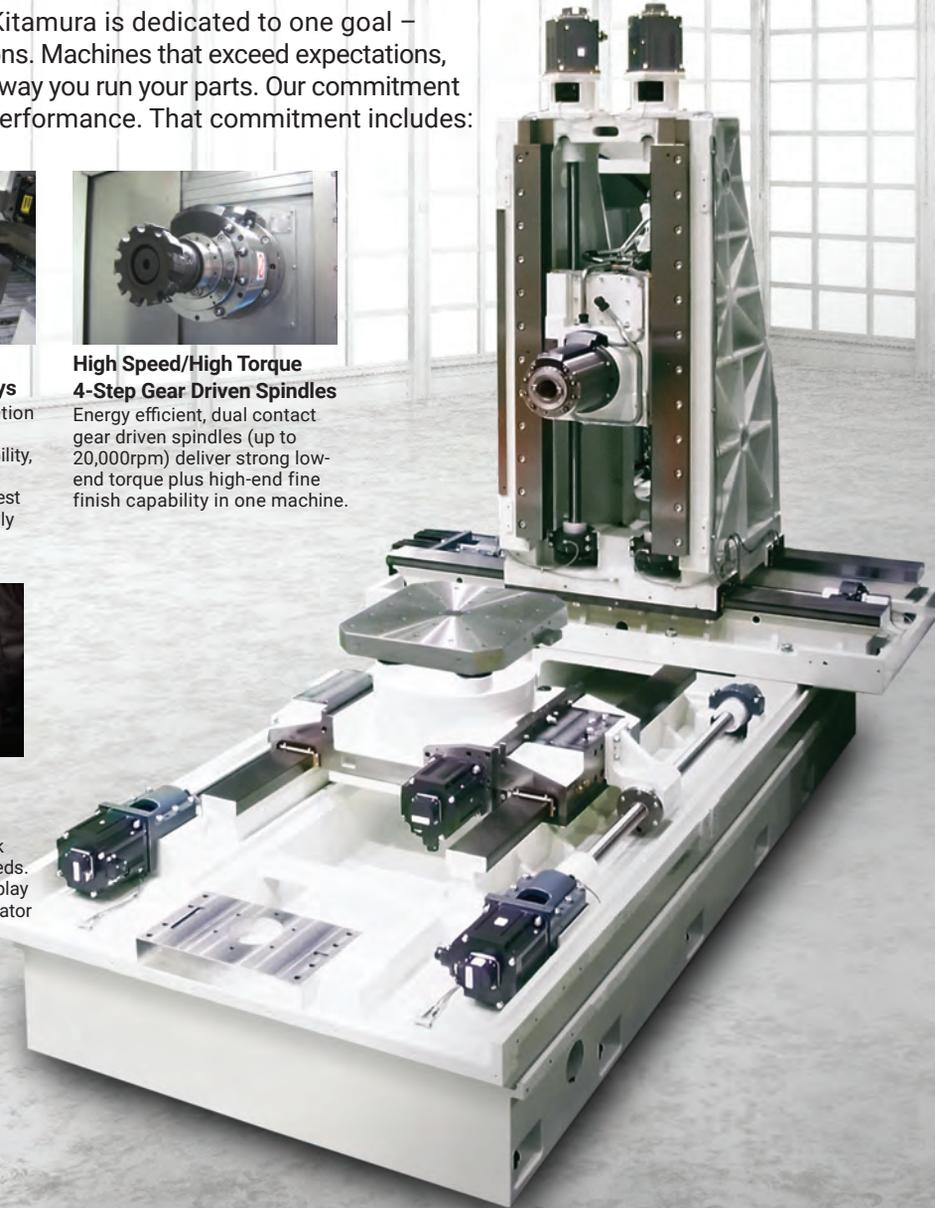
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MX TROPHIES



Article by Sean Buur
Photos by MX Trophies



22" tall finished award .5"
PVC body, clear acrylic,
stainless steel .125",
acrylic layered base

Thankfully, gone are the days when every trophy was a plastic gold person swinging a club or playing soccer. They all had a base of wood with a small engraved plate commemorating the achievement. At some point even the most sentimental person has to face the facts that the great tee ball championship of 1984 is overshadowed by the ugly and dated award used to memorialize it. Opened by Nick Fain in 2004, MX Trophies of Carson City, Nevada is upping the game for the next generation of awards.

Utilizing experience he gained from being involved in event promotion and racing, Nick branched out on his own to try something different. That difference has paid off when a customer helped MX to get involved with the AMA (American Motorcycle Association) manufacturing their plates. That garnered a lot of attention and bigger clients. What once was a one-man show has grown into a 15-person team and 10,000sq.ft. of manufacturing and assembly space. "We are a full-service awards and promotional item design and manufacturer," tells MX Trophies' design lead Rick Walker. "Our custom take on acrylic based awards is what really sets us apart."

Awards hadn't really changed in decades, but the early 2000's saw a shift in how people competed. As the sports got more extreme the awards had to keep pace. Materials that used to be more exotic became readily available, and thanks to technology they were now easy to work with.



18 Gauge Stainless Steel being precision cut on one of two Kern laser systems. MX's larger laser the Kern KT400 can make precision cuts on stainless up to 1/4" thick.

Take ink jet printers for example. Think about how far they have come in the last 15 years. You never would have thought that printing a design on clear vinyl and sticking it to ABS would be something that could last forever. With new inks, and UV resistant materials you can expect a shelf life of that product to outlast your desire to have it on a shelf. "We started out with acrylic awards," explains Rick. "Then six years ago we got our first Kern laser and

began to experiment with metals like steel and aluminum. Standard steel rusted, but stainless worked out great. We began to incorporate metal items into our designs, giving a more polished and industrial look to the awards. Eighteen gauge stainless is our go to material, but our 400 watt Kern laser can cut a piece .250" thick if we needed to."

Mixed material awards are where MX Trophies out-class the competition. A typical award for an event like



A 48" x 48" piece of .5" PVC is cut on one of two Kern Lasers. The desired shape is cut and the scrap is removed. Edges are smoothed before it is assembled by hand. MX Trophies averages 4500 awards per week.

the MXGP Euro motocross series will have elements made out of ABS, acrylic, metal, and printed vinyl. "We start with an acrylic base that is cut out on our CNC lasers," explains Rick. "That gets paired with ABS framing and stainless steel design features that are also cut on the lasers. We add all sorts of graphics from printed material to die cut logos. All the graphics are overlaid with clear UV resistant material that helps protect the award from damage by the sun. There are plenty of elements that need to come together to give the award our unique look. Every part needs to fit together and the precision we get off the Kern lasers makes assembly a breeze."

MX Trophies produce on average 4500 awards per week for customers worldwide. Most of the awards have seen multiple operations on the lasers. "We have two Kern lasers and a CNC router," details Rick. "They are a key part of our production process. The people at Kern are extremely knowledgeable and helpful. We've got great service from them over the years." The larger, less powerful laser is the Kern 52100-HSE with a work envelope of 52"x100". The newest, and higher wattage model KT400 has a smaller work area of 52"x50" but packs a lot more of a punch. Both have a wraparound gantry that traverses the cutting bed. This allows for part removal from all sides of the machine as well as consistent beam power and quality over the entire work area. "We are not CNC programmers," explains Rick. "And thankfully we don't have to be. As designers we work in the popular vector based design software CorelDRAW. It ties in with the Kern laser, seamlessly taking our designs and converting them to the needed CAD file. This is a huge feature for us. Because we are a promotional items company as well it allows our designers to work in a single ecosystem. We can take a trophy design and send it to the laser then use the same files to do anything from t-shirts to vehicle wraps. It is really powerful software and to have it integrated with the lasers makes life a lot easier and production go a lot faster."

As racers themselves they know how cool it is to win great awards. They also get how disappointing it is when you put in maximum effort to get a junky trophy right out of the 80's. "We strive to make our customers happy, and in turn making their customers happy," concludes Rick. "We are always evolving as a company and in our designs to stay ahead of the competition. We want our awards to be something that are displayed for a long time, and not stuffed in boxes or left in the garage. You should be as proud of your accomplishments as we are of making you that award." There might not be a 1st place prize for best trophy and promotional items company, but if there was MX Trophies would probably win it.....right after they designed it.

3-Jaw Chuck vs. Collet Chuck



GET THE FACTS	Standard 3-Jaw Chuck	Ordinary Collet Chuck	HAINBUCH Collet Chuck
Large quantity of parts to be machined that do not require a high degree of precision or concentricity	✓		
Parts that vary significantly in size. From .5" to 7.5" diameter clamping range	✓		✓
Ideal for clamping on raw cast or forged parts	✓	✓	✓
10-second clamping head [collet] changes		✓	✓
High RPM machining without significant loss of radial clamping force		✓	✓
Tight concentricity		✓	✓
Large surface area gripping close to the material diameter makes for secure gripping without marring the material		✓	✓
More rigidity for enhanced life and precision of cutting tools		✓	✓
Superior tool clearance allows for machining very close to the chuck face		✓	✓
O.D. to I.D. to 3-jaw clamping with modular adaptation in under 2 minutes			✓
Face driver, morse taper and magnet module adaptations			✓
Proprietary vulcanization [hardened rubber] of clamping heads [collets] endures extreme environments with minimal wear			✓
Modular adaptations utilized in vertical and horizontal machining centers			✓
Hexagonal alternative for increased clamping force and superior resistance to contamination			✓

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14N	1/32-1/2"	3JT	LAM-L40072B	\$192.22	\$134.55
16N	1/32-5/8"	3JT	LAM-L40073B	\$216.26	\$151.38
18N	1/32-3/4"	4JT	LAM-L40074B	\$324.41	\$227.09
20N	3/16-1"	5JT	LAM-L40075B	\$444.58	\$311.21
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1/8	SN-6HSJ-115	\$ 133.00
3/16	SN-6HSJ-177	\$ 133.00
1/4	SN-6HSJ-240	\$ 133.00
3/8	SN-6HSJ-365	\$ 133.00
1/2	SN-6HSJ-490	\$ 171.00

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ER 25	4.00"	C40-25ER400-K	\$ 82.44	C40-25ER400-KB	\$ 92.49
ER 32	2.50"	C40-32ER250-K	\$ 82.44	C40-32ER250-KB	\$ 93.08
ER 32	4.00"	C40-32ER400-K	\$ 82.45	C40-32ER400-KB	\$ 92.49
ER 40	2.50"	C40-40ER250-K	\$ 87.94	C40-40ER250-KB	\$ 98.07



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- For CAT & BT taper toolholders
- Crafted from 6061 anodized aluminum
- For vertical or horizontal use

Taper	Part Number	Mfg's List	Our Price
CAT/BT 40	TF-4001-K	\$ 89.00	\$ 74.99
CAT/BT 50	TF-5001-K	\$ 110.00	\$ 93.50

Dia	Proj	BALANCED TO 15,000 RPM		BALANCED TO 20,000 RPM	
		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"	1.38"	C40-37EM138-K	\$ 49.95	C40-37EM138-KB	\$ 69.99
	2.50"	C40-37EM250-K	\$ 53.85	C40-37EM250-KB	\$ 69.99
1/2"	1.75"	C40-50EM175-K	\$ 53.85	C40-50EM175-KB	\$ 69.99
	4.00"	C40-50EM400-K	\$ 53.85	C40-50EM400-KB	\$ 69.46
5/8"	1.75"	C40-62EM175-K	\$ 53.85	C40-62EM175-KB	\$ 69.99
	3.00"	C40-62EM300-K	\$ 53.85	C40-62EM400-KB	\$ 73.02
3/4"	1.75"	C40-75EM175-K	\$ 53.85	C40-75EM175-KB	\$ 69.99
	3.00"	C40-75EM300-K	\$ 53.85	C40-75EM300-KB	\$ 69.99
1"	1.75"	C40-10EM175-K	\$ 53.85	C40-10EM175-KB	\$ 69.99
	6.00"	C40-10EM600-K	\$ 60.45	C40-10EM600-KB	\$ 74.47
1-1/4"	2.00"	C40-12EM200-K	\$ 53.85	C40-12EM200-KB	\$ 69.99

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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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- 30/40 taper-10 holes, CAT 50-6 holes



Taper	# of Holes	Part Number	Price
CAT/BT 30	10	TRAY30-10	\$ 32.00
CAT/BT 40	10	TRAY40-10	\$ 29.50
CAT 50 (not BT)	6	TRAY50-6	\$ 36.00



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PROGRAMMING IS “ELEMENTARY” AT CAPTAIN LELAND F. NORTON SCHOOL

Article & Photos Contributed by
Lynn Gorman Communications LLC



Queshawn Malone (age 11) and Wayne Anderson (age 11) check their work on a Solar System project.

