

# CNC WEST

Volume 36 - Issue 6

**THE MAGAZINE FOR WESTERN METAL WORKING MANUFACTURING**

## EDM & IMTS PREVIEW



- **BLACKOUT DEFENSE - TARGETING PRECISION THROUGH TECHNOLOGY**
  - **ASTRO MACHINE TAKES OFF WITH ROBOCUT EDM'S**
  - **DKW PRECISION MACHINING USES SURFCAM TO CUT MACHINING TIME**
- ...Plus Much Much More**

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## Fadal 4020B-II/APC Pallet Changer

Fadal will be introducing their new VMC 4020B-II/APC machine at the IMTS show in September in Chicago.

This machine is a side shuttle system with 39" X 19" cast iron pallets.

Please stop by the Fadal booth #338374.



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# Planning for IMTS?



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# CNC West

August/September 2018 • Volume XXXVI No 6

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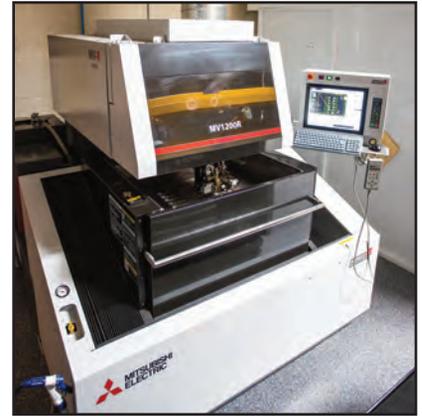
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**Coming in Oct/Nov 2018**  
**Cutting Tools & Workholding** —  
 Looking for innovative developments offering better, faster, more accurate cutting tools and material? This is the issue to search. Also look here for workholding, fixtures, sensors and tool management ideas.

*Editorial: Sept. 20, 2018*  
*Ad Space: Sept. 26, 2018*  
*Ad Material Oct. 2, 2018*



**VOL. XXXVI NO.6**

**August/Sept. 2018**

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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# IMTS is the Place to be in September

If you are in the west and have never been to an IMTS show in Chicago and are in this industry plan on going sometime in your life. It is an every other year event that would be totally worth your while. WESTEC is the big cheese in the west but in all honesty it pales in comparison to IMTS. And that is not a slight to WESTEC which is a fine machine tool show in its own right. It's just that it is not IMTS which has 1.3 million square feet of exhibit space. To see it properly and visit lots of booths and attend the seminars available it would take at least two days to see everything there. CNC WEST will be there for all five days, learning more technology, so we can be on top of things and be able to bring you the latest information to help your shop. We have over 30 pages in this issue dedicated to the show. Happy and proud to say this is our biggest issue of the year.

In addition to all the IMTS information in this issue there are three case studies on western region shops. The cover story is about an Arizona shop which has added EDM to its line up of machines to insure the sky and beyond is the limit for Astro Machine.

Another shop in California has found that their Robocut EDM has let them achieve things that they could not do before while our third feature is about a shop in Northern California.

There is also an interesting interview from Tim Paul on what the ex president of Autodesk is doing now along with numerous one page articles on things relevant to manufacturing in the west. I hope you enjoy reading it and please don't forget while you are reading all the great stories to check out the ads from all the companies that keep CNC WEST in business and insure we can send you the magazine for free every other month.

Sincerely  
Shawn Arnold

Publisher



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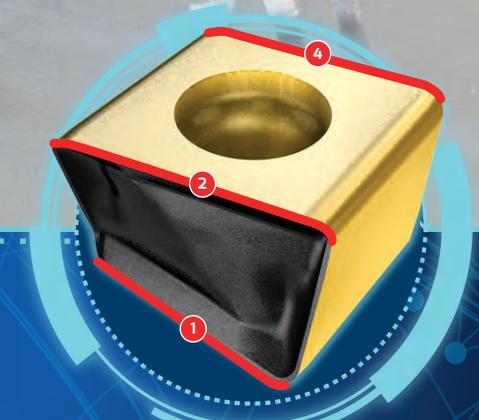
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## **Kratos Gets Target Drone Work**

Kratos Defense & Security Solutions Inc. announced on July 19 that it received a U.S. Air Force contract covering three lots of its BQM-167A high-performance, jet-powered unmanned aerial target drone systems.

The contract consists of a base year and two option years, with a maximum value of \$109 million. The deal includes contractor logistics support.

Fiscal year 2018 procurement funds of \$27 million are being initially obligated for 30 target drones and production support, Kratos said in its announcement.

San Diego-based Kratos produces its target drones in the Sacramento area.

## **Teal Group Predicts Worldwide Civil Drone Production Will Soar Over the Next Decade**

Civil Unmanned Aerial Systems (UAS) are attracting record levels of venture capital and promise to be the most dynamic growth sector of the world aerospace industry this decade, reports Teal Group.

"The groundwork is being laid for explosive growth in the civil UAS market," said Philip Finnegan, Teal Group's director of corporate analysis and author of the study. "The prospect for strong growth as airspace opens is attracting record levels of investment and the involvement of technology giants. New hardware, software and services are enabling businesses to begin to incorporate unmanned systems in their operations."

Teal Group's 2018 World Civil UAS Market Profile and Forecast projects that non-military UAS production will total \$88.3 billion in the next decade, soaring from \$4.4 billion worldwide in 2018 to \$13.1 billion in 2027, a 12.9% compound annual growth rate. The forecast includes commercial, consumer and civil government systems. Teal Group, provides support for the FAA in the preparation of its commercial UAS forecast.

Firms in traditional aerospace, data analysis, semiconductors, telecommunications are all driving aggressively into the civil market. Technology companies like Intel, Qual-

comm, Microsoft, Apple as well as venture capitalists have poured more than \$500 million into startup investments in 2017.

## **Raytheon Producing and Delivering 44 Standard Missile-3 Rounds Under \$466 Million Contract**

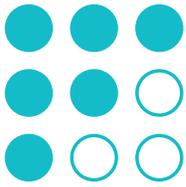
Raytheon Company will produce, test and deliver 44 Standard Missile-3 Block IB interceptors under a \$466.9 million U.S. Missile Defense Agency contract. This is the fiscal year 2018 contract under the initial 2015 contract announcement of \$2,351,177,872 for planned SM-3 fiscal year 2015-2018 production.

The U.S. Navy uses the missiles to provide regional defense against short- to intermediate-range ballistic missiles.

## **CMTC Expands its "California's Manufacturing Network" Resources to Serve More Small and Medium-Sized Manufacturers**

California Manufacturing Technology Consulting (CMTC) is expanding its "California's Manufacturing Network" to serve more manufacturers in California. The Network is a collaboration of manufacturing-focused partners aimed at delivering a broad range of technical assistance to Small and Medium-Sized Manufacturers (SMMs) in both urban and rural areas statewide. The Network's mission is to generate a positive financial impact for manufacturers and the California economy. To serve more manufacturers, Kristina Chavez Wyatt has been added to the CMTC team as a client associate to serve SMMs located in the central coast region of California between Monterey and Santa Cruz. The region is home to numerous manufacturing sectors including; computer, electronics and food and beverage. Kristina's primary focus will be to consult with SMMs in the region and assist them by providing the full range of services and programs offered by CMTC.