Today, computer programming is taught at just about every level in high schools and colleges across the country. Now, when you consider that very young children easily learn language skills, and that computer programming is considered a language, wouldn't it seem logical that very young children would also be able to learn computer programming? In fact, in manufacturing, there has been a call to introduce concepts at a much younger age than high schoolers. Here's a case in point that is proven every day at Captain Leland F. Norton Elementary School in San Bernardino, California, where programming has become an integral part of their STEM program, all the way up to and including Mastercam®, which is state-of-the-art CAD/CAM programming software. “We have a little over 500 students in the program,” said Elizabeth Cochrane-Benoit, the school's Principal, “from kindergarten through sixth grade. Our goal is to show them that what they learn in our STEM program relates to real-world jobs.”

The programming journey begins in kindergarten and extends into second grade with Tinkercad™, a free online collection of software tools that allow Leland Norton's beginners to design a wide range of projects. Think of a child learning the ABC's as the start of learning English, or Spanish, or French, for example. Similarly, a programming language starts with the basics, in this case Tinker-

cad, to form the foundation. “In the third grade,” said Cochrane-Benoit, “we move into CorelDRAW®, which is an introduction into SOLIDWORKS®. Even the early projects are mathematically and scientifically driven. The teachers build out yearlong lesson plans that are aligned with next-generation science standards, integrated with common-core standards.”

In their computer lab they have a project management board based on those found in a real manufacturing company. There is a start date and a scheduled completion date. Also noted are any problems occurring that could affect completion. The project for first graders, for example, is to create the life cycle of a plant. Beverly Sayson is a STEM instructor at the school. “The children must first draw a blueprint of the different parts of a plant,” she said, “such as the stem, leaves and flower and lay everything out in Tinkercad. Then, I will produce the plants in one of our 3D printers and give them to the students. It's exciting for them to see the progression from an idea, to a drawing, to an actual plastic plant they will take home to show their parents.”

The project for the second graders is to make a planter box for the plant. “This is where they incorporate math into their design” said Sayson, “because they have to calculate specific measurements that will result in a blueprint for a three-dimensional object. In third grade, the

students solve mathematical problems. Based on their answers, they will form a representation of a particular object, such as a cat or a clown that they would then lay out in CorelDRAW. Another project we give them is to draw their dream house, as well as their dream bedroom for that house. After creating their blueprint, they will go into the computer lab and lay out their dream house and bedroom in CorelDRAW.”

Students are introduced to SOLIDWORKS in the fourth grade. Their current project is to design a solar car, employing SOLIDWORKS for the basic design and then using Mastercam Art for the more intricate components. Mastercam Art is a single software package that lets a student bring a project from a 2D drawing on screen to a beautifully sculpted 3D object completed on a CNC machine. Mastercam Art includes visualization tools and instant editing features that are easy for the instructor to teach and for even very young students to learn. “Our school is environmentally focused,” said Cochrane-Benoit. “To this end, our fifth graders have been creating slogans that have themes aimed at protecting the environment and then using Mastercam to cut out plaques incorporating these themes on our CNC laser cutter. The plaques are of different media, such as cardboard and wood.”

This year, the sixth graders are creating replicas of the solar system using many of the tools in Tinkercad, CorelDRAW, SOLIDWORKS and Mastercam. “At this point,” said Cochrane-Benoit, “they know all four software systems and must integrate them all in bringing each planet



Elizabeth Cochrane-Benoit, principal of Captain Leland F. Norton Elementary School, San Bernardino, California.

from a drawing, to an isometric blueprint, to a 3D object. They have a choice in determining the final production. Some of them will transfer the program to one of our Stratasys® uPrint 3D printers to make plastic planet components. Other students will opt to cut them out of wood or plastic on the Universal® laser cutter, while others will load their programs into one of our Roland® MDX40 CNC milling machines for some exciting chip making production. All these components, in different media and produced on different machines, are assembled into an accurate representation of the solar system either as a mobile or on a mounting board for display. They have demonstrated that they have an excellent working knowledge and skill sets for programming as they move on through high school and eventually the job market.”

The school has 35 software seats in the computer lab.



STEM instructor Beverly Sayson works with student Gabriel Tinajero (age 13) in the school's CAD/CAM lab.



Victor Ceja (age 13) cleans a work piece on a CNC milling machine.

Because the different software systems are so well integrated, students are not apprehensive about learning a new system as they advance in grade. “They just move right along,” said Cochrane-Benoit, “going from SOLIDWORKS into Mastercam, for instance, as stress-free as going on to the next chapter in a reading assignment. There are a few struggles, of course, as they would have learning any new language. When we first decided to include computer programming in our STEM program, I knew I had to go get myself training in this new endeavor and invited a few teachers to go along with me to learn the SOLIDWORKS software.”

Ms. Cochrane-Benoit and her teachers attended training classes for educators held at Technical Employment Training, Inc. (TET), a San Bernardino non-profit business and education cooperative that provides manufac-

turing trades education and hands-on skills. “When it came to learning some of the programming steps,” said Cochrane-Benoit, “the teachers saw that I was struggling a little bit and wanted to help me. I told them no, that I had to work it out myself as though I was one of our students struggling with a problem. That is the best way to learn, by working through the problem to find the solution. We have to keep in mind that each student is learning how to program at his or her own pace, just as I had my own pace learning SOLIDWORKS.”

After completing the SOLIDWORKS training program, Ms. Cochrane-Benoit and her teachers met with representatives of local manufacturing industries and discussed their needs with regard to new employees’ programming skills. “This is when we learned about the role of Mastercam in the manufacturing process,” said Cochrane-Benoit, “and I knew we had to integrate their software into our program.” Once again, the same teachers joined Ms. Cochrane-Benoit in a series of training classes, this time to learn the basics of Mastercam. “Today,” she said, “instructors from Technical Employment Training come to our school on a regular basis to teach the CAD/CAM programming systems to all the teachers in our STEM program.”

The school’s relationship with Technical Employment Training goes back quite a few years. “Some time ago,” said Cochrane-Benoit, “our 4th grade students were having assessment problems. What we saw was that they were able to articulate their learning orally, but were do-



STEM instructor Beverly Sayson works with student Queshawn Malone (age 13) in the school’s CAD/CAM lab as student Gabriel Tinajero (age 13) looks on.



Alexa Aquino (age 13) sets up a work piece on a CNC milling machine.

ing poorly in the written tests. We discovered that many of them needed eyeglasses. Either they could not afford eyeglasses or their eyeglasses were broken. We created a project-based learning lesson where the students would design their own eyeglass frames. We went out into industry, looking for a company willing to partner with our students to manufacture the frames the students designed. Technical Employment Training's Dr. Bill Clarke came through for us and as the project progressed, we were introduced to CNC machining and the various CAD/CAM programs."

When the project was over, though, the company's relationship had really just begun. "Dr. Clarke thought he was through with us," said Cochrane-Benoit, "but I told him, 'Not so fast. You've been telling our 4th graders about Cartesian coordinates and that there are three axes of learning. These kids are really smart and want to be able to actually do the programming you have demonstrated to them as you made their eyeglass frames. The learning process must continue.' Dr. Clarke did not think such young students were capable of learning SOLIDWORKS and Mastercam, but at the time, Frank Paton of The Paton Group in Altadena, the SOLIDWORKS and Mastercam reseller, happened to be standing nearby and overheard us. He told Dr. Clarke that they were perfectly capable of learning the CAD/CAM software language, so long as the teachers were properly trained to teach it to such young minds. The STEM program we have today evolved from that discussion. The Paton Group has sup-

plied our equipment and software, but more than that, Frank Paton along with Chris Miller and Brad Roa of the Group have always been available to answer questions and help us through any 'snags' that might occur during one of our projects."

The STEM program at Captain Leland F. Norton Elementary exemplifies the school's mission statement. "We strive to provide students with foundational skills," said Cochrane-Benoit, "by balancing technology with a rich context curriculum through explicit teaching of the thinking skills needed to compete in the global economy and by showing them what they are learning is relevant to the real world around them."



STEM instructor Beverly Sayson teaches her CAD/CAM class at Leland F. Norton Elementary School.

Theme for IMTS 2020 is ‘Digital Manufacturing. Implemented’



If a manufacturing solution can be digitized, automated or connected, visitors will learn how to implement it at IMTS 2020, which will showcase a full spectrum of digital and traditional manufacturing technologies.

To meet the needs of changing audience demographics and reflect the advanced technology exhibited at the show, IMTS – The International Manufacturing Technology Show has announced that the theme for IMTS 2020 is “Digital Manufacturing. Implemented.” IMTS 2020 runs from Sept. 14-19 and will occupy all four buildings of Chicago’s McCormick Place.

“Instead of conceptually discussing digital transformation, IMTS 2020 visitors will find digital solutions that they can implement today,” says Peter R. Eelman, Vice President & CXO at AMT – The Association For Manufacturing Technology, which owns and produces IMTS. “Manufacturing requires a broad spectrum of technologies, and IMTS brings together manufacturing expertise from a multitude of sectors. There’s no ‘one-size-fits-all’ solution, but you will find it all at IMTS 2020.”

In addition to breakthrough products — such as voice command for CNC milling centers — digital technologies are becoming ingrained as part of familiar solutions, such as cutting tools that communicate wear, temperature, positioning and vibration.

Notable digital growth areas of IMTS 2020 will include additive manufacturing (40% more exhibit space compared to last show), quality assurance (11% more exhibit space), CAD-CAM software solutions and HANNOVER MESSE USA, where a majority of the 500+ exhibitors focus on digital-driven manufacturing technologies.

Tim Shinbara, Vice President & CTO for AMT, says, “Trends to watch for at IMTS 2020 include more collaborations, consortiums and partnerships among exhibitors, especially those that focus on interoperability. Exhibitors will show visitors how to connect data streams within a production cell, between devices and at an enterprise level.”

The easiest-to-spot collaborations involve the proliferation of robots and cobots that improve material flow efficiency. A similar example will be in situ quality assurance and metrology solutions that validate specifications before moving the part to the next manufacturing step, such as in situ touch probes and laser scanners. The proliferation of digital components will also correspond with exhibitors showcasing networking, control, communication protocols and cyber security solutions.

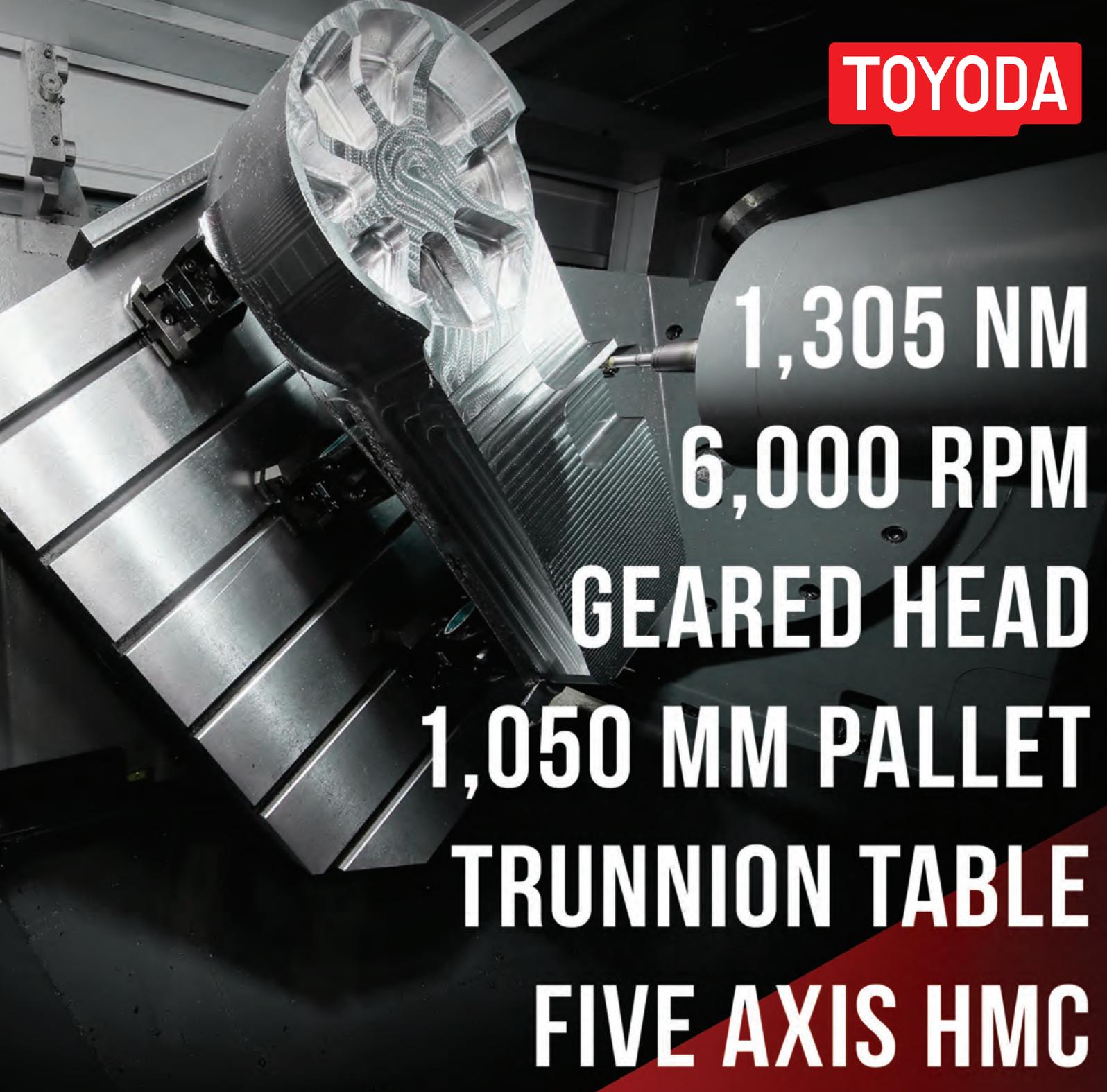
Shinbara adds that, “Instead of promoting faster spindle speeds or other physical metrics, exhibitors will emphasize how their equipment fits into a digital ecosystem. Also, look for technology based around creating a digital twin and how to integrate it into the physics of the manufacturing environment.”

Eelman, who has more than four decades of manufacturing industry experience, believes that the digital transformation of manufacturing will have an effect similar to that of the PC-based controller.

“We are on the cusp of a productivity breakthrough not seen in more than a generation,” he says.

While the immediate growth is temporarily dampened due to the uncertainty generated by international trade issues, the skilled labor market remains incredibly tight and companies must constantly prove that they offer customers the best value.

“Digital manufacturing enables a nimbler response, whether that’s to changing market dynamics or swings in customer preferences,” says Eelman. “Successful manufacturers position themselves for any possible future by being prepared. They do that by attending IMTS and connecting with the companies that will help them remain competitive.”



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Z-axis travel : 17.71"

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V-axis travel : 51.18" ~ 98.42"

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Y-axis travel : 47.24"

Z-axis travel : 35.43"

W-axis travel : 19.68"



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FCV-620 - 18017

High Speed 5-Axis Machining Center

Control : Fanuc 31i-85 (Full 5-Axis)

Travel : 25" x 21" x 18.1"

Spindle : 15,000 RPM, CAT40, Big Plus

List Price **\$282,800.**



MEGA5 P3026 - 18001

Bridge type 5-Axis Machining Center

Control : Heidenhain ITNC 640 (Full 5-Axis)

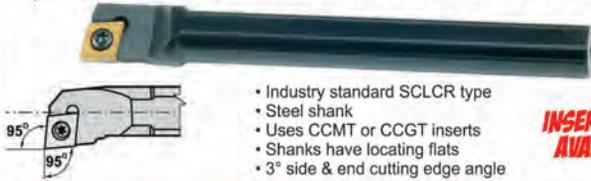
Travel : 118" x 103" x 39.3"

Spindle : 15,000 RPM, HSK-A100, Big Plus

List Price **\$847,000.**



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- Industry standard SCLCR type
- Steel shank
- Uses CCMT or CCGT inserts
- Shanks have locating flats
- 3° side & end cutting edge angle

INSERTS ALSO AVAILABLE!

Industry Reference	Uses Inserts	Shank Dia	Min Bore	OAL	Part Number	Price
SI-SCLCR/L6-2		.375	.468	6	BI-6870-062R	\$ 52.04
SI-SCLCR/L8-2	CC_T-21.5_	.500	.560	7	BI-6870-082R	\$ 52.04
SI-SCLCR/L10-2		.625	.810	8	BI-6870-085R	\$ 69.50
SI-SCLCR/L8-3	CC_T-32.5_	.500	.625	7	BI-6870-093R	\$ 52.39
SI-SCLCR/L10-3		.625	.812	8	BI-6870-103R	\$ 61.07



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- Buy the kit and save time and money!
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- Sets include tool block, part off blade and (10) CVD coated general purpose carbide inserts, suitable for steels/stainless with 0° lead angle

SAVE 10% OFF MFG'S LIST PRICE!

NEW ITEM!

Blade Size	Blade Ref #	Insert Size	Block Ref #	Part Number	Mfg's LIST	SET Price
1.02"	26-3	GTN-3	19-5	BI-6895-903	\$ 206.25	\$185.63
26mm	26-4	GTN-4	3/4" shank	BI-6895-904	\$ 209.00	\$188.10
	26-5	GTN-5		BI-6895-905	\$ 216.15	\$194.54
1.26"	32-3	GTN-3	25-6	BI-6895-923	\$ 217.80	\$196.02
32mm	32-4	GTN-4	1" shank	BI-6895-924	\$ 220.55	\$198.50
	32-5	GTN-5		BI-6895-925	\$ 228.25	\$205.43



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Insert	Prices Starting At:
WCMT 1.211	\$12.04 ea
WCMX 1.81.52	\$7.75 ea
WCMX 21.52	\$7.75 ea
WCMX 2.522	\$7.75 ea

Dia	Shank	LOC	Part Number	Price EA	Uses Insert
0.500	0.625	1.340	UD-0500-2D-063	\$138.32	WCMT 1.211
0.625	0.625	2.815	UD-0625-4D-063	\$198.68	WCMX 1.81.52
0.750	0.750	1.748	UD-0750-2D-075	\$153.40	WCMX 21.52
0.750	0.750	3.698	UD-0750-4D-075	\$220.05	WCMX 21.52
1.000	1.000	2.345	UD-1000-2D-100	\$168.49	WCMX 2.522
1.000	1.000	4.635	UD-1000-4D-100	\$242.68	WCMX 2.522
1.125	1.000	4.760	UD-1125-4D-100	\$242.68	WCMX 2.522

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- 4 flute, single end
- TiAIN Coated-for general purpose use on all materials
- Center cutting
- 30° helix, right hand



Dia	LOC	Shank Dia	OAL	4 Flute TiAIN Coated	Price Each
1/8"	1/2	1/8	1-1/2	MO-EM001067-4	\$ 7.91
3/16	5/8	3/16	2	MO-EM001107-4	\$ 10.68
1/4	3/4	1/4	2-1/2	MO-EM001137-4	\$ 15.35
5/16	13/16	5/16	2-1/2	MO-EM001153-4	\$ 21.84
3/8	1	3/8	2-1/2	MO-EM001177-4	\$ 25.39
1/2	1	1/2	3	MO-EM001207-4	\$ 40.75
5/8	1-1/4	5/8	3-1/2	MO-EM001226-4	\$ 74.00
3/4	1-1/2	3/4	4	MO-EM001244-4	\$ 109.50

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Ideal For Stainless, Mild Steels, Cast Iron & Low/Medium Hard Steels up to 40Hrc

Dia	LOC	Shank	OAL	Part Number	Price EA
1/8	3/8	1/8	1-1/2	YG-EMUGMF68901	\$ 13.51
1/4	3/4	1/4	2-1/2	YG-EMUGMF68905	\$ 23.07
3/8	7/8	3/8	2-1/2	YG-EMUGMF68907	\$ 38.02
1/2	1	1/2	3	YG-EMUGMF68909	\$ 58.42
5/8	1-1/4	5/8	3-1/2	YG-EMUGMF68911	\$ 117.96
3/4	3/4	3/4	3	YG-EMUGMF68048	\$ 150.07
1	1-1/2	1	4	YG-EMUGMF68913	\$ 272.90

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Am Std#	Dia	Width	OAL	Part Number	Price
202	1/4"	1/16"	2-1/16	KEO-62010	\$26.30
303	3/8"	3/32"	2-3/32	KEO-63030	\$26.30
204	1/2"	1/16"	2-1/16	KEO-62040	\$26.30
304	1/2"	3/32"	2-3/32	KEO-63040	\$26.30
405	5/8"	1/8"	2-1/8	KEO-64050	\$26.56
806	3/4"	1/4"	2-1/4	KEO-68060	\$27.83
608	1"	3/16"	2-3/16	KEO-66080	\$33.24



CARBIDE DRILLS

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Size	LOC	OAL	Part Number	Price
3/64	1/2	1-1/2	SRTA-3/64-MO	\$10.04
1/16	5/8	1-5/8	SRTA-1/16-MO	\$10.12
5/64	11/16	1-11/16	SRTA-5/64-MO	\$10.30
7/64	13/16	1-13/16	SRTA-7/64-MO	\$10.80
1/8	7/8	1-7/8	SRTA-1/8-MO	\$10.82
5/32	1	2-1/16	SRTA-5/32-MO	\$13.09
3/16	1-1/8	2-3/16	SRTA-3/16-MO	\$14.68
1/4	1-3/8	2-1/2	SRTA-1/4-MO	\$22.66
5/16	1-5/8	2-13/16	SRTA-5/16-MO	\$33.26
3/8	1-13/16	3-1/8	SRTA-3/8-MO	\$44.26
7/16	2-1/16	3-7/16	SRTA-7/16-MO	\$66.37
1/2	2-1/4	3-3/4	SRTA-1/2-MO	\$77.94



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- TM Chipbreaker-Medium cutting of steels and hi-temp alloys
- SM Chipbreaker- Medium cutting of mild steels and stainless

COMPLETE LINE AVAILABLE!

Insert No.	Rad.	Grade	Chip-Breaker	Application/ Material	Part Number	BOX QTY EACH
CNMG431	.015	T9125	TM	Steels	TO-3514	\$8.78
CNMG432	.031	AH120	TM	Super Alloys	TO-1364	\$8.78
DNMG431	.015	AH120	TM	Super Alloys	TO-1709	\$11.48
DNMG432	.031	T6130	SM	Stainless	TO-6805431	\$12.01
TNMG431	.015	AH120	TM	Super Alloys	TO-2833	\$9.50
TNMG432	.031	AH120	TM	Super Alloys	TO-2868	\$9.50
WNMG431	.015	T6030	SM	Stainless	TO-6827354	\$8.78
WNMG432	.031	AH120	TM	Super Alloys	TO-3338	\$8.78



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Range	Part Number	Mfg List	Price
0-1"	FOW-54-870-001	\$99.18	\$77.00
1-2"	FOW-54-870-002	\$107.10	\$84.00
2-3"	FOW-54-870-003	\$121.38	\$90.00

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- Dual chrome plated beams
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- Base is hardened, ground & lapped for maximum flatness

0-12" Range	0-24" Range
Part # FOW-52-174-212 Reg. Price: \$296.51	Part # FOW-52-174-224 Reg. Price: \$494.19
\$225.00 each	\$415.00 each

HAND PADS



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Mfg Ref.	Description	Color	Pkg Qty	Price
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7447B	Gen. Purpose (Bulk)	Maroon	60	3M-04229-9 \$ 73.18
6444	Extra Duty Hand Pad	Brown	20	3M-16553-0 \$ 31.43
6448	Light Duty Hand Pad	Dark Gray	20	3M-16555-4 \$ 28.55
7440	Heavy Duty Hand Pad	Tan	20	3M-04050-9 \$ 36.02
7445	Light Duty Cleansing Pad	White	20	3M-16976-7 \$ 27.44

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Type	Includes	Part Number	Set Price
Standard	1 Handle, 1 B Holder & 5 B11P coated blades	SHAVIV-90110	\$21.11
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	9	SC	Fine	3M-05790-3	\$ 53.58
6" x 1" x 1"	8	AO	Medium	3M-13617-2	\$ 75.01
	8	SC	Fine	3M-09549-3	\$ 75.01
	9	SC	Fine	3M-05132-1	\$ 75.01



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13	.050, 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, (Inch) 5/32, 3/16, 7/32, 1/4, 5/16, 3/8"	BO-69637	\$ 37.12	\$ 29.33
9 (mm)	1.5, 2, 2.5, 3, 4, 5, 6, 8, 10mm	BO-69699	\$ 30.09	\$ 23.77
22	1 each: Inch & Metric Set	BO-69600	\$ 63.84	\$ 50.43

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Boeing Funds New Lab Facility within Stanford University's Aero/Astro Department

Boeing is funding the creation of a state-of-the-art laboratory facility dedicated to the research and testing of autonomous aerial vehicles within Stanford University's Department of Aeronautics and Astronautics. Stanford University is located in Palo Alto, California.

The Boeing Flight & Autonomy Laboratory features a control room and maker area, the newest motion-capture cameras and sensor networks, and a public observation area. The lab is the latest support by Boeing in Stanford's Aero/Astro department.