**Continued on page 120.....**



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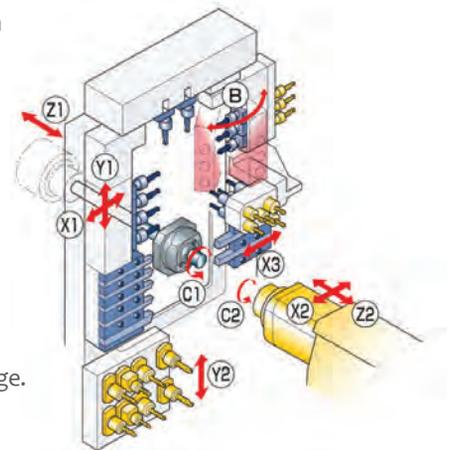
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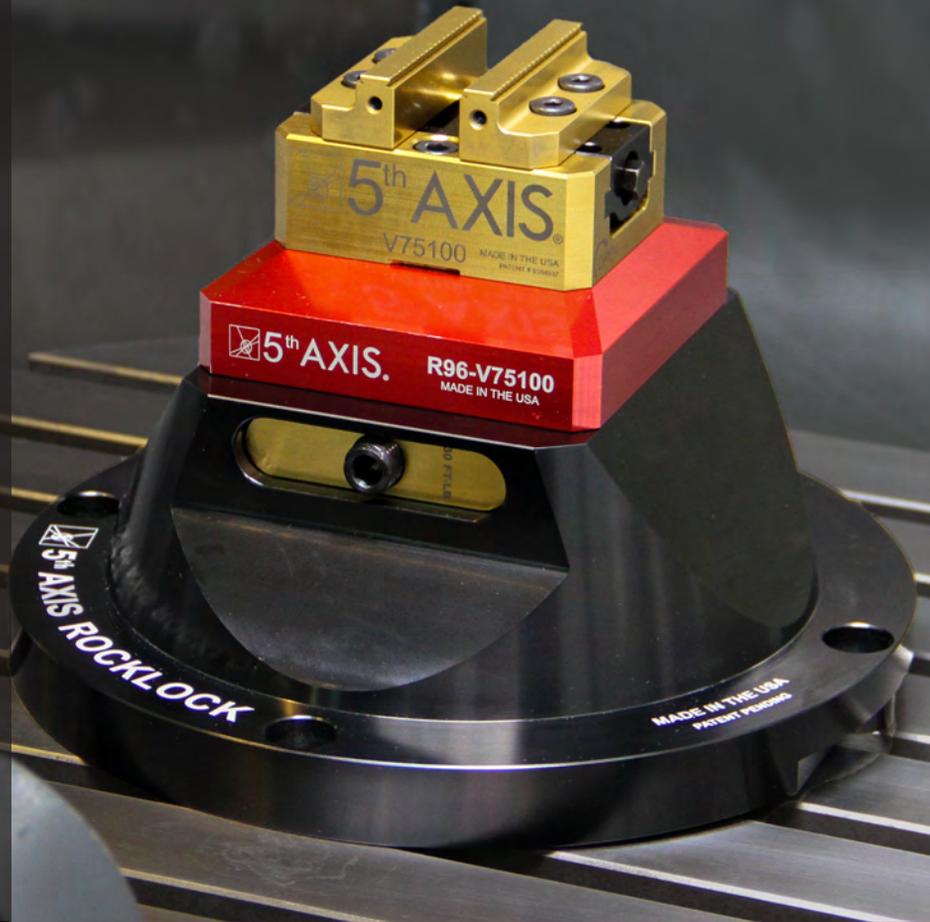
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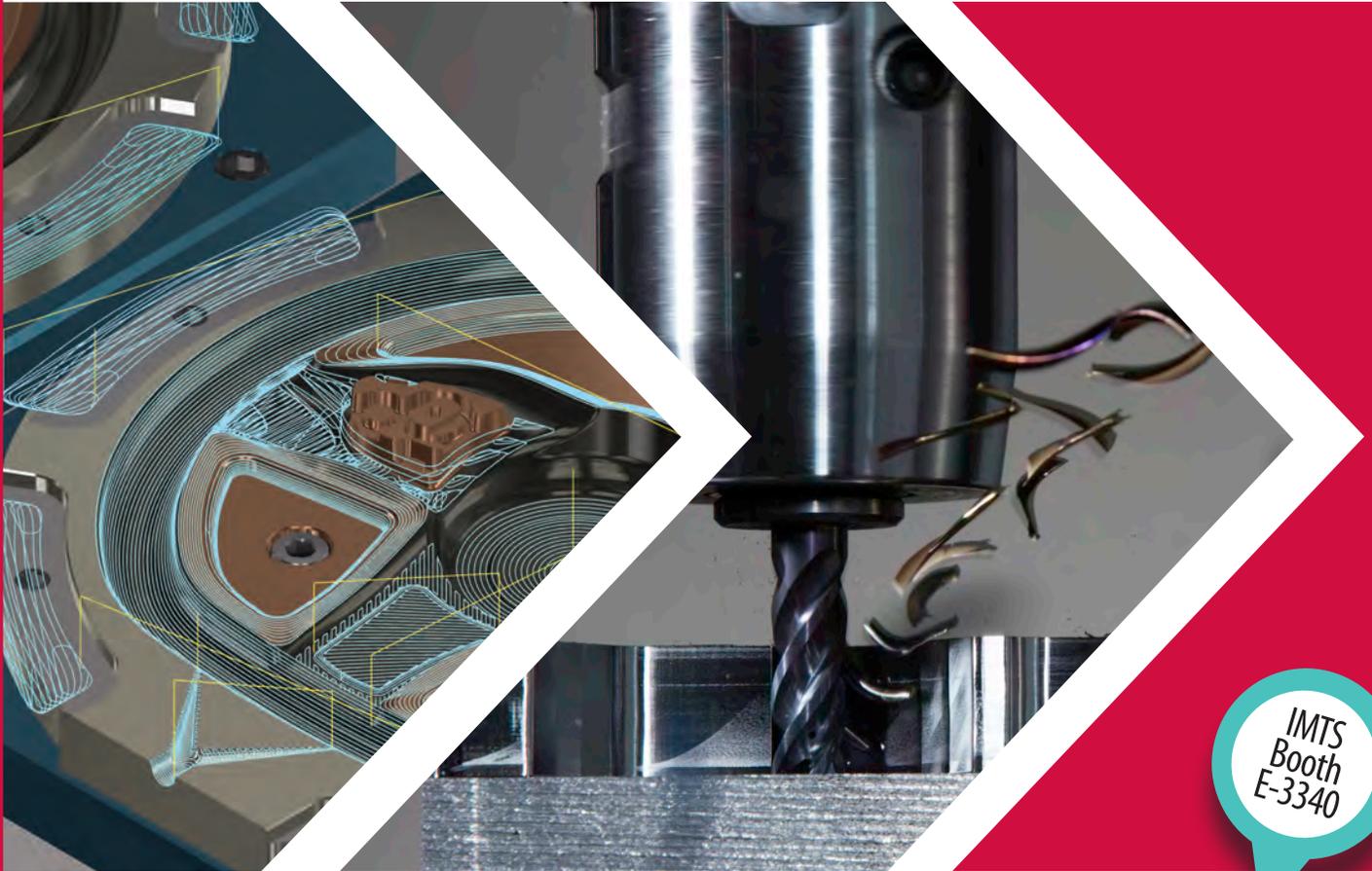
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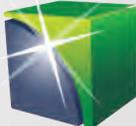


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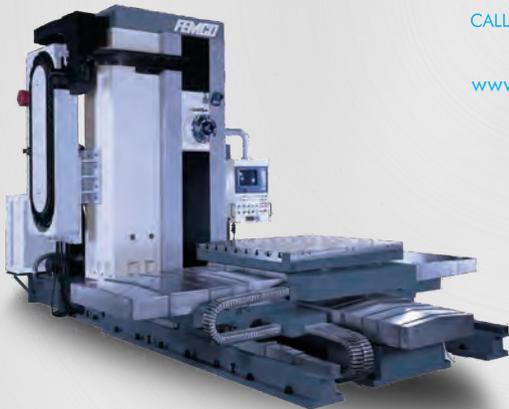


  
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Chuck Model	Chuck Dia	Part Number	Price Per Set	Part Number	Price Per Set
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B208, HS08	8"	KT-80HJ2-U	\$294.53	KT-80HJ2-X	\$312.71
B210, HS10	10"	KT-100HJ2-U	\$336.60	KT-100HJ2-X	\$370.44
B-12	12"	KT-120HJ2-U	\$391.99	KT-120HJ2-X	\$415.42
B-212, HS12	12"	KT-128HJ2-U	\$390.92	KT-128HJ2-X	\$416.29
B-15	15"	KT-150HJ2-U	\$504.90	KT-150HJ2-X	\$554.85

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						KT-6400F	\$ 95.71	RKT-6400A	\$ 118.88
Kit B208 HS08	8"	0.551	12MM	0.984	2"	KT-8200F	\$ 40.70	RKT-8200A	\$ 85.36
						KT-8400F	\$ 61.00	RKT-8400A	\$ 159.83
Kit B210 HS10, N210	10"	0.630	12MM	1.181	2"	KT-10200F	\$ 45.84	RKT-10200A	\$ 126.28
						KT-10400F	\$ 76.14	RKT-10400A	\$ 193.60
Kit B12 HS12	12"	0.709	14MM	1.181	2"	KT-12200F	\$ 72.00	RKT-12200A	\$ 184.71
						KT-12300F	\$ 107.96	RKT-12300A	\$ 245.72
Kit B212 N212	12"	0.827	16MM	1.181	2"	KT-12208F	\$ 72.00	RKT-12208A	\$ 184.71
						KT-12308F	\$ 107.96	RKT-12308A	\$ 278.56

\*For Painted Soft Jaws, replace "F" with "P" & add \$4.00 (6"-10") OR \$7.00 (12" & larger) per set

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B208, N208, HS08	8"	ED-MJSK8LA	\$783.75
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HS10	10"	ED-MJSK10HA	\$783.75

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12"	4.06	2800	BI-3866-1200P	\$1,597.82	\$1,438.04
15"	5.35	2000	BI-3866-1600P	\$3,051.21	\$2,746.09

## U S Shop Tools

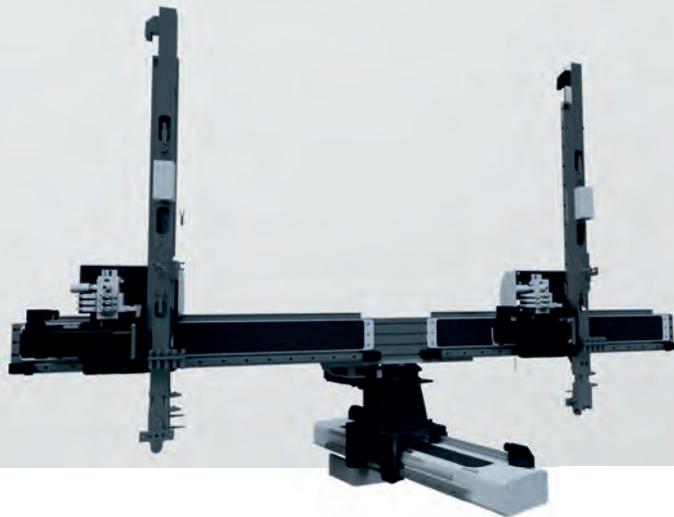
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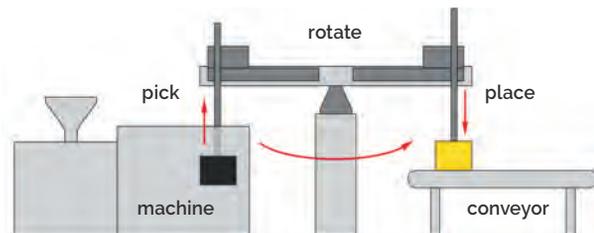
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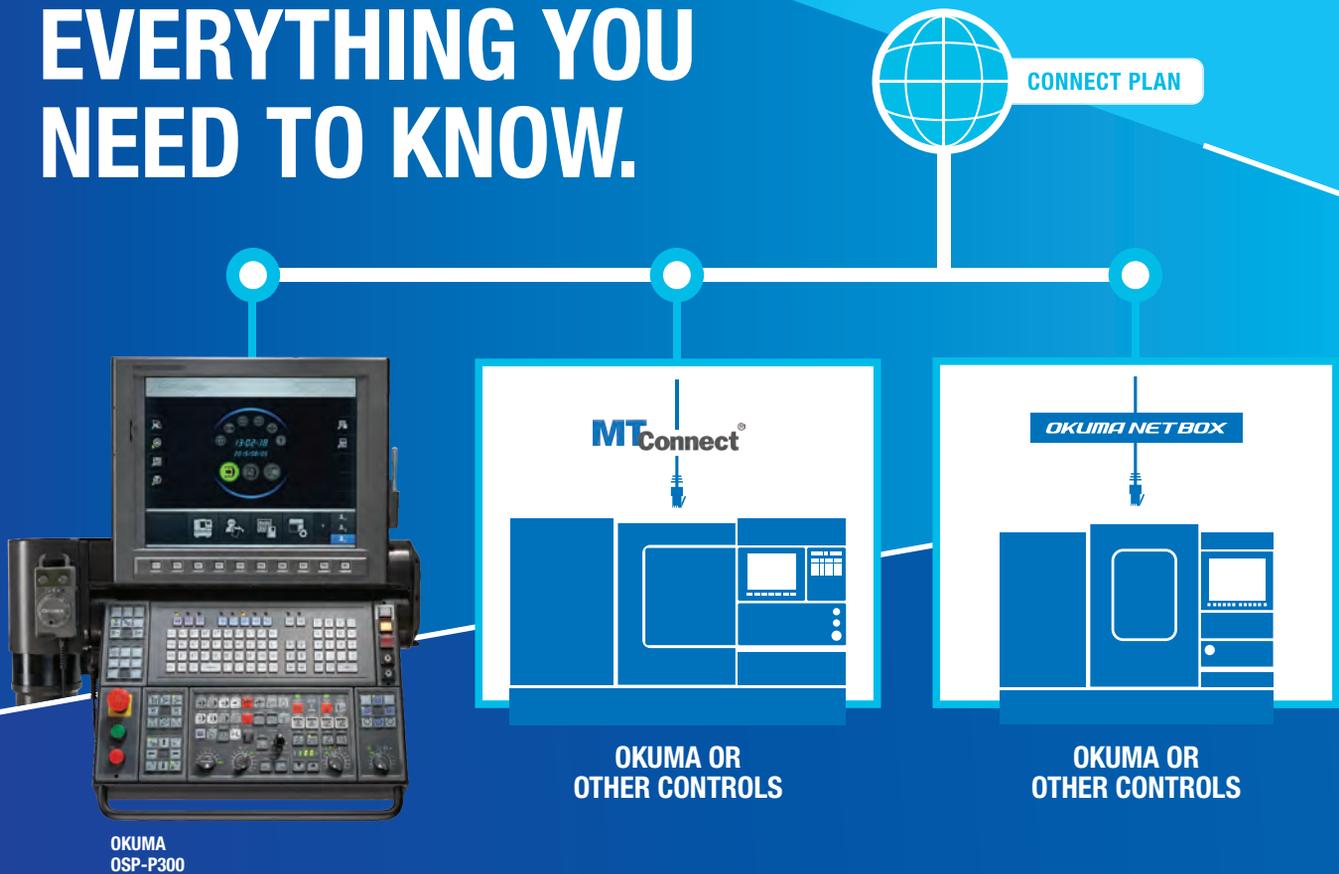
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# First Modig Universal Machining Center in Southern California Expands Capabilities for Aerospace Supplier Hydroform USA



The West Coast headquarters of Gosiger, Inc. is overseeing placement of the first HHV-2 universal machining center for bar or extrusion components from Modig Machine Tool, Sweden. Gosiger exclusively represents Modig in California.