"We're pleased to contribute to Stanford's mission of educating lifelong learners, entrepreneurs and leaders," said Charles Touns, vice president and general manager of the Disruptive Computing & Networks organization at Boeing.

"We are very grateful to Boeing for their gift," said Charbel Farhat, the Vivian Church Hoff professor of Aircraft Structures and chairman of Stanford's Aero/Astro department. "The company's generosity helps enable us to continue to educate the next generation of aero- and astronautic engineers and conduct the kind of groundbreaking research for which Stanford is known."

In addition to the \$2.5 million contribution to fund the Boeing Flight & Autonomy Laboratory, located in the Durand Building, Boeing is a founding member of the Stanford Aero/Astro Launch Fund for a new undergraduate program in aeronautics and astronautics. The inaugural class in that program will graduate in 2020.

Since 2010, Boeing has contributed nearly \$850,000 to Stanford curriculum enrichment, STEM and diversity initiatives, as well as to student organizations such as the Stanford Student Space Initiative and Stanford Solar Car Project. The company also hosts an annual tour of its commercial airplane production facilities in Everett, Washington, for Sloan Fellows in the Stanford Graduate School of Business.

"We are proud to support the diverse people and programs at Stanford, many of whom continue to further aerospace technology today," said Bruce Dickinson, vice president and general manager of the 747/767 program at Boeing.

Boeing also has funded more than \$26 million in collaborative R&D projects at Stanford since 2003. These projects span diverse fields of study, including aerodynamic analysis and optimization using advanced computational methods, materials and sensors, machine learning and autonomy.

Boeing is the world's largest aerospace company and leading provider of commercial airplanes, defense, space and security systems, and global services. As the top U.S. exporter, the company supports commercial and government customers in more than 150 countries. Boeing employs more than 150,000 people worldwide and leverages the talents of a global supplier base. Building on a legacy of aerospace leadership, Boeing continues to lead in technology and innovation, deliver for its customers and invest in its people and future growth.

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Industry 4.0: New Digital Tool Management System from HAIMER

Article Provided by HAIMER



Pick up any machining or manufacturing publication and you will likely find an article on Industry 4.0 (i4.0). Simply put, i4.0 is the digitalization of the manufacturing process by connecting machine tools with networks so data can be shared and analyzed.

In the machine shop of the future, balancing, presetting, shrink fit equipment and machine tools will interface and communicate with each other. The visualization of this data will make the entire enterprise more efficient and productive.

Here at HAIMER, we have already embraced i4.0 and are currently providing shops digital connectivity and communication between tools and machines. This forward thinking is reflected in the i4.0 generation of our proven Power Clamp shrink fit machines: The Premium i4.0, Sprint i4.0 and Comfort i4.0. As the names suggest, they are all industry 4.0-ready and network-compatible.

Digitized Tool Management

Our latest example of i4.0 technology is the HAIMER DAC (Data Analyzer and Controller). This digital tool management system enables a consistent exchange of tool data, and connects the entire tool room (including CAD/CAM and the machine tool) to a digital Industry 4.0 system.

The DAC establishes the connection with a corporate network and manages the exchange of target and actual values (as well as other tool data) between the individual tool room stations.

The complete tool – HAIMER tool holders in combination with available RFID data carriers,

QR or data matrix codes (which can be read and evaluated by various systems via a scanner) – can be clearly

identified.

Through the network connection, the DAC also provides additional tool data: assembly instructions, article numbers, stock adjustments, and 3D models. The DAC also supports the user in the analysis of production data and process optimization.

The DAC in Action

In the CAD/CAM system, a tool assembly order is generated and sent to the DAC, which generates a tool ID which accompanies the tool throughout the entire process for traceability. The subsequent stations – assembly (e.g., shrinking), measuring and balancing – all communicate with the DAC.

After the last value transfer, the data is sent to the machine tool control, where the correct magazine location is specified. Potential confusion regarding the correct magazine location can be prevented by scanning the tool ID at the machine.

Depending on the unbalance tolerance, an adaptation (such as reduction) of the maximum spindle speed takes place, if necessary. After the milling operation, data on the remaining tool life is transferred back to the DAC.

No Operator Error

The system is easy to operate: The user controls the entire process by simply clicking and confirming (data transfer). Since no manual input is required (or even possible), there is no false input, and thus no collision risk. The HAIMER DAC concept is scalable from small to large and makes digitization in tool management feasible for small and medium-sized companies as well as larger organizations. The customer can take over existing machines and systems, as these can also be integrated by the DAC.

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Kitamura Machinery Adds CNC Solutions to Dealer Network

Kitamura Machinery announces the appointment of CNC Solutions to its dealer network. Based in Milpitas, CA, they will offer exclusive sales and service for Kitamura's line of horizontal, vertical and 5-axis machining centers in Northern California and Northern Nevada.

"We are very excited to represent the Kitamura product line in Northern California and Northern Nevada," said Jim Selway, president of CNC Solutions. "Kitamura has been a machine tool line we have admired for years. The product line fits our market perfectly, they are one the highest in quality and offer space saving designs as well as future expand ability.

Coming from the Silicon Valley having a high powered, Fanuc compatible control was a key feature we were looking for, the Arumatik control gives us that and much more. We feel with our experienced sales team and well known service reputation that this will be a great match for Kitamura, CNC Solutions, and all of our existing and future customers."

"It's an exciting time of growth for our company." Said Ted Asano, vice president of sales at Kitamura Machinery. The addition and experience of CNC Solutions is critical to our success. Family owned, combining the talent of over 60 years in the machine tool industry, CNC Solutions brings to our customers an experienced

sales staff, seasoned service team and knowledgeable applications staff as well as a local technology showroom for display of the latest in Kitamura products."

Methods Announces Mark Wright As President & CEO

Methods Machine Tools, Inc. announces that its Board of Directors has appointed Mr. Mark Wright as its president and chief executive officer effective September 13, 2019. Mr. Wright will assume all operating functions of Methods Machine Tools, Inc. including the Sudbury Massachusetts headquarters and all 7 direct offices throughout the United States as well as its national distribution network.



"During this time of transformation, new technologies, emerging industries, and product innovation, there is no better person to lead Methods into the future than Mark Wright," said Scott McIver, chairman of the board and 3rd generation owner. "Mark is a proven leader in manufacturing and distribution disciplines. His strategic ideas, goals and ambitions align with our plans for the future and our continued growth."

Mark's career spans nearly every level of operating responsibilities in a wide variety of industries including software, hardware, machinery, and services. He has led operations, sales, and financial teams to superior results.

"After seeing many companies in my career, you get to know greatness when you see it. Having an opportunity to join such a team, such a family, it is what I worked for my entire career,

and I am honored by this opportunity," explained Mark Wright. "I am confident we can continue to grow and move the business forward and deliver the high caliber products and services in our special way that makes Methods unique. I will enable our people to fulfill their passion to make a difference."

Enhanced Training, Service and Digital Capabilities at Mazak DISCOVER 2019

The industry's largest private manufacturing event, DISCOVER 2019, will offer visitors the opportunity to experience Mazak Corporation's wide range of productivity-enhancing digital solutions, from powerful SMOOTH TECHNOLOGY solutions to the latest in training and machine connectivity methodologies. The event, which takes place November 5-7 and 12-13 at the company's North American Manufacturing Headquarters in Florence, Kentucky, will set the stage for the North American debut of new digital technologies that include Mixed Reality Training and the MAZATROL SmoothAi CNC, as well as enhancements to the machine connectivity and cybersecurity capabilities of the Mazak SmartBox.

Mazak's new Mixed Reality paradigm is a system that combines the key advantages of virtual reality (VR) and augmented reality (AR). Designed to reduce the risks associated with training new operators on highly sophisticated technology, Mixed Reality Training and new remote service modalities take virtual objects from VR and overlay them in the real world with an AR approach, enabling risk-free training and new possibilities for machine service and maintenance. It will be seen for the first time at DISCOVER 2019.

Mazak's new MAZATROL SmoothAi CNC will make its first ap-

Industry News

pearance in North America. Featuring graphical user interface enhancements, an optional second monitor and operation panel enhancements to support other new SMOOTH TECHNOLOGY solutions, including SMOOTH Ai Spindle, Solid MAZATROL and Ai Thermal Shield, The SmoothAi CNC will also incorporate new products like SMOOTH CAM Ai, MAZATROL TWINS and SMOOTH Project Manager. A core component of the Mazak iSMART Factory™ concept, the SmartBox enables the complete digital integration of Mazak's advanced manufacturing cells and systems.

Makerspace Training, Collaboration and Hiring (MaTCH) Pilot Competition Winners

The U.S. Small Business Administration Acting Administrator Chris Pilकर्ton announced the winners of the Makerspace Training, Collaboration and Hiring (MaTCH) Pilot Competition. The SBA awarded \$1 million in prize money to competition winners. Vocademy, located in Riverside County in a designated Opportunity Zone, with a mission to provide advanced manufacturing and maker skills, was awarded \$100,000.

Vocademy combines attributes of makerspaces and traditional trade schools by giving participants access to makerspace evenings, seven-days-a-week, where they can practice what they are learning and gain critical experience. As an SBA MaTCH award recipient, Vocademy will use its prize money to scale current successful programs that serve the needs of manufacturing companies looking for employees and underserved participants who seek training and a high paying job.

"Our goal at Vocademy is to help people find meaningful work by pro-

viding fundamental hands on skills training and to effectively solve the advanced manufacturing skills gap" said Gene Sherman, founder and CEO,

Vocademy.

Also winning a grant was Workshops for Warriors (San Diego, CA) who were awarded \$150,000. Work-

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shops for Warriors is headquartered in San Diego in a designated Opportunity Zone. Workshops for Warriors' provides veterans and transitioning

service members with industry-leading manufacturing education, experience, and job placement.



HEIDENHAIN Opens New Colorado Office

Heidenhain announces the opening of a new central U.S. sales office as part of the company's continued North American expansion efforts. Operating in Longmont, CO, this new office now provides direct sales support for central U.S. and Mexico territories, previously managed in either Heidenhain's long-time Illinois or its 2017-established California headquarters.

"This new development allows Heidenhain to get even closer to our customers and is simply an extension of our 'Customer First' initiatives," said John Thormodsgard, Heidenhain's Sales Director for Central Region. "The Longmont location is centrally located near Denver, Boulder and Fort Collins – a growing R&D, industrial and higher educational corridor – which we can now more efficiently support with our motion control technology expertise."

Besides sales office space, Heidenhain's new location can also host visitors in conference rooms as needed. The new office is located at 1079 S. Hover in Longmont, CO.

Tom Shelar of CAD/CAM Consulting Services Passes

A company spokesperson stated, "It is with deep sadness and a profound sense of loss that we announce that our founder and owner, Tom Shelar, passed away in his sleep on August

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22, 2019. Tom founded CAD/CAM Consulting Services INC. (“CCCS”) in 1993 and was its driving force over the past 26 years. Tom was an amazing leader of the company and, more importantly, a great friend to each and every employee of the company as well as to many of our customers.”

Tom, 60, is survived by his son, Patrick, Danielle Berger, his longtime companion, his brothers, Rick and Larry, sister Carol Dobson and many nieces, grandnieces and grand-nephews. He loved



racing and recently led his race team, High Speed Motor Sports, to the 2018 NHRA Heritage Series Top Fuel National Championship.

CCCS is the authorized reseller of Mastercam® software in Southern California and, under Tom’s leadership, is currently one of the top 10 resellers in the world. CCCS maintains two offices in Newbury Park, CA and Anaheim, CA. Tom’s family is committed to continuing to grow CCCS, and maintain their place as a leader in providing high quality solutions and customer service to the manufacturing community.

3rd Annual National Metalworking Reshoring Award

Four leading manufacturing associations have announced the 3rd National Metalworking Reshoring Award. Companies that have successfully reshored products, parts or tooling made primarily by metal forming, fabricating, casting or machining, including additive manufacturing, are invited to apply. The Reshoring Initia-

tive, the PMA, NTMA, and AMT are pleased to sponsor this competition.

To be eligible for the award, the work must have been reshored be-

tween January 1, 2013, and May 31, 2020, from outside North America to North America. Reshoring includes work that is produced either in-house



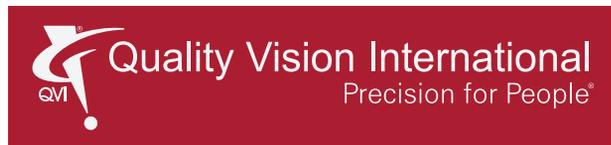
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or outsourced. Applications must be submitted by June 30, 2020. To view award details and enter to win, visit www.amtonline.org/reshoringaward.