The high-precision machine will reside in the Carson, CA facility of Hydroform USA. According to Hydroform president, Chester Jablonski, "Our one goal is to make America strong by providing direct support to the aerospace industry. To better serve our customers we continuously add new technologies, like this Modig machining center, to our 150,000 square foot facility." Their 150,000 square foot facility sits on five acres.

Hydroform USA, founded in 1982, employs lean practices to manage large build packages and carries ISO 9001:2008 and AS9100 certifications. The facility is also NADCAP certified in heat treat, age and anneal; penetrant (NDT); chem-film, alodine, anodize, paint; and resistance spot welding.

Once installation is completed, the HHV-2 machining center will be available for customer demos through Gosiger's Cypress, California West Coast Headquarters.

"We're very excited to be associated with Modig," Gosiger west region president, Brad Gecowets commented, "These products provide unique processing capabilities and unprecedented speed that revolutionize the way aerospace components are manufactured."

Gosiger will service and support Modig customers from its new West Coast headquarters located in Cypress, CA. The 17,500 square foot facility houses a staff that conducts customer demonstrations, applications assistance, customer education, maintains a spare parts inventory that utilizes an automatic retrieval system, and provides technical services.

The Modig HHV-2 accommodates aluminum and carbon fiber parts up to 60 feet long and, according to Modig, reduces cycle times by 40% to 60% compared to standard machining centers. A patented rotary chuck design controls the reference jaw through the CNC control, making it possible to clamp surfaces to a new position or already pre-joggled parts. Feed rates are 0 – 60 meters per minute.

Modig is a family-owned company founded in 1947 that specializes in manufacturing aircraft production equipment used worldwide by aircraft and aerospace companies and their major suppliers.

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# BLACKOUT

# DEFENSE

Article by Sean Buur

Photos by Sean Buur & Blackout Defense

## TARGETING PRECISION THROUGH TECHNOLOGY

When you walk into Blackout Defense, you see all the expected technology of an elite defense manufacturer. But Blackout Defense isn't making cruise missiles. They're making America's rifle.

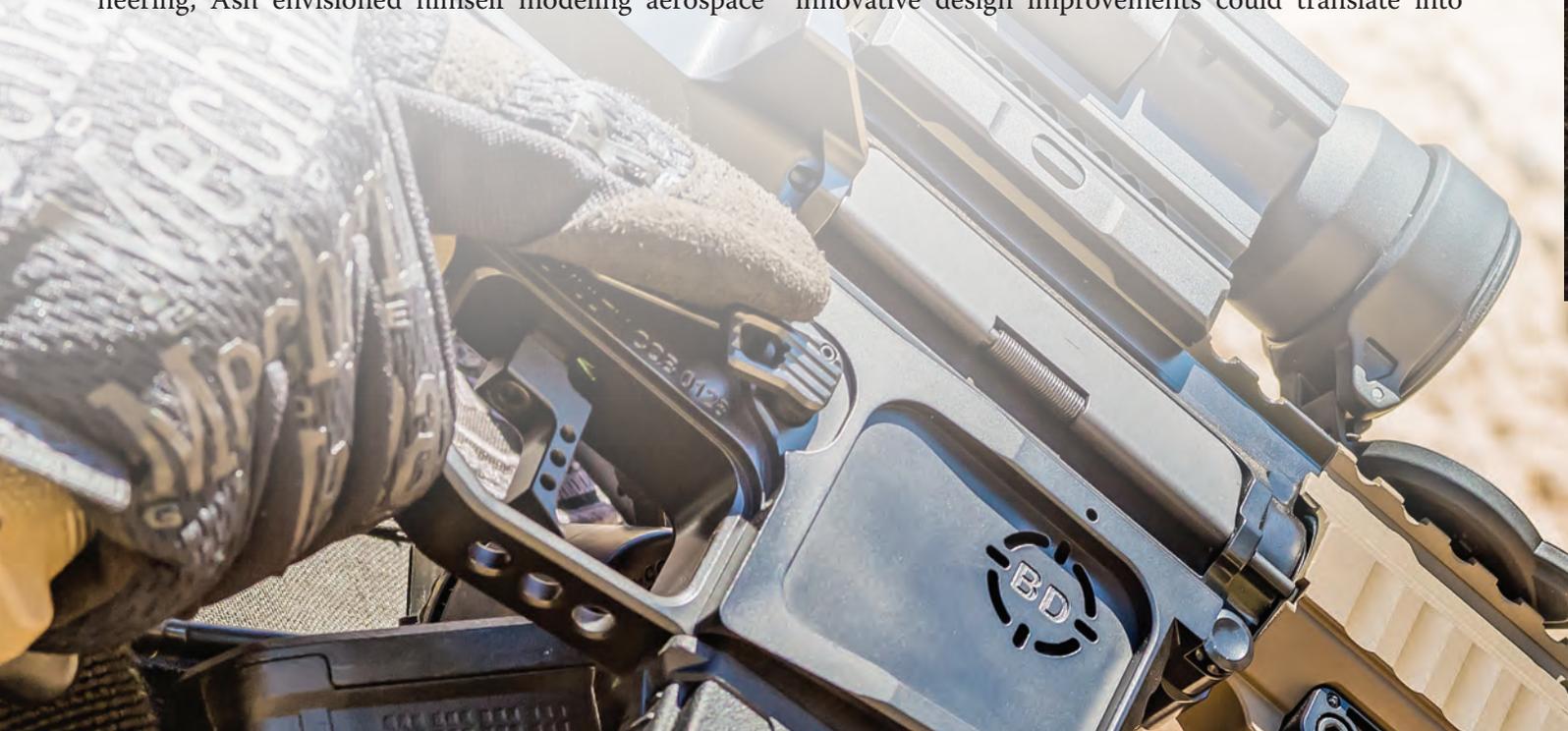
In other words, they focus on the popular AR-15 rifle. They machine the lower receiver from a block of aluminum on their DMG MORI NHX-4000 and use their Mitsubishi wire EDM to cut the magazine well. But why invest so much in automation and technology for a rifle whose design and engineering has changed little since the Cold War? "My wife asks me that all the time," cracks Ash Thompson, one of the founding investors in Blackout Defense. "But all jokes aside," he says, taking a serious tone, "we believe we could make the AR better."

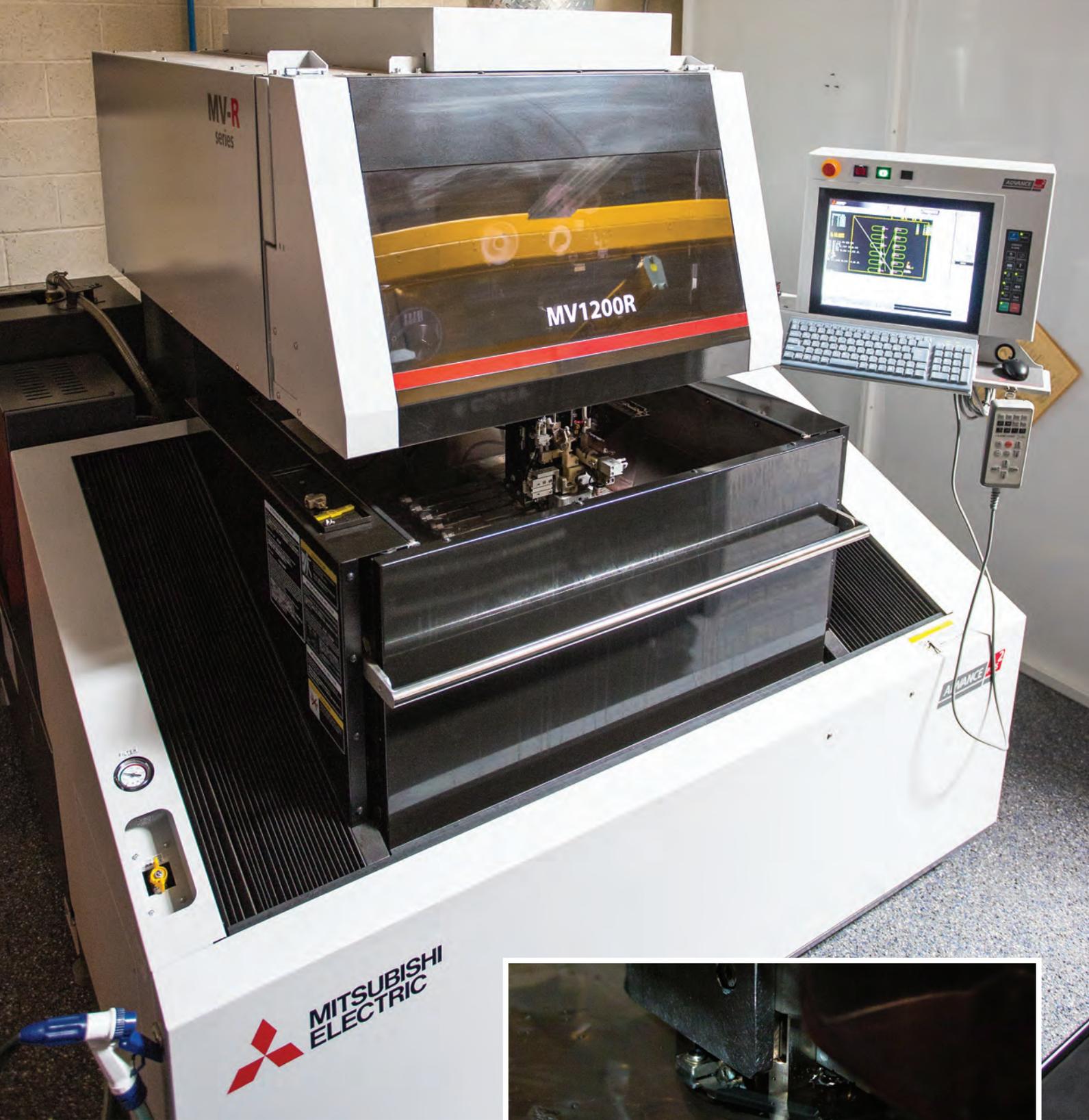
Ash Thompson was born into a military family and moved more than a dozen times before finally settling down. No matter where they were on assignment, though, he spent his summers on his grandparents' ranch. "My grandparents tried to teach me how to tend to the cows," said Ash, "but all I wanted to do was take apart the tractors." After earning his degree in engineering, Ash envisioned himself modeling aerospace

components for defense purposes. But after years as a design engineer, he became disillusioned. "I kept thinking back to my summers on the farm," he reminisced. "I missed getting my hands dirty."

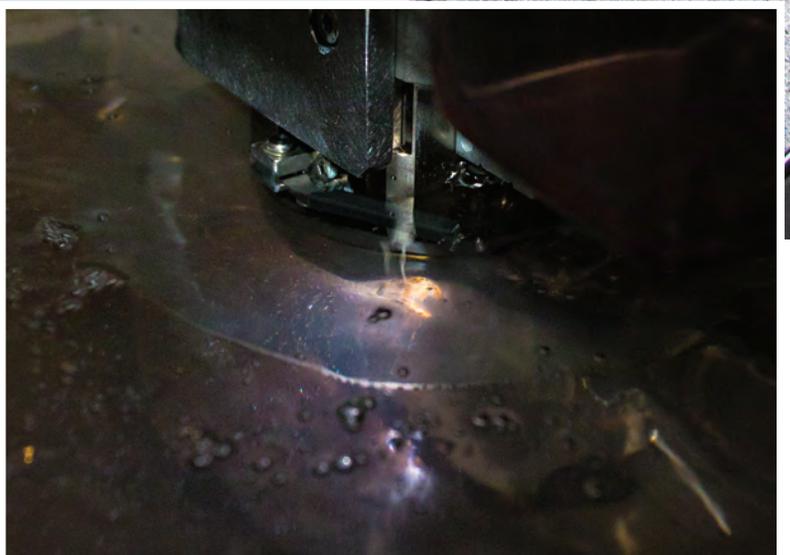
One day, Ash decided to walk his latest blueprint to his employer's machine shop instead of e-mailing it to the machinists. "That was eye-opening," recalls Ash. "Lots of jokes start with 'an engineer walks into a machine shop,' and that certainly was true in my case." "I was totally out of my element," Ash admits, "but I wanted—no, I needed—to learn more." Ash buried himself in CAM software tutorials and spent Friday nights watching YouTube videos on the art of machining. "I was single for a long time," Ash deadpans. Fast-forward years later, and Ash had the opportunity to invest in a machine shop of his own. "It was fate."

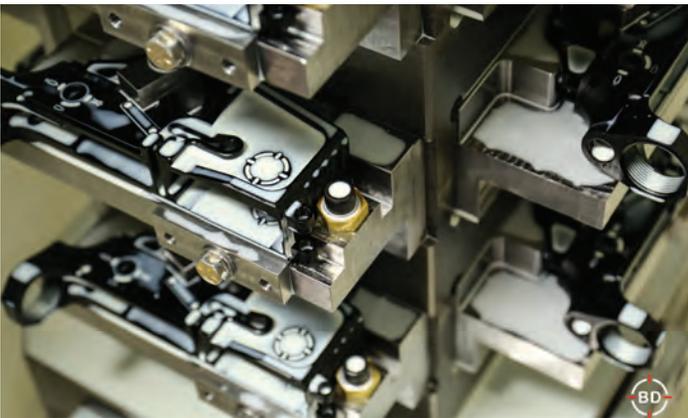
Ash's partners weren't sold at first on manufacturing rifles. "In the elite manufacturing world, rifles aren't sexy," Ash explains. "But I just kept thinking back to the farm. I wanted to make a utility—something practical and ordinary, but I wanted to make it extraordinary." After some persuasion, Ash convinced his partners that innovative design improvements could translate into





**Blackout Defense purchased the Mitsubishi MV1200R wire EDM specifically to machine out the magazine well on their AR-15 style rifles. It took a little getting used to having never operated an EDM before. Through the support of North South Machinery and Mitsubishi Blackout Defense was able to get production rolling at the level of quality they required. Starting next year the EDM will also play a part in the manufacturing of their precision bolt-action rifle and 1911 style pistol.**





**Blackout Defense has a DMG Mori NHX-4000 horizontal milling center. They run lights out and machine 24 lowers in 9 hours. Ash hopes to add a pallet pool to increase the automation level in the shop. His goal is to have it run for days with minimal operator interaction.**

real accuracy and stability enhancements for the AR. “Our target market is serious shooters and law enforcement,” he says with a smile, hovering over the pun.

Blackout Defense elected to start with the best of the best. “For some reason,” Ash puzzled, “new shops are afraid of horizontals and tend to start with commodity-level vertical mills.” “But not us,” Ash proclaimed. “The first mill we bought was a DMG MORI NHX-4000.” But they didn’t stop there. “We dove right in and ordered at the same time a Mitsubishi MV1200R from North South Machinery.” Reflecting on the pairing, Ash noted “it was the logical choice.” “DMG MORI and Mitsubishi are highly respected and North South Machinery also is a trusted name in the business. We knew these would be worthwhile investments.”

And, indeed, they were. The learning curve on the EDM turned out to be steeper than expected, causing Blackout Defense to turn the experts for help. Brian Juarez from North South Machinery and the team at Mitsubishi were instrumental in getting them back on track. “We had some operator error in the beginning,” Ash confessed, “and we had to crush more subpar lowers than I care to admit.” Ash heaped praise on Mitsubishi’s customer service. “They got us back up and running like we should have been from the beginning.” Ash has no regrets with his recommended purchases. “They were worth every penny.”

Blackout Defense has found the EDM to be particularly worthwhile because of its accuracy. “The only alternative to the EDM for the magazine well is broaching,” Ash

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**Blackout Defense chose the AR-15 as their foray into gun manufacturing. The popular shooting platform gave them the opportunity to machine a wide selection of parts and complete rifles. The devil is in the details and a close look will show how they are doing things a little bit differently than most. Here is a tungsten finish on a Blackout Defense AR-15 chambered in a 6.5 Grendel.**



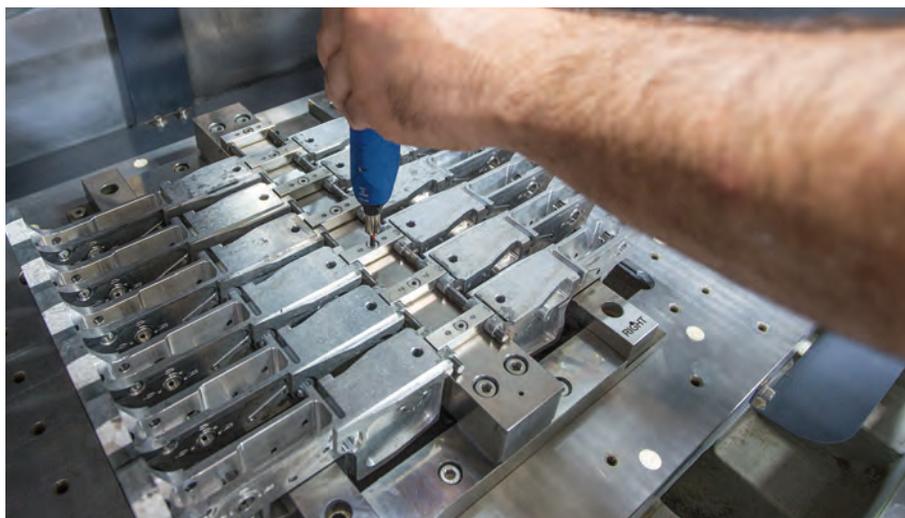
explained. Although broaching is far less expensive, it generally is associated with lower-end rifles. Ash knew that their target market would demand more. “Law enforcement agencies need a fast reload, and broached mag wells are more likely to drag on the

mag release. Quality is everything, particularly when it comes to a weapon that could mean the difference between life and death.” Ash and his partners concluded that EDM was the only way to get the job done right.

One look at Blackout Defense’s lowers and you can see they were dead on. They can achieve with their EDM a near 90-degree corner if necessary. “EDM is the only way to get it tight and precise,” remarks Ash. “It is impossible to do this with a mill or by broaching.” Blackout Defense EDMs 12 lowers at a time, efficiently completing two racks a day. Ash touts the Mitsubishi MV1200R as one of the best and most enjoyable machines he has ever used.

Ash is proud of the ripples Blackout Defense has made in the AR market. Continuing its trend of innovative and measurable enhancements, Blackout Defense has its sights set on introducing a precision bolt action rifle by the end of the 2019, and a 1911 pistol by the end of 2020. Ash predicts that the EDM will play a significant role in the manufacturing of both products. “We anticipate using the EDM to refine the bolt action receiver after heat treatment. We also expect to use the EDM to cut the 1911 slide and frame from a single block of material.”

Blackout Defense has everything in house: milling, EDM, heat treating, and even CNC grinding. “We crammed a lot of technology in a very small space,” notes Ash. “We believe in technology and want to be able to control as many processes as possible to minimize the manu-



**EDM fixtures don't have to hold the part as solidly as you would need to on a mill, but they offer their own set of nuances that you don't see on any other style of machine. Blackout Defense cuts 12 lowers at the same time. They machine two racks of lowers per day.**



facturing variable.” As evidence of its success, Blackout Defense just ordered a DMG MORI NLX-2500 mill turn center with live tooling and dual spindles to manufacture bolts for its anticipated bolt action rifles. “By keeping everything under one roof, we are able to ensure the highest quality without delays.”

Even more impressive, a new Zeiss Contura CMM arrives next month as Blackout Defense works towards their ISO9000 quality-control management. Even though ISO isn’t required, Ash believes in the value added—he is confident that Blackout Defense’s customers will ap-

preciate knowing that their products are 100% quality-controlled. Professional shooters and law enforcement agencies expect top notch manufacturing practices and ISO is a large part of that.

“At Blackout Defense, we believe in the highest quality work,” concludes Ash. “Here at Blackout Defense, we don’t cut corners . . . except when we need to on the EDM, then they are tight and beautiful.”