“In 2018 over 1,300 companies announced they were shifting jobs to the U.S. from offshore, up 38% from 2017. Jobs reshored since 2010 account for 3.3% of total U.S. manufacturing employment,” said Harry Moser, founder and president of the Reshoring Initiative. “There is still time for companies to decide to reshore and be eligible for the Award. We also hope that other associations will choose to support similar awards to show that their industries are also now successfully reshoring.”

Sherrill Manufacturing received the 2019 National Metalworking Re-

shoring Award in recognition of the company’s success bringing manufacturing back home to the United States. Sherrill’s success demonstrates that it is feasible to reshore completely lost product categories. When Oneida Limited ceased operations, all U.S. flatware production had been lost, primarily to Asia. Sherrill Mfg. took over the Oneida flatware factory, launched innovative products under the Liberty Tabletop brand, and found a more efficient way to market those products.

Questions about the National Metalworking Reshoring Award can be directed to Harry Moser at harry.moser@reshorenw.org.

Machinist Certification to Meet Industry Needs

The Sacramento Valley Manufacturing Initiative (SVMI) is a non-profit collaboration of manufacturing companies spanning seven counties in the Sacramento region. The organization formed early in 2018, in recognition of a crisis level skilled labor shortage.

SVMI’s board is made up of executive level employees and manufacturing business owners in the Sacramento region. The organization is led by SVMI President Kevin McGrew, Siemens Mobility Change Agent for Organizational Quality; George Joseph Wernette III, CEO of TRI Tool Inc. serves as SVMI vice president; Mi-

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- Check and adjust XY squareness
- Check spindle tram
- Verify proper tool change position (Z pos)
- Verify proper TC rotational adjustment
- Verify proper spindle orientation position
- Verify rigid tapping & adjust as necessary
- Set backlash
- Adjust all system voltages as necessary



LUBRICATION

- Clean or replace waylube filter
- Verify lube pump is cycling properly
- Check and fill hydraulic reservoir



COMPUTER

- Backup parameters



FINAL CHECK

- Verify all systems on CNC are working properly. Test spindle speed, coolant on/off, tool changer rotation and shuttle. Run a warmup program and verify machine is fully functional.



MISC. CHECKS

- Check for proper air pressure
- Check Air & hydraulic lines for leaks, cracks
- Air solenoids for leakage/operation
- Waylube level, lube to ways & lines
- Verify work lights operate
- Check ATC-clips, tool locator tabs, springs, etc.
- Check incoming voltage; adjust transformer taps
- Replace spindle belts, inspect pulleys
- Check draw force
- Meg motors, Note values
- Turn ballscrew and verify all is smooth and tight
- Perform push pull test on X & Y axis
- Check spindle motor fan operation
- Check the operation of chiller system (if applicable)
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chelle Stofan, vice president of Garner Products serves as Treasurer; and Dean Peckham serves as the organization's executive director.

SVMI Member companies have

designed a curriculum that includes the required training programs to bolster the labor pool as well as up-skilling existing skilled labor. In recent months, SVMI has certified 24 new CNC ap-

prentices.

Soon the group will launch an SVMI sponsored program for skilled machinists. Through this program, experienced CNC machinists will be able to earn a credential recognized by industry as a certified journey level machinist. To qualify, these machinists must be sponsored by an SVMI member company.

If you are a CNC machinist and you are interested in obtaining this certification credential or you represent a company interested in becoming a SVMI member, please visit www.sacvalleymfg.org. There are also opportunities for local non-manufacturing affiliate companies to join the SVMI effort.

NIMS Launches First-Ever Industry Recognized CAM Credentials

The National Institute for Metalworking Skills (NIMS) is now offering



standardized Computer Aided Manufacturing (CAM) credentials, CAM milling and turning. "The CAM field continues to grow and is expected to create almost 100,000 new programmer, designer, and engineer jobs by 2024," said NIMS executive director Montez King. "It is imperative that people entering the field are properly trained and capable, and these credentials show a potential employer that applicants are ready to program CNC machine tools. Further, employees already on the job may wish to secure an official, portable, industry-recognized

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certification.”

The new credentials are based on standards developed in partnership with and sponsored by Autodesk, a leader in 3D design and engineering software. Over 125 subject matter experts from organizations such as CNC Software, developer of Mastercam; Barefoot CNC; Arkansas State University Mid-South; CamInstructor, and custom machining technology leader, Rosenburger of North America, volunteered their insight during the rigorous development and piloting process of the standards.

Throughout the development process, field experts, within their technical work groups, identified the skills expected for entry-level CAM positions. As a result, these standards now

define necessary competencies associated with job preparation, modeling, toolpath generation, documentation, written oral communication, machining mathematics, decision making and problem solving, social skills and personal qualities, engineering drawings and sketches, computer operations, and technologies.

MC Machinery Announces New West Coast Regional Sales Manager

MC Machinery announces its new West Coast regional sales manager – fabrication division, Tim Gelsomino. In this role, Gelsomino will be responsible for west coast operations and growing relationships with current and

new customers in the region.

“I’m both excited and eager to bring my knowledge, experience and work ethic to our west coast operations,” says Gelsomino. “We have a great sales team in place and we will all band together to make sure our customers know we value their business and partnership.”

Gelsomino has been at MC Machinery Systems for over 12 years. He was hired as the company’s first sales assis-



Premium Economical CMM

LK Metrology’s new ALTERA C offers reliable measurement results and efficient throughput for measurement tasks in industrial and shop floor environments. Innovative design features have resulted in a surprisingly compact footprint, making the ALTERA C an attractive proposition when floor space is limited.

Available in three sizes 7.7.5, 10.7.5 and 10.7.7. A range of multi-sensor technology is available to meet varied customer applications and budgets, including: 5-axis PH20, industry standard PH10, low cost automated RTP20, manual MH20i and fixed head PH6.



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Industry News

tant supporting the fabrication division and then transitioned to an inside sales manager role, supporting the sales of all product lines and divisions. After

10 years in the machine sales division, Gelsomino was promoted to service sales manager.

TCI Precision Metals Adds Latest Duplex Milling Technology

TCI Precision Metals today announced the installation of its newest high tech milling machine. The new Amada, THV800 is the latest in precision duplex milling and adds to the line of optimized milling machines used by TCI Precision Metals in the production of Machine-Ready Blanks. The TCI Machine-Ready Blanks are milled in width and length, using the THV800's specially designed twin spindle, in one setup instead of two. This reduces set up time and increases efficiency. One or more Machine-Ready Blank can be produced together, up to the machines' overall dimensional capacity of 16.93"W x 16.93"L x 9.6"H.

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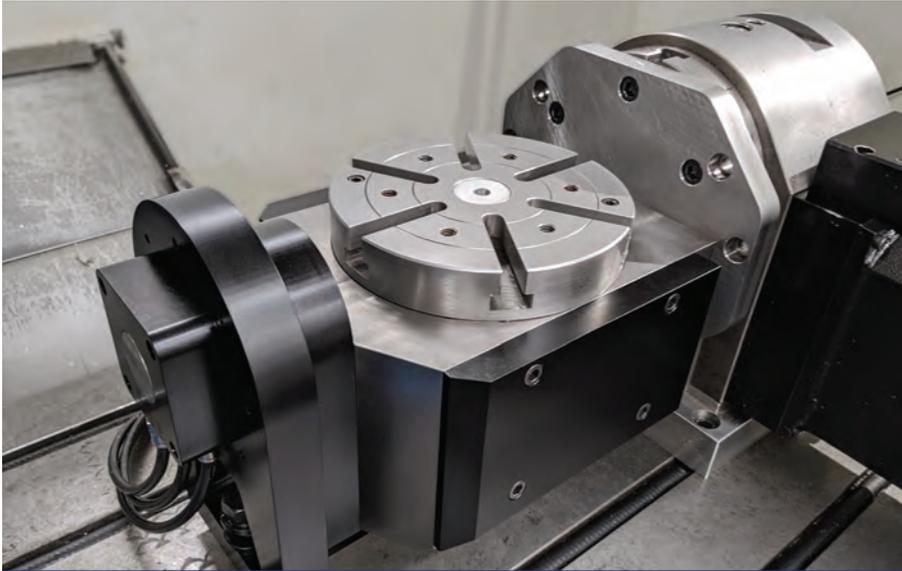
MC Machinery New West Coast Service Manager

MC Machinery Systems announced its new western regional service manager of Laser, Michael Pankiewicz. In his new role, Pankiewicz will be responsible for all technical service and support for west coast customers.

"We're excited about Mike's new role as western regional service manager," says Tony Imbrogno, senior vice president, service and support. "He's done a great job here at MC Machinery over the last 8.5 years and we're confident his industry experience will help our customers get the service and support they need."

Before Pankiewicz joined MC Machinery as a technician more than 8 years ago, he was a technician and

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Industry News

a manager in the technical service industry as well as a regional manager in the photofinishing industry. In total, Pankiewicz has 33 years of experience.

LK Metrology Celebrates First Anniversary As An Independent Company

LK Metrology recently celebrated its first year of trading as a stand-alone company again, following its purchase at the end of March 2018 from Nikon Metrology by Angelo Muscarella, owner of Italian firm ASF Metrology. The last time LK was independently owned was prior to its takeover by former holding group Metris at the beginning of 2006.

CEO Angelo Muscarella said, “We

are delighted to complete our first year so successfully, during which we made a profit despite the expense necessarily incurred in transferring ownership of the company, which included opening a new office in Shanghai.

“We have already launched a packaged version of our Altera CMM with Renishaw REVO-2 probe, the SCANtek 5, and at the Control exhibition we are showing a brand-new product, the AlteraC 10.7.5, which is the first of three sizes planned.”

Muscarella adds, “It will be supplied with our CAMIO programming, analysis and reporting software plus Renishaw indexing head and touch probe, which can be exchanged for a laser scanner. The machine lowers the price of entry to LK CMM multi-sensor inspection technology and will

be officially launched later this year.”

In 2018, LK celebrated its 55th anniversary as a global leader in the metrology industry. It is the longest established CMM manufacturer and its name is linked to numerous innovations, such as the ceramic bridge design, air bearing and granite guideways for stability and stiffness, carbon fiber composite spindles, and horizontal-spindle coordinate measuring. The company worked in partnership with Rolls-Royce to develop Renishaw’s first touch trigger probe for use on a CMM. LK’s brand recognition is strong, especially in the automotive, aerospace, medical and electronics sectors.

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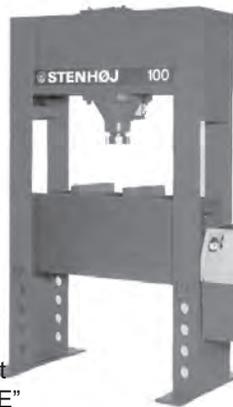
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New Products

New AgieCharmilles CUT AM 500 EDM —GF Machining Solutions

GF Machining Solutions recently announced the AgieCharmilles CUT AM 500, a new horizontal wire EDM designed to complement metal additive manufacturing (AM). The AgieCharmilles CUT AM 500 makes it easier than ever to quickly separate additively manufactured metal parts from the build plate while maintaining geometrical accuracy and ensuring assembly readiness.

In addition to improving overall efficiency, the CUT AM 500 also resolves a number of quality barriers encountered by manufacturers created by the use of band saws, including but not limited to geometric inaccuracy, loss of workpiece material (kerf) and damage to the part.

A complementary technology, the CUT AM 500 works seamlessly alongside other GF Machining Solutions' and 3D Systems' scalable, workflow-optimized solutions such as the DMP Factory 500, DMP Flex 350 and DMP Factory 350.

Accommodating parts up to 510 x 510 x 510 mm (including the base plate) and up to 500 kg in weight, the CUT AM 500 uses 0.2 mm diameter wire to separate additively manufactured parts from the build platform at a maximum cutting speed of 300 mm²/m. It delivers ±0.1 mm accuracy and surface roughness of less than 6 μm. The CUT AM 500 blends a horizontal wire orientation, a rotary axis and an integrated basket to catch separated parts.

The CUT AM 500's rapid wire technology, together with the machine's generator, ensures the fastest EDM process – at least three times faster than standard EDM – and the most reliable separation of additively manufactured parts with specific support structures.

The layout of the CUT AM 500 is designed to accommodate the integra-

tion of a clamping system for easier clamping and referencing. As additive manufacturing evolves into mass production, automated AM processes will be needed. System 3R, a GF Machining

Solutions brand, specializes in tooling, automation and software and offers in-house expertise and technology to drive manufacturers' future success in AM.

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New Products

CoroDrill® DS20 Indexable Drill —Sandvik

The CoroDrill® DS20 is the first indexable drill concept capable

of producing hole depths up to 7xD according to the company. The drill, includes completely new designs for both the body and inserts.

Replacing the existing CoroDrill 880 and CoroDrill 881 tools, 4–5xD



CoroDrill DS20 indexable drills provide tool life improvements. The 6–7xD variants represent an entirely new capability range of indexable drills from Sandvik Coromant. To complement the introduction, the company is releasing a new Modular Drilling Interface (MDI) that acts as a coupling between the drill and adapter. Available in Coromant Capto® and HSK shank types.

The drill body is strong and fatigue-resistant with higher levels of stiffness than ever achieved before, while chip flute shapes are individually designed for each drill size and insert. In addition, next-generation “double-step” technology reduces entry cutting forces by up to 75% compared to CoroDrill 880 tools, improving centering capabilities. Strong insert design and bulk strength provide extra toughness, with four true cutting edges on both center and peripheral inserts.

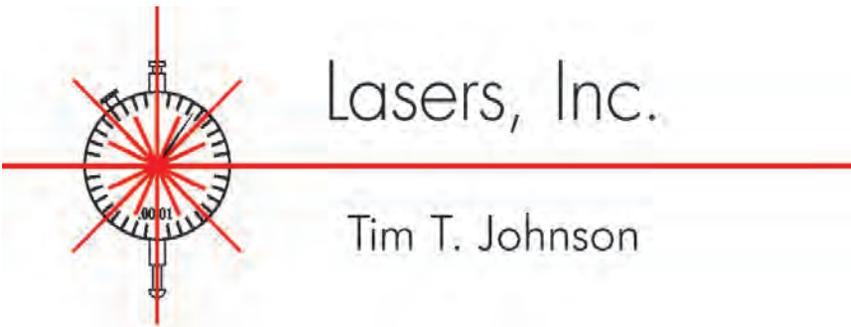
CoroDrill DS20 indexable drills are initially available in diameters .591 to 1.575 inch with a selection of shank types, insert sizes, grades and geometries to suit all material types and applications.

Large-Capacity Hydrodynamic Magazine Bar Feeder

—CNC Indexing & Feeding Technologies

The large-capacity TRACER 65V/80V hydrodynamic magazine bar feeder from CNC Indexing & Feeding

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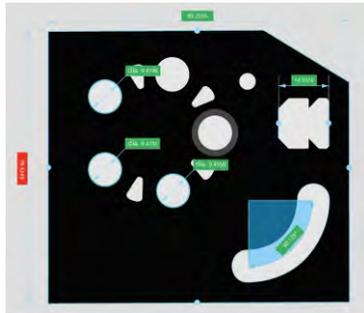
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New Products

Technologies can accommodate bars up to 12' long in diameters from 10 mm - 65 mm and, following a simple channel change, up to 80 mm in diameter. The feeder holds multiple bars, depending on the diameter size. For example, it can hold 36 bars that are 10 mm in diameter.

"Large-diameter bar stock typically requires the use of loaders that can handle only 4 ft. and 5 ft. lengths, limiting productivity in long-term or lights-out operations. The TRACER hydrodynamic system, however, balances clamping action and oil pressure to hold and feed larger-diameter bars up to 12 ft. long securely and precisely,

providing an economical solution for long production runs," said a company spokesperson.

The new 65V/80V bar feeder is engineered for users of fixed- and sliding-headstock CNC lathes who need to feed production-run quantities of long, large-diameter bar stock. An operator can adjust the machine quickly for different bar sizes without any tools, and fast changes of guide channels increase throughput while minimizing changeover and set-up times.

Torque force and speed are easily adjustable to assure consistent feeding.

New Versatile Shoulder Milling Cutter —Walter

Walter has introduced the M4130, a shoulder milling cutter that reduces costs through its ability to use Walter's universal M4000 system inserts in a variety of different applications.

This versatile new addition to the M4000 system is also capable of plunge milling, ramping, pocket milling and circular interpolation milling. The M4130 with a 90° approach angle is available as standard in diameter ranges 16-100 mm with depths of cut of (8, 13 or 16 mm), depending on the size of the insert. It is also available in

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The M4130’s inserts, with rhombic basic shape and a 15° clearance angle, can also be used either in the routing cutters or helical milling cutters of the M4000 family. The double-edged inserts with sintered circumference are

available in three sizes, each with four CVD-coated and three PVD-coated grades.

Workholding Fixture for 5-Axis Machining —Tecnara

Engineered for compactness, the MST Smart Grip workholding fixture is designed to minimize interference and to allow enhanced accessibility to toolholders and cutting tools.

With increased clamping force and rigidity, the Smart Grip is designed expressly for milling applications. Set-up is quick and easy, reducing production time. Workpiece holder set-up can be performed off line, minimizing

machine downtime.

The Smart Grip base unit utilizes HSK A type connections, including A40, A63 and A100. The system offers high axial positioning accuracy and enhanced rigidity against bending forces. Smart Grip offers a choice of workholder interfaces, including dovetail clamping, a rigid dual face clamping method that requires only minimum clamping surface.

Smart Grip is also suitable for 4th axis and tilting rotary tables. The Smart Grip HSK-A base unit is available with either manual or hydraulic clamping.



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New Products



Versatile Fixturing Line-Up —Mitee-Bite

Mitee-Bite Products offers three new products: the X-Plate System, the Power Bar and Heavy-Duty T-Slot Clamp. “These clamps are designed to save time, material costs and easily

solve many workholding needs,” said a company spokesperson.

The X-Plate System is a versatile modular fixturing platform for 3-, 4- and 5-axis applications, providing many mounting options including a precision quick-change system when clamped in a vise or T-slot table. It includes a provision on the bottom for the Mitee-Bite diamond/taper locating pins to precisely mount to sub-plate, plus the primary function as a multi-functional face plate for indexers and 5-axis machining centers. The X-Plate System is designed to save time, material cost and provide more options when determining the best method for the next job.

“The Power Bar is a modular platform designed to elevate your capabilities with some of the strongest clamps in today’s market,” said the spokesperson. “Utilizing any of the DK model OK-Vise Wedge clamps or the largest Mitee-Bite Pitbull clamps, you have the options to elevate your work-piece for mill/drill through operations or forcing your parts onto the machine table.” They are precisely ground to the same height as the Mitee-Bite In-line clamps and stops, multi-fixture clamps and stops and modular Pitbull for added versatility, are suitable for running in series for large aerospace and automotive application and designed to be used opposing each other for the

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New Products

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VMXDi Series Introduced —Hurco

Hurco has taken the workhorse VMXi Series of performance CNC machines and launched its newest iteration that features a direct drive spindle. The new VMXDi Series includes the VMX24Di (travels 24" x 20" x 24"), VMX30Di (travels 30" x 20" x 24") and the VMX42Di (travels 42" x 24" x 24").

The VMXi series offers a high



level of performance whether customers are running batch production or die/mold work. With the new direct drive spindle, the VMXDi series offers a better surface finish, quieter spindle and less head growth. It also includes a 15,000-RPM spindle, improved chip-to-chip time (2,000 RPM, 12" Z-travel

in 4 seconds), faster spindle acceleration and deceleration (0-15,000 RPM in 3.2 seconds, 15,000 - 0 RPM in 2.4 seconds).

The Hurco VMX42Di is equipped with the Hurco control powered by WinMax software and the patented motion system called UltiMotion. Hurco reports the control helps machinists and job shops be more productive and profitable by supporting many programming methods: conversational programming; NC programming; and a Hurco-specific feature called NC/Conversational Merge designed to optimize efficiency even further.

“Additionally, the Hurco control’s



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New Products

technical specifications lead the industry with 4 GB RAM, 128 GB solid state drive and 10,000 block look ahead,” said a company spokesperson.

“CNC Package” for Loading and Unloading CNC Machines

—Productive Robotics

Productive Robotics, Inc., the Santa Barbara, CA based designer and manufacturer of OB7 Collaborative Robots announces what they call a new game-changer for CNC Machine Shop automation. The latest offering is a “CNC Package”, a fully equipped package that includes all the necessary components required to connect to any type of CNC machine and begin



automating on day one.

The package consists of an OB7 robot arm, Robot computer and controls, Productive Robotics parallel gripper, OB7 robot rolling stand, work staging table, interface and pneumatic controller, chip fan, and 4” pneumatic vice. According to the company, the OB7 CNC package makes it simple to work with all brands of CNC machin-

ing centers, turning centers, and other machines. OB7 simply rolls up to the machine and loads and unloads parts, enabling “lights out” production.

“Machine shops are looking for simple and fast automation solutions that work with their existing machines and equipment, without high integration costs and long setup times”, said Zac Bogart, president and CEO of Productive Robotics. The CNC package builds on Productive Robotics’ approach to providing its customers with ultimate simplicity, flexibility, and cost-effective solutions to cobot automation.

OB7’s “learn by demonstration” teaching approach and “no programming” simple user interface allows operators to quickly and easily teach OB7. In addition, OB7’s seventh axis allows it to be placed to the side of the

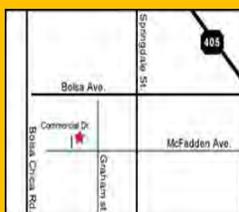
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New Products

machine door (rather than directly in front of it), providing greater flexibility and freeing up space for machine operators.

New Presetter Line —Koma Precision

Koma Precision introduces a new line of tool presetters. The line offers a range of presetters, from an entry level bench top unit up to semi-automatic measuring machines. The new tool management software is design to help manufacturers “close the loop”.

Koma’s new benchtop unit features a larger measuring range up to 600mm in Z-height and 400mm in diameter, with all the advanced measuring features. A large HD screen running a simple user-friendly interface allows



operators of all skill levels to set tooling. The large screen allows all icons to be visible while keeping the tool profile in view. With a full PC onboard, it has full capability to communicate directly with CNC machines sending

tool offsets direct to tooling tables.

The new line-up also offers more advanced models, with larger tool capacity and the ability to capture a multitude of data about the cutting tools measured. An ergonomic design allows for easy use when measuring larger tooling and a large 22” HD screen makes it easy to measure and inspect a variety of tooling. Tool wear and various tool geometry features are easily measured and can be exported from the presetter in a variety of formats. Direct communication with CNC controls is also available on these units either over a local area network or using the new tool management software.

New tool management software offered by Koma Precision uses a series of unique barcodes to transfer data to and from CNC controls.

Mitutoyo PRECISION TOOLS & GAGES
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The advertisement features a collection of Mitutoyo precision tools and gages. On the left is a large blue and white coordinate measuring machine (CMM) with a large circular probe. In the center is a vertical height gage with a digital display showing 135.0. To the right is a digital depth gage showing 0.20285. Below these are a digital vernier caliper showing 06.785, a digital micrometer, and a digital depth gauge. At the bottom right is a Mitutoyo digital readout (DRO) system with a screen showing 116.04.

New Products

Allied Machine Unveils the Solution Hub —Allied Machine

Allied Machine & Engineering, releases their free mobile app, Solution Hub, available now for download on both the Apple Store and Google Play. The app is a fresh-faced expansion of the original Allied Machine app, now reimagined as a centralized “hub” of Allied product information. Solution Hub offers quick access to free on-line utilities, videos, tap drill charts, operation manuals, technical guides, and digital catalogs for drilling, boring, threading, reaming, roller-burnishing, and more.

Find product details, watch tool demos, and flip through Allied Ma-

chine’s extensive lineup of holemaking solutions. Machine operators can find data on everything from shank options and diameter ranges for the 4TEX indexable carbide drill to NPT and Unified National tap drill charts. Handy resources also include a collection of Wohlhaupter operation manuals for the VarioBore, EK Grooving Head, Combi-Line, Alu-Line, and more. Flip through technical guides like Allied Machine’s illustrated pocket reference for thread milling or look for speed and feed recommendations in their Recommended Cutting Data Guide too.

The Solution Hub provides access to six free online utilities. Users can locate the right tool for both standard and unique holemaking/finishing applications with the Product Selector



and Boring Insert Selector utilities. They can design, assemble, and save 2D drawings and 3D tool files with Wohlhaupter’s Tool-Architect and Allied’s ToolMD. Solution Hub includes Insta-Quote too which helps customers create their own custom tooling and generate a quote and drawing in minutes. Machine operators can also download the Insta-Code utility to

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New Products

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Ultra Compact Simultaneous 5-Axis High Precision VMC

—Kitamura

Kitamura Machinery has added to its 5-axis line up with the MedCenter5AX vertical machining center (VMC).

The MedCenter5AX employs an X-, Y- and Z-axis, and additional tilting A-axis (+/-120°) and a rotary C-axis (360°) with a 0.001° minimum indexing command. Machining of

high precision, complicated parts like orthopedic implants or aerospace parts can be completed in one operation. The maximum workpiece size (dia. x height) 8.7" x 6.9" and maximum table load capacity 44 lbs.