**The magazine well on an AR-15 style weapon is often broached to save money. Blackout Defense utilizes their Mitsubishi wire EDM to machine it instead. This added level of precision is a must for dedicated civilian shooters and law enforcement agencies alike.**



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# ASTRO MACHINE

Article & Photos by Sean Buur



Shop manager Allen Boothe and his two sons Justin and Conrad

## ASTRO MACHINE TAKES OFF WITH ROBOCUT EDM'S

Two machinists from Hughes Aircraft founded Astro Machine Co in 1965 at the height of the space race. Everything Astro related was cool, from Astro the cartoon dog to Astronauts. Apollo 11 was still a few years off, but the space industry was booming in So-Cal, so Jim Vellonakis and Bill Skintauy set up shop in Hawthorne, Ca. Fifty years later Astro Machine is still in Hawthorne and is in the second generation of ownership. Jim's son Stas Vellonakis grew up in the shop and took over running Astro in 1985. Astro's core focus has remained the same over the years, but recently the precision machine shop has added the value of wire EDM into the mix.

As their name implies Astro Machine Co does quite a bit of work for the space industry. They specialize in the satellite, defense and medical industries. "We are 100% a job shop," tells Astro's plant manager Allen Boothe. "We quote the order and if we win the bid find a way to make money manufacturing it. Astro has never had a product of our own, we are a contract machining company and always have been." Allen began working at Astro while he was still in school and 30 years later he is head of manufacturing. His decades of experience make him a key player when it comes time to buy new equipment. Up until 4 years ago Astro Machine Co was a milling focused production facility. They got their first Fadal tool changing CNC mill in the

late 80's and have stuck with the Fadal brand through the years. "We have 11 spindles of milling," details Allen. "All our mills are Fadal 3 axis machines some with 4th and 5th axes trunnion tables. Sizes vary from machine to machine but our largest is 80" x 30" and can hold 30 tools. Having all the same brand machining centers makes things a lot easier. We keep machines for a long time so when we began our search for a wire EDM longevity and a respected brand were right at the top of our wish list."

Astro Machine Co purchased their first Fanuc Robocut A-C400ib iMed wire EDM back in 2014 from Methods Machine Tool and recently added a second machine to their production line. "We did our due diligence," describes Allen. "I was familiar with the Fanuc Robocut because an outside EDM vendor we used had one. By familiar I mean I knew the brand and some of the capabilities, but by no means did we know much about EDM machining. Number one for us is having coverage and the Fanuc EDM machines offer us a wide set of capabilities to support the mills. The wire EDM lends itself to very small radii and high aspect ratios. Rather than continuing to send EDM work out we decided to buy one. We used it so much that we relocated our lunch table to find space for a second machine."

With no EDM experience Allen went to Method's week long training program and figured it out from there. The training Methods offered was a valuable tool and gave him a solid

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Astro Machine Co has two Fanuc A-C400iB iMed Robocut wire EDM machines. The first one they got 4 years ago from Methods Machine Tools and liked it so much they recently added a second one. Astro's EDM machines have a work envelope of 400mm x 300mm x 255mm so they can get a variety of parts on the table at the same time.



Fanuc puts their top of the line control on their own machines and the 31i was a big selling point. The 31i has a large touch screen display and friendly user interface.

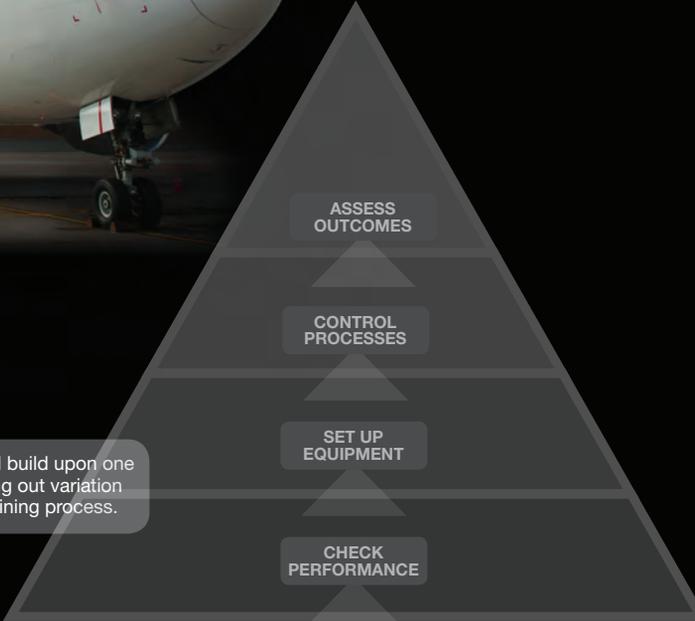
base to start machining from. “The Fanuc 31i control was a big part of our decision to purchase the Robocut,” details Allen. “The training gave me hands on experience with the systems and menus that otherwise I would have had to figure out on my own. The machines are not difficult to learn compared to 5 axis milling so we picked up on it rather quickly. My two sons Justin and Conrad also work here and they went through the training when we added the second machine.” Fanuc controls are very popular among machine tools, but Fanuc only puts their top of the line control like the 31i on their own machines. It is rare to see as sophisticated a control on commodity level machines. That added value didn’t go unnoticed by Allen and the management team at Astro. “The 31i control has a friendly interface, a large touch screen and all the manuals are available on screen,” details Allen. “It is a Windows back end and can support a mouse, keyboard and connect to our network. It has external features like remote monitoring so I can check in on it from home and see how it is running or if there was a fault.”

The Fanuc EDMs were originally purchased to support the Fadals by machining small features and slots not possible to do with a mill. The more they used the EDM the more ways they found to utilize the capabilities. “You remove metal differently with an EDM,” explains Allen. “Instead of using a ½” endmill to sneak up on a desired shape you can just cut a final path with the EDM. It seems silly, but waste is easier to handle when it comes off as a large chunk vs. thousands of chips.” Astro’s EDM

machines have a work envelope of 400mm x 300mm x 255mm so they can get a variety of parts on the table at the same time. Prior to the EDMs, lights out manufacturing wasn’t much of a possibility due to the nature of the parts and material used. That changed when the first EDM came on line. “EDMs are as a whole very reliable, and the Fanuc is no exception,” explains Allen. “They don’t require a lot of attention during the day and can easily run unattended. We set up the machines to run for 8-10 hours at a time. My guys come in and load it up and it runs. At the end of the shift they load them again. We get 16-20 hours of run time every day out of each Fanuc Robocut with very little fuss. The machines are just so constant in what they do. On a milling machine running the exotic alloys you need to babysit it. You have to listen to the tools and be there to attend it. We only are staffed with one shift, but we get two shifts minimum out of our EDMs, every day. I’ve never needed a service call on either machine and I love that. I do all the basic maintenance and replace things like rollers. The nice thing is the manual is on the control so I pull up the part I need to replace and I get step-by-step instructions on screen with actual photos showing how to do it.”

Astro Machine Co has 13 full time employees with 9 dedicated machinists. They run only a single shift 5 days a week but the shift is split between an early start time and a later start. Allen touts the skill of his machinists as the reason Astro has been successful for so many years. “Our machinists are

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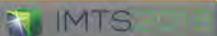


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A typical use for the Fanuc Robocut wire EDM machines is to start with a block of titanium and machine the outer dimensions before sending it over to the milling department. Astro fixtures enough parts on the table to run an entire extra shift unattended, doubling the production for the day. The lights out capabilities of the EDM make it a very productive machine tool. An added bonus is being able to dispose of the waste piece instead of dealing with millions of chips.

just that, machinists,” details Allen. “We don’t have operators or button pushers. Our people program, they setup, they run, they inspect. They are all high skill level. We do low production numbers so having just an operator doesn’t work for what we do. A long run for us is in the hundreds, but most of the time it is 1 to 10 parts total.”

The old adage of the sky being the limit doesn’t really apply at Astro Machine Co. For Astro, the sky is just the beginning, and for over 50 years shooting for the stars is just called a typical Tuesday.