Rigid in design and equipped with high resolution optical scale feedback on all axes, the MedCenter5AX offers the precise accuracies needed.

Kitamura's standard high speed 30,000 RPM, 24.5 HP direct drive HSK-E40 spindle offers enhanced rigidity and stiffness in spindle construction and function while allowing for super fine finish capabilities. Suitable for small diameter tools and hard milling, the MedCenter5AX offers a

standard air through spindle feature for dry cutting.

"The MedCenter5AX may be compact but it is equipped with a large 40-tool magazine—a great benefit when machining more complex parts," said a company spokesperson. Tool changes are a fast 1.5 seconds.

For increased productivity, Kitamura offers an optional 12-station automatic pallet system for running long hours of unmanned machining.

Kitamura combines many standard features in its feature-rich Arumatik-Mi control.



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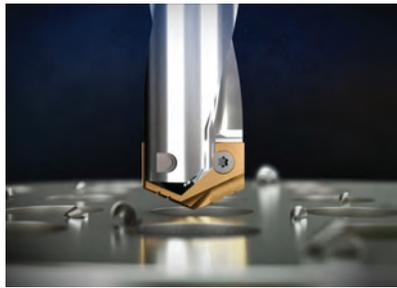
New Products

YG-1 New SV-Point Spade Drill Inserts —YG-1

YG-1 has introduced SV-Point spade drill inserts which a company spokesman said provide longer tool life at higher spindle speeds and feeds than conventional spade drills.

He also added that SV-Point spade drill inserts offer exceptional performance in a wide range of applications and materials including steel, stainless steel and cast iron.

Some of the features of these new spade drill inserts are H-coating for high heat and wear resistance, sinusoidal thinning edge for smooth cutting



and improved centering, positive rake angle for improved hole finish and low thrust force which is an excellent option for underpowered machines.

They come in three material options: Super Cobalt (T15) for improved tool life and performance over

standard HSS inserts – size range: 9.5mm to 114.3mm. Premium Cobalt (M48) which offers extended tool life over T15 in harder materials – size range: 9.5mm to 114.3mm. The third option is Carbide C5 (P40) for longer tool life and faster speeds and feeds in rigid setups – size range: 9.5mm to 47.6mm

Performance Vertical Machining Center —Milltronics

Milltronics USA has introduced the new VM8434XP to its performance vertical machining center (VMC) prod-

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New Products

uct line-up. The Milltronics XP Series CNC machines are #50 taper VMCs designed for applications that need extra cutting power. The VM8434XP is built with linear cross roller guides for rigidity, direct-coupled ball screws for faster response and a dual-wound spindle motor for faster acceleration/ deceleration and more torque. With 35 HP for maximum metal removal, the VM8434XP also includes a heavy-duty belt driven, 8,000 RPM spindle that generates 365 ft-lbs. of torque with a maximum cutting feedrate of 500 IPM.

Features such as a coolant ring and washdown system, lift-up chip conveyor, and height adjustment on the control are standard on XP Series



machines. The VM8434XP is now the largest Milltronics XP Series machine with 84" x 34" x 30" travels and an 86" x 34" table.

Milltronics XP Series machines are

equipped with the 9000 Series control that includes 120 GB disk storage, 4 GB memory, improved graphic performance, mid-travel tactile keys and a 15" LCD touchscreen.

The 9000 Series control also supports the optional ChipBoss feature that uses proprietary algorithms to calculate toolpaths and control maximum allowable cutter engagement. ChipBoss allows to use the whole length of a tool rather than just the tip, which means profiles can be cut at full depth rather than taking multiple depth passes.



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New Products

New Generation of Compact Turning Centers with Y-Axis

—Doosan

Doosan Machine Tools offers its Lynx 2100LY Series of compact turning centers with Y-axis. “This generation of Lynx line comes fully loaded with features that are typically optional, including a variety of toolholders (both static and live tools), a toolsetter, a parts catcher and a parts conveyor. Built to deliver high value to shops of all sizes, the Lynx 2100LY is designed and equipped for high productivity,” said a company spokesperson.



While incorporating a 20 HP spindle that rotates at 4,500 RPM along with a larger turning capacity, the Lynx 2100LY maintains the same compact footprint as previous models. The additional Y-axis and optional sub-spindle

make machining of parts with diverse and complex shapes faster and easier with one set-up.

Other standard features include: a 12-station servo-driven BMT tool turret with a half index feature (24 positions), Easy Operation Package (EOP) software and a CNC tail-stock.

The Lynx 2100LY Series is designed with a rigid bed structure and incorporates roller type LM guides for all axes. It is available in both a 6” and 8” chuck size to accommodate a maximum turning diameter of 11.8” and a maximum turning length of 20”.

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New Products

Next Generation RSF Kit Angle Encoder for Motion Feedback

—Heidenhain

RSF Elektronik is now offering a next generation kit angle encoder for motion feedback best suited for applications in robotics, semiconductor, medical and machine tool. Offered through parent company Heidenhain Corporation in North America, this new encoder is available in both absolute (MCR 15) and incremental (MSR 15) versions. Both models consist of an optical scanning unit and a separate full circle drum with the graduation on the outer diameter.

The new absolute MCR 15 and incremental MSR 15 encoders are available in several sizes of drums, from an inside diameter of 40mm up to 330mm. The drums come with accuracies starting at 20 arc seconds with up to 10 arc second, depending upon diameter. Resolutions are also diameter-based and range from 22 to 25 bits for the absolute versions. The resolutions of the incremental versions start at 4,740 lines per 360 degrees all the way up to 27,540.

Maximum revolutions per minute on the large diameter is 870, and the smallest diameter can be spun up to 12,200 times per minute.

Both the MCR and MSR 15 scan-

ning units come with a colored status LED that indicates the operating and mounting condition. Interfaces available include the analog 1 Volt peak to peak, digital TTL with up to x200 interpolation, and for the absolute encoders, ENDAT, Fanuc, Yaskawa, Mitsubishi and Panasonic. The scanning units can withstand a larger operating temperature specification as well, from -10 °C up to 70 °C.



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New Products

SMART wire Technology for AgieCharmilles CUT P Series

—GF Machining Solutions

GF Machining Solutions showcased the latest innovations in electrical discharge machining (EDM) at its booth at EMO Hannover 2019, including SMART wire which leverages radio frequency identification (RFID) technology for Industry



4.0-level process control.

Thanks to SMART wire's monitoring capabilities, the machine operator always knows how much wire is available for the current job. The moment a spool of SMART wire is installed, the CUT P machine recognizes the available length of wire and provides the operator with peace of mind that there will be enough wire on the spool to complete cutting operations without interruptions.

At the same time, wire traceability is enhanced with SMART wire's ability to provide information such as date of manufacture, type, lot and expiration date, which is transmitted via RFID to the machine report.

GF Machining Solutions customer services offers a wide range of SMART wires to help optimize machine performance and improve process continuity and traceability.

Dynamic Production Machine with Small Footprint —DMG MORI

As the successor of the MILLTAP 700 (with more than 3,000 machines installed), the DMP 70, by DMG MORI, is designed to offer maximum productivity in the smallest space. With a footprint of 46.28 sq. ft., it is 10% smaller than the MILLTAP 700. Travel paths of 27" x 16" x 15" and the

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DMP 70 is an extremely rigid production machine, with a metal removal rate that is 10% higher than the MILLTAP 700. The grey cast iron machine bed and enlarged 1.3 in linear guideways are the basis for the 30% faster machining times on demanding workpieces. Additional machining stability has been achieved through the high-strength spindle.

DMG MORI has improved thermal stability with an optimized cooling concept and increased the long-term accuracy of the DMP 70. Direct absolute scale feedback systems provide high levels of positioning accuracy.

With reengineered high accuracy components, the DMP 70 has a 60% increased accuracy over its predecessor. With rapid traverse rates of 60 m/min and an acceleration of up to 2 G in each axis, the DMP 70 offers high speed and acceleration. In its standard version, the DMP 70 is equipped with an inline spindle with a speed of 10,000 RPM and 78 Nm torque. It has fast tool change and chip-to-chip times of 1.5 seconds.

The DMP 70 utilizes DMG MORI's SLIMline multi-touch control with Siemens Operate 4.8. The 19" high-resolution display allows 3D machine simulation to be incorporated into the production process.



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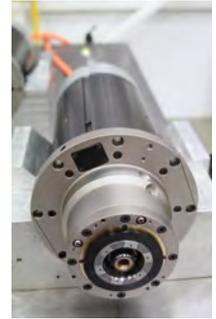
lution that can handle both roughing and finishing operations and is equally effective in all material types, from steel to cast iron and stainless steels to superalloys.

e-SPINDLE That Monitors Cutting Processes in Real Time-PCI SCEMM

Absolute Machine Tools partner PCI SCEMM (a Tongtai company) recently introduced the e-SPINDLE at EMO 2019, a new electro-spindle that integrates sensors and actuators to monitor cutting processes and adjust parameters to optimize tool life and workpiece quality.

At the show PCI presented three e-SPINDLE applications that showcased smart machining technology.

One toolholder demonstration highlighted real-time monitoring of cutting process variables including force, vibration, and coolant pressure. An adaptive drilling application illustrated the benefits of ongoing vibration control. And a honing toolholder operation featured integrated measurement of workpiece diameter



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to permit continual control of abrasive honing tooling.

PCI developed e-SPINDLE technology in France in collaboration with the Technical Centre for Mechanical Industry (Cetim) and the Aix-en-Provence campus of the French Arts et Métiers engineering and research graduate school.

Absolute Machine Tools president Steve Ortnier said, “e-SPINDLE technology from PCI is another way Absolute Machine Tools enables its customers to participate fully in smart manufacturing, the IIoT, and Industry 4.0.”

High-Quality Equipment Package for Improved Productivity —DMG MORI

With the new DMC 90 U duoBLOCK, DMG MORI has developed a package machine that unites all the proven benefits of the duoBLOCK design, high-quality equipment and an attractive price. The strengths of 5-axis simultaneous machining with pallet changer come into play in particular in the fields of die and mold, general mechanical engineering and tool manufacturing.

Like all machines of the duoBLOCK series, the DMC 90 U duoB-

LOCK combines maximum stability and excellent performance. The sturdy design and well thought out cooling system ensure high long-term accuracy. Optionally, an inside cooling with 80 bar and temperature control are available. With 20,000 rpm, 130 Nm and 35 kW, the powerful speed-MASTER spindle guarantees high-performance machining. As is the case for all spindles in the MASTER series, it has a 36-month warranty with unlimited hours.

The work area of the DMC 90 U duoBLOCK provides sufficient space for workpieces with a diameter up to 900 x 1,450 mm. The maximum workpiece weight is 1,500 kg. The tool



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Shawn Arnold
Publisher
October 1, 2018

New Products

magazine is designed for 60 tools – up to 180 pockets are optionally available – and minimizes the setup time in day-to-day production. Furthermore, the optimally accessible pallet changer enables parallel setup, with which users can significantly increase productivity.

The DMC 90 U duoBLOCK is equipped as standard with the intuitive control and operating system CELOS and SIEMENS 840D solutionline, which enables easy integration into the increasingly digital production. Alternatively, DMG MORI also has a HEIDENHAIN TNC 640 on offer. The DMG MORI IoTconnector is included in the range of features for optimum digital integration. The sensor package i4.0 ensures improved accuracy and increased process reliability. DMG MORI technology cycles such as the 3D quickSET or the maintenance package I4.0 round off the offer.

this design improves rigidity and increases cutting performance. Shanks are available in common standard and metric sizes.

New Software Broadens DRO Use To Include EDM Machines —ACU-RITE

Heidenhain Corporation's ACU-RITE brand introduces new software for its versatile 300 Series digital readout (DRO) that now allows users to control a sinker EDM machine. This new development broadens this estab-



lished DRO's use to include all of the most common manual shop machines such as milling, turning, grinding and now EDM in a single DRO.

When ACU-RITE's new EDM software is loaded into a DRO300 and coupled with an IOB 610 interface box, it enables the simple control of sinker EDM through the use of three relay signals. This software is now included on all new multipurpose DRO300s. For those who already own an ACU-RITE DRO300, v1.3.1 can be downloaded for free on the Software Updates page of www.acu-rite.com.

Thinbit® Heavy Duty Round Reversible Toolholders —Kaiser Tool Company

THINBIT®, manufactured by Kaiser Tool Company Inc., introduces



a new toolholder option that takes advantage of the full line of inserts for grooving, threading, face grooving and custom applications. The heavy duty round reversible toolholder presets an insert parallel to the centerline of the shank and can be used as either right or left hand. Compatible with CNC, Swiss and conventional machines,

J350G Jig Grinder — Mitsui Seiki

The Mitsui Seiki J350G jig grinder offers a combination of application flexibility, accuracy, and operator-friendly operation. The company reports the machine's grinding infeed stroke is the largest available among competing machines, with a

New Products



U-axis range of -3mm to +50mm relative to the spindle center. This provides the flexibility to grind small and large diameter holes, as well as multiple features, using a single wheel in a continuous, automatic mode.