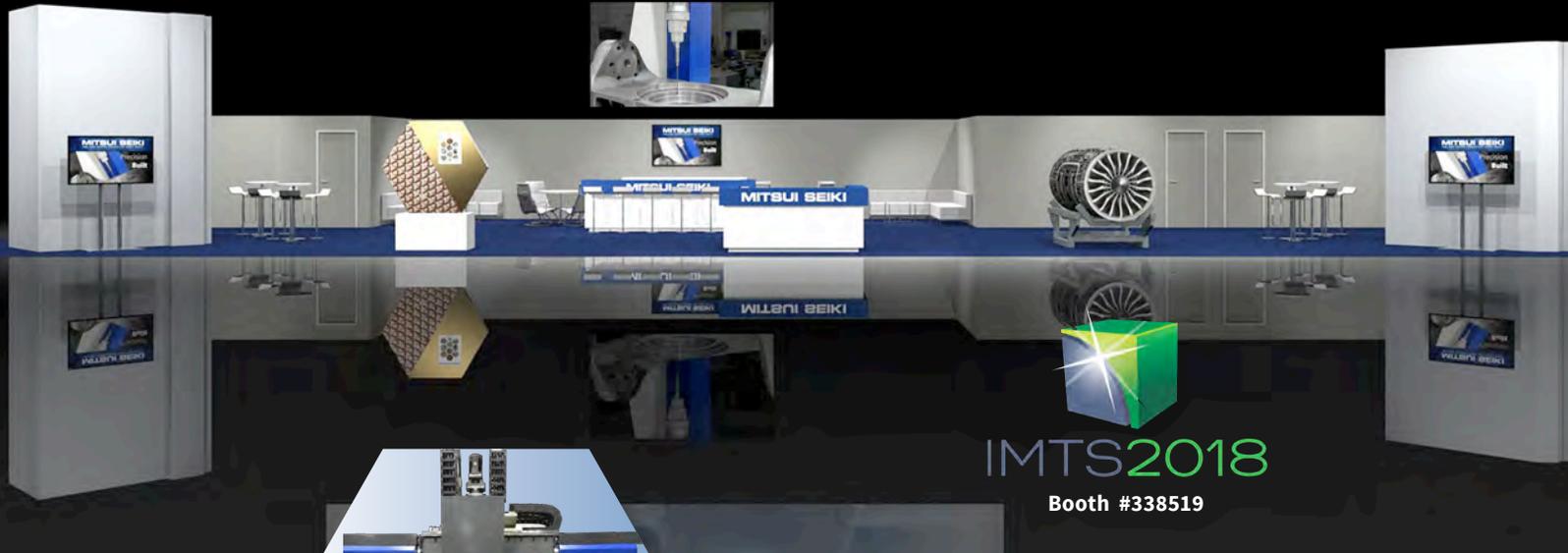


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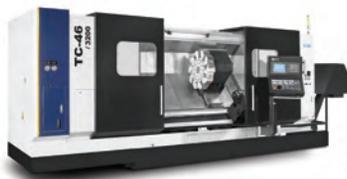
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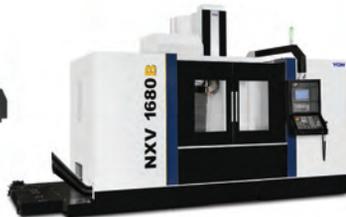
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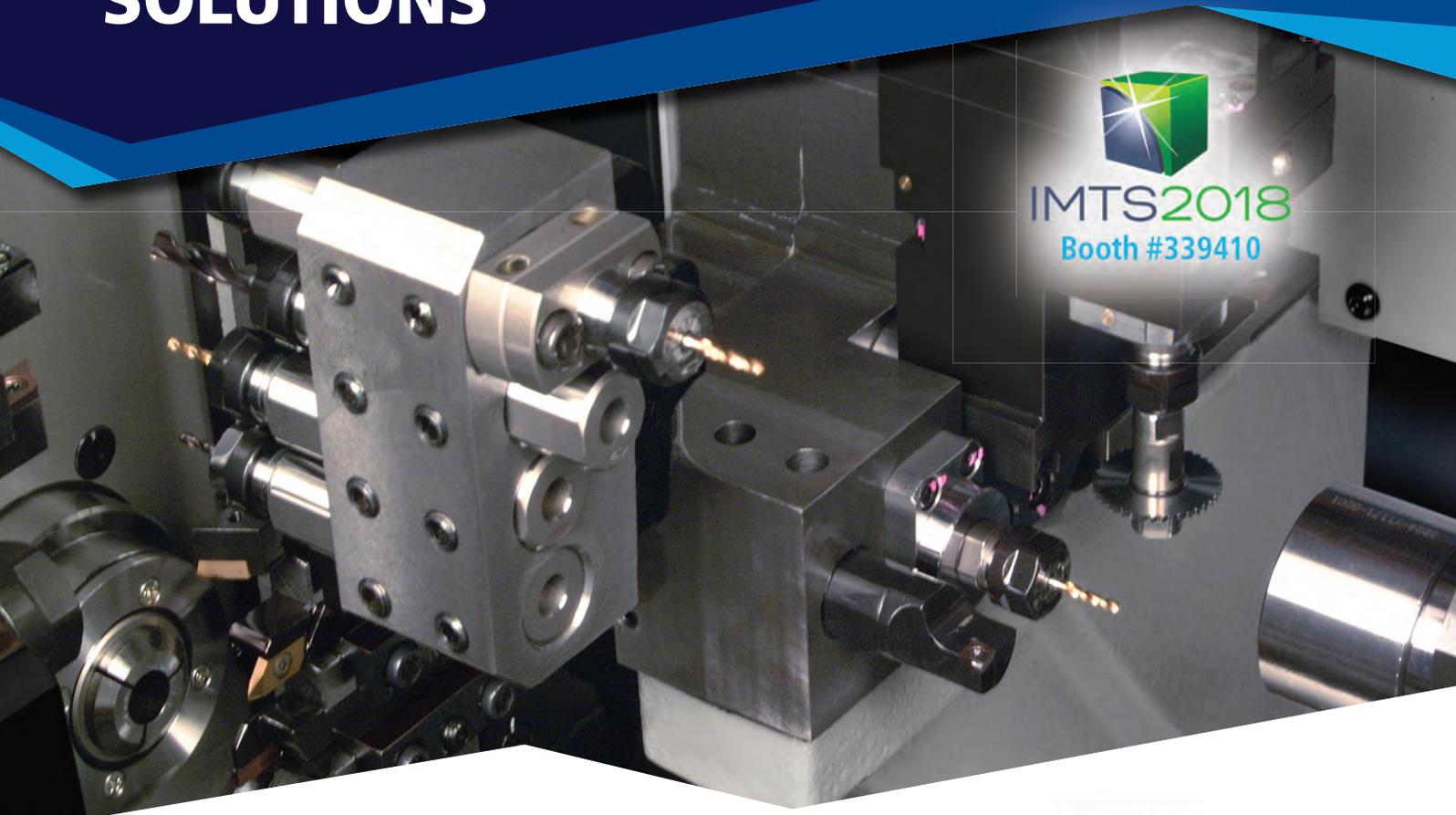
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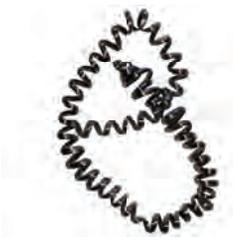


  
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# INDUSTRY 4.0



Article Courtesy of Steven Brand, CMTC [www.cmtc.com](http://www.cmtc.com)

## THE DRIVE TOWARD DIGITAL TRANSFORMATION IN MANUFACTURING

While manufacturers have traditionally been hesitant to invest in their operations due to cost, a recent National Association of Manufacturers (NAM) survey of more than 500 manufacturers reveals that 65% plan to increase capital spending in the coming years. Where is the money going to go? Experts predict most manufacturers will look toward revamping their facilities in order to adapt to the demands of today's digital world. This adjustment, which many call the "fourth industrial revolution" or smart manufacturing, will move manufacturers from mass production to customized production via a digital supply network.

The digital transformation, a melding of new technologies such as the Internet of Things (IoT), advanced robotics, Artificial Intelligence (AI), and 3D printing, is expected to generate more than \$370 billion in net global value over the next four years. While digitization is helping to get more out of manufacturers' materials and machines, what are the driving forces behind transformation? In short, customers, employees, and suppliers.

### CUSTOMERS

According to a Harvard Business Review study of 75,000 people, the most important factor for customers is the reduction of effort; they want the products they interact with to be simple, questions to be answered fast, and information to be available when they need it. These expectations are changing the way they view traditional products and brands, opening up the door for competing manufacturers that have embraced the digital transformation. To stay ahead of the curve, keep customers, and attract new ones, manufacturers need to innovate faster and create products that are software-enabled and con-

nected (think the smart car; today there are entire smart cities).

Keeping up with shorter product life-cycles (PLCs) is also of the utmost importance. Today, a typical life-cycle between electronic variants and generations is going from 12-18 months to less than one year for many products (consider how frequently people upgrade their smartphones for the latest and greatest; even in the automotive industry, PLC has gone from 9 to 5 years). With PLCs getting shorter and shorter, manufacturing processes need to get faster and faster, and digital transformation is leading the charge.

Finally, today's customers expect higher levels of quality; when they drop hundreds of dollars on a new device, they expect a high-quality piece of technology. Digitization in manufacturing facilities introduces rigorous quality management and control, helping manufacturers to build better products.

### EMPLOYEES

Disconnected employees lead to job dissatisfaction. Digitization helps manufacturers get the most out of their employees, and helps employees get the most out of their jobs. Digitization breaks down information barriers and departmental thinking allowing employees to do their jobs more effectively. However, there can be a lack of digital talent in many manufacturing facilities. While this is understandable in large, well-established firms, their position in the industry allows them to adapt at a slightly slower pace. Small and medium-sized manufacturers (SMMs), on the other hand, are under tremendous pressure to bring in tech-savvy employees that understand the digital realm, otherwise they become extremely vulnerable to competition from startups and other more agile companies that attract young digital talent in droves.

But it's not just about bringing in the millennials (and soon, Generation Z); after all, things are changing so quickly that much of what someone learned in school may be nearly outdated within a few years. So while bringing in new employees can be beneficial, manufacturers should also look at current employees who understand the business and the market. If those employees are excited to learn and mix their experience with new digital strategies, they may be the ideal candidate.

A few best practices for attracting tech-savvy employees and adapting existing employees:

- Give equal opportunity to all, regardless of tenure. The age of an employee should also not be a factor; rather, the willingness to learn should be the determinant.
- Adopt a continuous learning program; as-you-go learning will be more successful than a trial-by-fire approach down the road.
- Pair newer, digital natives with tenured, experienced employees so they can learn from one another and transfer knowledge.

## SUPPLIERS

To stay agile, resilient and responsive, manufacturers need to be able to easily communicate with suppliers and partners across geographies before integrating a product into their delivery supply chain. Today, manufacturers are also extending their value chains to external collaborators for everything from product design and development to sales and service. However, many of these functions still operate within a silo rather than working together harmoniously. Digitization brings down

those walls, so that manufacturers, suppliers, collaborators, transporters, and yes, even customers, become one seamlessly integrated ecosystem that is fully transparent.

There are three main ways the digital transformation will change the supplier relationship forever (and for the better):

- Procurement. Closer connections can be formed with suppliers and partners to aid the planning process, improve sourcing, actively manage supplier risk, and boost collaboration. This helps support the manufacturer's long-term plans for growth, innovation, and sustainability.
- Transparency. Manufacturers will not just react to disruptions but be able to anticipate them, modeling the network, creating "what-if" scenarios, and adjusting the supply chain immediately as conditions change.
- Analytics. With immediate access to data, manufacturers gain a clear understanding of how well they are handling operations with metrics related to speed, inventory, and finances.

The future is now. The digital transformation is upon us, and it is giving SMMs the opportunity to build their own smart facilities in order to better serve their customers, engage their employees, and collaborate with suppliers. Those who embrace this fourth industrial revolution—smart manufacturing—are sure to thrive, while those who do not may be left behind. If you haven't already done so, consider re-investing in your business through digitization, and start manufacturing smarter, not harder.

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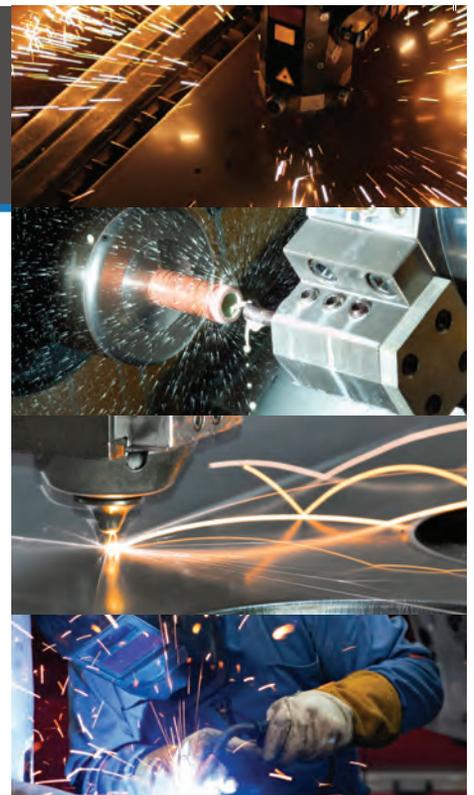


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# BASIC MILL END MILL SAVES MONEY AND BOOSTS PRODUCTIVITY FOR BRANICK INDUSTRIES

**B**ranick Industries, located in Fargo, North Dakota, has been a leader in the tire and automotive equipment industry since 1917. Since then, the company has been issued over 100 patents for products such as jacks, tire changers, inflation cages, and other specialty tools. Today the company is known as a pioneer in areas such as tire service and repair equipment, tire inflation equipment, and nitrogen systems.