To maximize accuracy, the X- and Y-axes of J350G are hand scraped and incorporate needle roller bearings. The machine bed consists of a thick, highly rigid casting supported by three level points, assuring consistent perpendicularity and parallelism. Built-in, custom-designed Heidenhain scales contribute to +/- 0.0007mm accuracy on the X-, Y- and Z-axes.

Table longitudinal travel (X axis) is 500mm, transverse travel (Y-axis) is 300mm, and quill travel (Z-axis) is 100mm. Maximum distance from the table surface to the grinding spindle nose is 450mm. The machine's work surface is 700mm x 350mm and permissible table load is 300kg.

Table and saddle maximum rapid feed rates are 2,000 mm/min and grinding feed rates are variable from 0.1mm/min to 2,000 mm/min. The standard high-frequency spindle motor operates from 9,000 rpm – 45,000 rpm. A variety of spindle motor options include an air-turbine motor with 75,000 rpm capability.

The machine's 3m² (2,220mm x 2,610mm) footprint is 50 percent smaller than that of the previous model, maximizing floor space efficiency.

The J350G's Fanuc 31i-B control has a 15" touch panel LCD screen and

is preloaded with G-MAPS conversational-style programming software. The control also permits easy manual programming via graphic icons, data entry, or conventional methods.

QUINDEX 5th Axis Indexing System —Index Designs

For 5-sided machining applications, Index Designs introduces the "QUINDEX" 5th-axis indexing system. The patent pending QUINDEX system is designed to quickly bolt to any existing 4th-axis rotary table, allowing cutting tools to access 5 sides of a part, all in one set-up.

Index Designs reports the QUINDEX drastically reduces part handling, and the number of setups while improving part accuracy and substantially increasing profit margins. The company also states with a QUINDEX you don't need a 5th axis capable machine, just mount the QUINDEX to a 4th-axis rotary table and connect standard shop air. A 90-degree index is triggered by

an M-code written within the program of your CNC machine. The simple design utilizes a powerful rotary actuator that drives the 6.75" diameter spindle up against hard stops for super accurate positioning with 5 arc-seconds of repeatability and a pneumatic brake plate provides up to 250 ft./lbs. of holding torque to absorb heavy cuts.

Don't have an existing 4th-axis to bolt the QUINDEX on to? No, problem. Index Designs can provide you with a complete package for your machine. The total package includes the VH-6, 4th axis rotary table, the Quindex air driven head including outboard support and air lines. All components are aligned and mounted on a subplate and can come as a true 4th axis or as a semi 4th axis when paired with the Index Designs programmable control box that can be activated automatically by a simple M-code. Index Design reports their 4th and 5th axis QUINDEX packages give you the flexibility to run the 4th-axis all by itself as a true or semi 4th axis or in a matter of minutes you can bolt on the QUINDEX for 5-sided machining.

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...Hotline Continued From Page 8

Brentwood-based GPI Cos. Purchased a Manufacturing Building in El Segundo, CA. for \$84 Million.

The 200,000-square-foot property, at 2031 E. Mariposa Ave., is leased by a research and design arm of Mattel Inc.

"El Segundo has become one of the go-to markets for firms looking for large, open-office environments," Drew Planting, a managing principal at GPI, said in a statement.

The Mariposa property opened in the 1940s as an aircraft fabrication manufacturing facility – it is one of several buildings in the area with aerospace ties that have sold recently.

NASA's Mars 2020 Comes Full Circle

Engineers took NASA's Mars 2020 for a spin on Aug. 29, 2019. The 2,300-pound (1,040-kilogram) Martian vehicle was rotated clockwise and counterclockwise at about 1 revolution per minute on what is called a spin table in the clean room of the Spacecraft Assembly Facility at NASA's Jet Propulsion Laboratory in Pasadena, California. The engineers were looking for the rover's center of gravity, or the point at which weight is evenly dispersed on all sides.

Establishing the rover's center of gravity is a key part of the assembly process and helps ensure that the spacecraft travels smoothly from launch to entry, descent and landing on Mars as calculated. Engineers can add weights in order to help balance out the vehicle. In the end, they affixed nine tungsten weights totaling 44 pounds (20 kilograms) to the rover chassis at predetermined attachment points to get the center of gravity just right.

JPL is building and will manage operations of the Mars 2020 rover for NASA. The rover will launch on a United Launch Alliance Atlas V rocket in July 2020 from Space Launch Complex 41 at Cape Canaveral. NASA's Launch Services Program, based at the agency's Kennedy Space Center in Florida, is responsible for launch management.

When the rover lands at Jezero Crater on Feb. 18, 2021, it will be the first spacecraft in the history of planetary exploration with the ability to accurately retarget its point of touchdown during the landing sequence.

Oregon Company Passes Regulatory Milestone

Arcimoto has completed federal safety testing on its three-wheeled electric Fun Utility Vehicle, the Eugene, Oregon company said recently, a prerequisite to beginning regular line production.

Arcimoto didn't set a timetable for deliveries, but declared "the Summer of FUV is finally here," and told customers and followers to "stay tuned for our official production and delivery announcement."

In February, 100 people quickly put down \$5,000 nonrefundable deposits on Arcimoto's first retail production model, the \$19,900 Evergreen Edition Fun Utility Vehicle. Regulatory compliance testing stretched the delivery date past a June target, but CEO Mark Frohnmayer said a few weeks ago that the company was building up inventory in the meantime, and anticipated sending out vehicles before the end of the third quarter – Sept. 30.

Frohnmayer said Arcimoto hopes to produce around 100 vehicles a month over the next several months. As of June 30, the company had 4,128 FUV pre-orders with \$100 refundable deposits, up from 3,217 as of the end of last year.

Boeing Awarded \$2.6 Billion for Fifth KC-46A Tanker Production Lot

The U.S. Air Force recently awarded Boeing a \$2.6 billion contract for 15 KC-46A tanker aircraft, spares, support equipment, spare engines and wing air refueling pod kits. With this fifth production lot, Boeing now is on contract for 67 KC-46 tankers.

Boeing received its first two production lots, for 7 and 12 aircraft, in August 2016. The third lot, for 15 aircraft, was awarded in January 2017; the fourth lot for 18 aircraft in September 2018.

Boeing plans to build 179 of the 767-based refueling aircraft for the Air Force to replace its legacy tanker fleet. The company delivered the first tankers to the Air Force in January 2019.

Boeing is assembling KC-46 aircraft at its Everett, Wash., facility and recently started production of the first KC-46 for Japan.

Continued on page 98.....

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...Hotline Continued From Page 96

Colorado Based Bye Aerospace Will Sell Two Dozen All-Electric Airplanes to a Los Angeles-Based Air Taxi Operator

The purchase-deposit agreement lines up Quantum Air to receive 22 four-place eFlyer 4 models and two of Bye Aerospace's two-place eFlyer 2 aircraft, the companies said in a news release.

Scott Akina, Quantum's vice president and chief pilot, predicted that Quantum's mission to electrify aviation "will ignite urban and regional mobility. Electric aircraft are safer, quieter, and more efficient than legacy aircraft, and they are more fun, more comfortable, and do not pollute."

The Quantum purchase announcement also noted the signing of "a comprehensive agreement that includes two future advanced aircraft under development from Bye Aerospace."

Investor to Pump Millions into Phoenix Semi-Truck Maker

A European industrial giant will invest \$250 million in Phoenix-based Nikola Motor Co. as part of a larger strategic partnership to accelerate adoption of fuel-cell technology.

London-based CNH Industrial will lead Nikola's Series D round with its multi-million-dollar investment, the companies announced. Also part of the funding deal is a partnership to spur adoption of Nikola's hydrogen-electric technology throughout North America and Europe.

Nikola, which intends to build a \$1 billion factory southeast of Phoenix in Coolidge, will work with a pair of CNH Industrial brands – Iveco and FPT Industrial – to industrialize its hydrogen-electric semi-trucks. FPT Industrial has been at the forefront of alternative propulsion solutions for more than two decades, having produced more than 40,000 natural gas-powered engines to date.

Raytheon Contract in Fullerton, CA.

Raytheon Integrated Defense Systems, Fullerton, California, was awarded a modification (P00005) to contract W31P4Q-19-C-0018 for the procurement of seven enhanced sentinel A3 radars and associated spares in support of the European Deterrence Initiative and future initial maneuver-short range air defense battalions. Work will be performed in Fullerton, California, with an estimated completion date of Aug. 31, 2021.

Insitu Gets Work for Washington and California

Insitu Inc., Bingen, Washington, has been awarded a contract that procures product and hardware support required to provide rapid response to fielded unmanned aerial systems, unmanned air vehicles and operational personnel. Work will be performed in Bingen, Washington (90%); and China Lake, California (10 %), and is expected to be completed in September 2024.

USCG Awards San Diego Company \$83M Contract for MH-60 Work

A San Diego-based company has been awarded an \$83 million contract to perform modifications and repairs to the U.S. Coast Guard's fleet of MH-60 helicopters.

The \$83 million contract was awarded to Affordable Engineering Services Inc. by the U.S. Department of Homeland Security, on behalf of the Coast Guard's Aviation Logistics Center, which is based in Elizabeth City. The ALC is charged with performing and overseeing depot level maintenance on all Coast Guard aircraft, among other aircraft logistics related responsibilities.

The award was announced Sept. 3 in a news release from Affordable Engineering Services and posted at the LinkedIn account of the company's president, Bob Simek.

According to the release, Affordable Engineering will perform depot level maintenance on the Coast Guard's MH-60T helicopters. The work will include aircraft induction, modifications, repairs and the support of flight tests, the release states.

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5th Axis.....10	Hexagon Metrology83	Pro Business Variations.....89
Acu-Rite Co. BackCover	Howards Machinery.....72	Productive Robotics.....11
Advanced Measurement	HS&S.....88	Q-Mark Mfg Inc.....89
Machines75,81	Hurco.....97	QPlus.....91
All AmericanSls&Serv.....1	Index Design CNC.....70	QuickTurn Financial.....88
Allied Machine Engrg.....64	Industrial Surplus.....87	Refresh Your Memory.....54
Awea/Yama Seiki.....55	Iscar.....7,72	Renishaw.....37
Barton.....79	James Murphy Auction84	Rosco Precision.....97
BC Barfeeds90	Jergens.....73	Royal Products79,93
Cal Metrics.....92	Kaiser Tool Co25	R-Tec Machine.....41
Can Do Machinery.....87	KBC Tools.....92	Selway Machine Tool.....2
CG Tech.....63	KD Capital Equip93	Southwestern Industries
Chevalier40	King Machine.....75 Inside Back Cover
Clark Mfg.....71	Kitamura39	SST.....31
CME.....90	Lasers Inc.....74	Star CNC9
CNC Pros67	LK Metrology69,92	Stark Precision86
CNC Solutions.....39,97	Lyndex Nikken.....78	Starrag.....19
D & R Machinery97	Machinery Sales39,97	Sulli Tool90
DIL.....88	Makino.....31	Takisawa Taiwan.....41
Doosan Infracore.....21	Mastercam/CNC SoftSware ..6	TechMet.....68
Dynatect82	Mazak.....13	Thinbit.....25
Ellison Technologies.....21	MCT.....76	Toyoda.....53
Engineered Product Sls.....82	Methods MachineTIs.....5	TQS.....75
Factory Wiz.....54	Mini Mover.....91	Tsugrami/Rem Sales99
Fadal Engineering59	Mitee Bite.....96	US Shop Tools
Fadalcnc.com67	Nikon Metrology.....6614,15,46,47,56,57,72
Fagor..... Inside Front Cover	NuTechMachinery.....88	Vac U Lok88,89
Femco.....16	Nyman Machinery93	Valley Financial.....87
Foothills Machinery.....97	OGP.....65	Webb Prec Mach77
Freedom Machine.....1	Pacific Machine&Engrg91	WesternMetrolgy Sls75
Gen Swiss30	Pacific Swiss & Mfg.....83	Whipple Enterprises91
Goodway/Yama Seiki33	PerformanceMachTIs41	Yama Seiki.....33,55
Gosiger18	Pierson Workholding12	YCM.....61
Hainbuch45	Platinum Tooling86	YG-1 Tool.....29
Hanwha32	PM Machinery.....80	Zeiss Industrial Quality
Heidenhain..... Back Cover	Precision Tool75	Solutions.....17,75

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