## DEMAND DRIVES INNOVATION

Branick has over 750,000 customers worldwide, mainly tire shops, fleet maintenance operations and dealerships. Because of the demand for its products, their machining center runs day and night – all week and into the weekend. To handle the volume, the company is constantly looking for ways to cut processing time and increase productivity.

One example is the production of the Branick 7600 strut compressor. Made of 1212 Carbon Steel, this patented device is designed to remove the strut from the middle of a spring. Known as “the standard in the industry,” the 7600 handles the heaviest coil-over-shocks on light trucks and SUV’s without needing additional adapters. The multi-position upper spring hooks can be arranged for ultimate flexibility to fit factory coil spring configurations.

The 7600 has three hooks on the top and three on the bottom which slide in and out of a slot on the unit. Originally, production of the hook component was outsourced, but Branick brought it in-house to have better control of quality and productivity. At first, the machinist would bore a hole with a ½” carbide drill and then make three sweeps with a 10mm end mill to create a finished slot.

## PLUNGE AND RUN

The company’s HAIMER distributor, Productivity Inc., looked at the operation and suggested using the HAIMER Basic Mill for the milling portion of the job to achieve better tool life. But since the Basic Mill is capable of drilling, roughing and finishing, the operators at Branick decided to try it for both steps of the process. After some calibration of speed and feed rates, the single tool method worked appreciably better than the previous technique. Now, operators using the HAIMER Basic Mill, plunge and slot the part in one smooth operation using one tool.

“Before going to the HAIMER Basic Mill, the hook components were holding up production of the 7600 line,” said Jon Lewis, automation technician for Branick Industries. “We’re always chasing bottlenecks to improve productivity, and the change to the Basic Mill eliminated a big one.”



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# **Guide to Technologies on Display at IMTS 2018**

IMTS 2018 will occupy more than 1.3 million sq. ft. of exhibit space inside of Chicago's McCormick Place from 10-15 September, 2018.

As one of the largest trade shows in the world, IMTS 2018 will occupy more than 1.3 million sq. ft. of exhibit space inside of Chicago's McCormick Place September 10-15, 2018. In addition to more than 2,000 exhibitors, the show provides hundreds of conference sessions and technology presentations.

## **IMTS groups technologies together into 10 Pavilions.**

### **East Building and Pavilions**

Anticipating a stronger show in 2018, IMTS worked with McCormick Place to expand exhibit space in the East Building. New for IMTS 2018, Level 2 of the East Building is home to the Machine Components/Cleaning/Environmental Pavilion, which covers the components essential for safe, efficient and environmentally responsible operation, service and monitoring of machines and facilities. Exhibitors showcase reclaim, reuse and recycle technologies, products for washing, purification, filtration and separation, material handling systems and motion control components, as well as environmental management software and more.

Level 2 will also host exhibitors from the Controls & CAD/CAM Pavilion, as well as HANNOVER MESSE USA co-located shows and events.

Co-locating HANNOVER MESSE USA with IMTS 2018 increases the show's emphasis on automation, robotics and Industry 4.0, with approximately 550 additional exhibitors occupying 130,000 sq. ft. of floor space. HANNOVER MESSE USA Level 2 features include a Digital Factory area and exhibitors that focus on industrial surface treatment and finishing, compressed air and vacuum systems and industrial subcontracting and lightweight construction.

To present a complete spectrum of technology for industrial automation, IT, power transmission and fluid power technology, HANNOVER MESSE USA will feature its new show Integration, Automation & Drives USA exhibitors on Level 3 of the East Building.

Level 3 of the East Building will showcase the Controls & CAD/CAM, EDM and Quality Assurance Pavilions. The Quality Assurance Pavilion will have more than 175 exhibitors, and attendees are encouraged to bring a part or print so they can start finding metrology solutions right on the show floor.

### **South and North Building Pavilions**

The Metal Cutting Pavilion occupies all of Level 3 of the South Building, while Level 3 of the North Building houses the Fabrication & Lasers, Gear Generation and Abrasive/Machining/Sawing Pavilions.

### **West Building Pavilions**

After evaluating machines, many attendees then head to the West Building to optimize their investment by visiting the Tooling & Workholding Pavilion and now the new Tooling & Workholding Annex.

The Additive Manufacturing Pavilion has moved to the entrance of the West Building in order to expand space and increase the number of exhibitors to 56 for IMTS 2018. "No matter where visitors are in their additive journey, they can find support that takes them through the progressive steps in additive manufacturing: prototype, material options, selecting and optimizing part design, scaling up, production, integration into a facility and ongoing service and upgrades," said an IMTS spokesperson.

### **Planning and Show Hours**

IMTS visitors are encouraged to plan ahead to make the most of their time. IMTS.com has an exhibitor search function, show floor plans and a MyShow Planner tool. Daily show hours from Monday, September 10, through Saturday, September 15:

. East Building, Level 2 and West Building, Level 3 Annex: 8:30 AM - 4:30 PM . East Building, Level 3 and West Building, Level 3: 9 AM - 5 PM . North Building, Level 3 and South Building, Level 3: 10 AM - 6 PM.

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MT 3	Ext	5700	660	L-M3E-D88H55A-T	\$200.00	\$120.00
MT 4	Std HD	3500	1300	L-M4S-H17H38A-T	\$353.67	\$212.20
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	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" 32mm	32-3	GTN-3	25-6	BI-6895-923	\$ 217.80	\$196.02
	32-4	GTN-4		BI-6895-924	\$ 220.55	\$198.50
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22	Inch & Metric Sets	BO-69499	\$ 61.48	\$ 47.95

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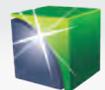
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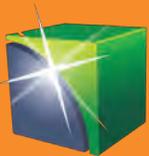
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# DKW PRECISION MACHINING

Article Supplied by Vero International



## HED//DKW PRECISION MACHINING HAS USED SURFCAM TRADITIONAL SINCE 1998 TO CUT MACHINING TIME AND DELIVER UNPARALLELED PART QUALITY TO MULTIPLE INDUSTRIES

**A**ny manufacturer who's survived more than 30 years in business has weathered the usual ups and downs of entrepreneurship, and could write a "how-to" book with a chapter devoted to learning from mistakes.

Kurt Franklin, owner of DKW Precision Machining since 1984, has fared far better than many — due in part to an adherence to high customer-service standards, continual process improvements, and an avid willingness to learn and embrace technology.

"Over the years, we saw a lot of manufacturing go overseas, and learned from experience that there is also a lot of unpredictability in manufacturing," Franklin says. "It changed the way we do things because we realized that it is important to diversify and to grow intelligently."

Based in Manteca, California, the business co-founded by Franklin in a garage in San Jose with his brother, Doug Franklin, now serves numerous sectors, including the underwater exploration, aerospace and commercial industries. Counted among DKW's customers are Schilling Robotics, which produces underwater remotely op-

erated vehicles, or ROVs, and automotive manufacturer Tesla, Inc.

A born entrepreneur, Franklin decided that he was in manufacturing to stay and eventually purchased his brother's share of the company. Having learned the value of quality service as owner of a motorcycle shop prior to opening the doors of DKW, Franklin has always placed a premium on customer relationships. "Our motto is to always treat customers the way that we expect to be treated," Franklin says.

General Manager Brian Kott, who was hired as a shop helper and driver and has been with DKW for 23 years, believes that quality also sets the company apart. "Most machine shops can build parts on a CNC Mill, but to build a part and make it look great cosmetically can really set you apart."

To produce its products, DKW utilizes a combination of CNC machinery and software designed to deliver both efficiency and the quality that customers seek. In 1998, Franklin purchased the Surfcam Traditional computer-aided-manufacturing (CAM) solution, by Vero Software,

DKW's capabilities include a live tool Samsung SL25BSY lathe utilizing Surfcam's multi axis programming software to complete this part.





Leadman Jason Franklin changes out a part on DKW's YCM TV188 50 taper CNC mill with 70 x 34 x 31 travel and a 10,000 RPM spindle.

after finding that his previous CAM system could no longer meet the company's needs.

"We could see that our old software wasn't moving along in development like the other systems, and we got Surfcam so that we could do more advanced programming on more advanced machinery," Franklin says.

Franklin recently also acquired, and is now transitioning into, the latest version of Surfcam to address the complexities of driving his new mill-turn machine. However, he continues to rely on Surfcam Traditional due to its ability to generate accurate, specialized toolpath. He programs his five mills and four lathes with Surfcam Traditional, and will use the latest version of Surfcam to power his new mill-turn machine tool.

Though the company doesn't specialize in design work, DKW does work with customer design teams to make parts more manufacturable.

To create or edit computer-aided-design (CAD) models that can be imported into Surfcam, DKW uses the

SOLIDWORKS® CAD solution, by Dassault Systèmes, to generate or edit solid models that can be imported into Surfcam Traditional. The software's seamless and simple interoperability with the CAD solution allows users to open SOLIDWORKS files right within the Surfcam Traditional interface. This feature increases ease of use for users of both systems and ensures that CAM data is updated when changes are made to the design.

"Even if you make a change in the SOLIDWORKS file, it will automatically update in Surfcam," says Franklin, who adds that the interaction between CAD and CAM solutions simplifies the design process.

DKW does not perform a significant amount of production, and so lot sizes typically range between one and 200 parts. About 70 percent of jobs are machined in aluminum, though the company also works with plenty of stainless steel, titanium, and pre-hardened metals.

Franklin appreciates the toolpath control offered with Surfcam Traditional, which allows him to create custom



Machinist Clint Franklin completing his final operation and paying close attention to detail prior to sending it to the inspection department.

datum points and edit specialized toolpath to suit the needs of the job, which may include adjustments specific to tooling and material. He notes that the software makes it simple to view and manipulate part models, with graphical tools that make it easy to identify changes that need to be made.

Among specialized Surfcam Traditional machining strategies used at DKW is the TRUEMill cycle, which generates optimized roughing toolpath that can be completed with a one-step 3D roughing through pre-finishing operation. "Using the TRUEMill on certain parts with our newer machines allows us to remove material really fast," Franklin says.

TRUEMill offers a synchronized multiple-tool strategy that coordinates up to eight tools in a single operation. Regardless of how many tools are used, the specialized cycle creates uniform step height across all surfaces while removing material at significantly faster rates and greater depths of cut.

Use of the TRUEMill cycle cut machining time on one of DKW's jobs from 40 minutes to about 18 minutes. "Forty minutes to 18 minutes is a substantial amount of time, and it's also easier on our tooling because you aren't getting the tool hot and then cold, putting it through a continuous cycle of heating and cooling," Kott says.

"If you can save 10 minutes per part on 10 parts, that's over an hour and a half saved," Franklin adds. "You're not making money unless you're throwing chips."

Smart, continuous growth and process improvements are par for the course at DKW, which once employed 38 staff and currently employs a 10-man team — including Franklin's son, who heads the mill department, and two of Franklin's nephews. Franklin explains that the smaller team can accomplish just as much as his larger teams have in the past. Efficiency gains, he says, are the combined result of embracing advanced technologies and ensuring that personnel are well trained and knowledgeable.

"I believe that you have to invest in time and spend any extra time that you have on training," Franklin says. "Even during the hard times, we still invested in training."



Owner Kurt Franklin has maintained the highest level of quality for 34 years. They utilize CMM manager software on their 48" Brown and Sharpe CMM.

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# CAD/CAM/CNC Perspective

By: Tim Paul

Manager- Manufacturing and Business Strategy

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Instagram: OneEarTim

## Interview with Carl Bass (Former Autodesk CEO)

A couple months ago Carl Bass's name started popping up in my tech industry news feeds followed by some "What are Carl and Amar up to?" text messages. So, I thought I would reach out to Carl and find out what he has been up to since he retired from his position as CEO of Autodesk. As eager to talk shop and hospitable as ever, Carl said to stop by any time.

Tucked into the tight grid of Berkley streets between houses and commercial buildings is a nondescript building where Carl spends much of his time these days. The bland outside gives little indication of modern machining and fabrication equipment within that any professional shop would be proud to have. No matter which door you enter it's hard not to get distracted by the numerous projects scattered throughout the newly remodeled shop. At one end, a Factory Five Cobra kit car is being built as an electric powered hot rod. Past the new Matsuura MX-330 5 Axis mill and electric-powered autonomously-driven Go-Kart I saw an intriguing Kuka Robot with DeWalt sanders attached to the end. But it's the details like the hand-crafted furniture and kitchen cabinets, made right down the street at Carl's wood shop, that set it apart from your average prototyping shop. I caught Carl as he was finishing up a CAMplete class in his office.

**Tim:** What have you been up to since stepping down as the CEO of Autodesk Carl?

**Carl:** I've been having fun playing with robots, traveling and spending time with my family.

**Tim:** Before we talk about why you stepped down as the Autodesk CEO I wanted to ask how you became the CEO. Is it something that you pursued or something that found you?



**Carl:** It definitely found me. I did not pursue it. My wife always described me as the reluctant CEO. Most of my leadership positions were never particularly interesting to me. They just came about. The very first time they wanted me to be the Vice President of Autodesk I avoided them for a week. Sometimes you push for things, sometimes you get pulled and sometimes you just do what you know is right.

**Tim:** Now can you explain your thoughts behind what led you to

that consuming it prevents you from doing anything else. On a personal note, my kids were going off to college, so this allows me to travel for fun and have a lot more freedom, so it seemed like the perfect time.

**Tim:** Did the activist investors prolong the decision or change the timing?

**Carl:** By the time they came around we were on the verge of making the announcement. To make a successful transition I ended up staying probably a year longer that I wanted to.

**Tim:** How did the activist investors change things?

**Carl:** Honestly, for me it was kind of fun. They came with a not very well thought about agenda of what we should do. So, I got a big kick out of proving them wrong.

**Tim:** Let's talk about your shops. Can you explain what shops you have, what they mean to you and why you have them?

**Carl:** I have two shops. One is basically filled with wood working tools and one is filled with metal working tools. I ended up with two shops because wood and metal mix so badly. Even if I could I wouldn't really want them in the same place. They are both for making one off projects. There is almost nothing we do that resembles job shop work. Everything is either a one off or prototype. If I look around I'm building a wood/epoxy/composite canoe over at the wood shop. Here we are building the electric cobra, a 3D metal printer and we have the robot doing some sanding and grinding where we are teaching a robot how to sand, grind and polish. So, those are good examples of the projects we are working on. None of them are repeatable. None will be hundreds or thousands of parts. They are all about extending capability. The thing that I am mostly focused on are how quickly can I go from an idea to a finished artifact for things that interest me.

**Tim:** Are you doing these things to feed your brain? Or for what reason?

**Carl:** Ya, that's it. I look at a lot of these things and go, that's interesting.

**Tim:** What roles do Bets and Chris play in your shops?

**Carl:** At each place they really take care of the shops and we work on projects together. They each have their own

step down as CEO of Autodesk?

**Carl:** Sure. Number one, this wasn't the job I always wanted to do. I enjoyed it, there were lots of parts of the job I really liked. But, it was a job. And, it's a pretty all-consuming job. One of the things you find in a job of that size is that there is always more work than you can do. So, you are always in triage and there is always a huge amount of pressure to be doing more. There are just no more hours in the day to do more. And, I didn't realize it at the time, but I had an inkling that there were more chapters and there were other fun and interesting things to do. And, with a job



businesses where they work on their own things and then we work on projects together.

**Tim:** So, you mentioned the robot sanding and polishing project. When I first saw that months ago I saw some people around here that I didn't know. Is that something we can talk about?

**Carl:** Sure. What I can say is that I've been involved in a lot of projects involving machines like CNC Machines and robots. And what I've been doing is teaming up with the folks at Google to apply machine learning to a number of things. So, instead of teaching a computer to recognize a cat on the internet, wouldn't it be interesting to teach a machine how to polish something just the way that we would using modern computer vision and machine learning techniques. That's why we get them involved.

**Tim:** I thought it would be fun to ask what your two favorite tools are?

**Carl:** I have a couple of favorite tools. I have some Japanese wood working tools and one that I love is a rasp. It's like a file made of a bunch of old hack saw blades. It is the best cutting thing. If I were to go to the store and buy one, it would be a cheap piece of crap that wouldn't work very well. The other thing I like is when a tool does something clever. For example, I have a little German tool for finding the center of round things. On the expensive tool side, I think the thing that I'm most delighted by these days is the Waterjet. We all appreciate what a nice CNC machine does, but the fact that a Waterjet can offload a lot of really mundane jobs like cutting something with a plasma and then grinding on it or roughing a lot of parts that would normally be mostly turned into chips. It's just a nice work flow for what we do.

**Tim:** I watched you take about two years of looking at

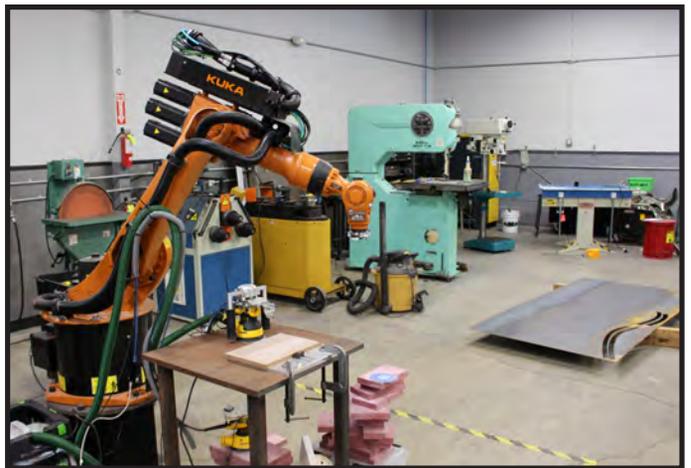


different 5 axis machines. Why did you end up getting the Matsuura MX-330?

**Carl:** Probably like a lot of other people. Recommendations from friends. I knew the software I'm using supports it. And, it was the local dealer where I knew I could get good service and support. I heard some horror stories of what people would probably consider higher end machines. I think we together had a bad experience with a higher end but unsupported machine at the Pier and I realized that a super high-end machine that goes unsupported or poorly supported is barely worth a nickel. And, really this machine was what we needed.

**Tim:** Let's talk about the latest news blurbs of Carl Bass teaming up with former interim Co-CEO of Autodesk Amar Hanspal to start an Autonomous Manufacturing start up called AutoLab AI. What can you share about that?

**Carl:** I'll share at least my role on it. People have it misunderstood. A lot of people think I've gone and taken another job. Well let me tell you. This is a typical day for me. I'm here in my shorts working on my 5-axis machine. Tomorrow I'll be over working on my canoe. That's what I'm doing. I am on the board. Amar got appointed the CEO of a new company. They are interested in using software to do flexible manufacturing. They are using software to program robotic work cells.



**Tim:** Manufacturing is very broad. What will AutoLab be doing?

**Carl:** This company is a spinoff of Flextronics. And, if you think of the kind of things that Flextronics build they will be doing that kind of thing. So, they will be building a software and services company to support that. Amar and a good friend of mine Mike McNamara (CEO-Flex Ltd.) started this together and asked me to be on the board. So, I am a board member just like I am with many other companies.

**Tim:** I think a lot of people would like to know what your thoughts are on the direction Autodesk is heading since you have been gone. Any thoughts on that?

**Carl:** I think about it the same way you think about a house that you sell. When you drive by you are interested to see what they have changed. But, you don't get upset if they've painted it green or moved things around. You just look with curiosity. I'm just having fun with my projects now.

My full conversation with Carl was longer than this article allows. It's always a treat to chat with Carl about what he is working on, with all the tangentially related conversations that come. I was hoping to break some news on AutoLab AI. But it looks like Carl just holds yet another board seat. I think it's safe to say that Carl is enjoying his retirement from Autodesk with his constant steam of projects. If the saying, "he who dies with the most tools wins" has any merit, I think Carl is in a good spot.

# The Impact of Manufacturing Day —and How to Get Involved

*Courtesy of Steven Brand CMTC*



Dark, dirty, dangerous. Unfortunately, this outdated perception of manufacturing persists to this day, and it can keep away new talent. By 2025, nearly 25 percent of the United States population is expected to be aged 60 or older, meaning many manufacturing workers will be leaving the factory floor. This makes attracting the next generation of workers critical to ensuring the industry remains vibrant. With this thought in mind, the National Association of Manufacturers and the Manufacturing Institute developed National Manufacturing Day.

It all began in 2012, with the goal of inspiring more people to pursue manufacturing careers. Designed to correct the notion that manufacturing involved only repetitive, unskilled tasks in dark, dirty, and dangerous places, Manufacturing Day (MFG DAY) shows up-and-comers that the industry employs highly-skilled individuals while offering some of the most exciting, innovative work environments around.

## Shifting Public Perception

Is it working? We can answer with a resounding yes! Deloitte, an MFG DAY sponsor since 2015, has been tracking reception toward the event, and the results are very encouraging. Focusing on students who have engaged in MFG DAY, the numbers are overwhelmingly positive:

- 88% found MFG DAY events interesting and engaging
- 89% became more aware of manufacturing jobs in their community

- 87% were convinced that manufacturing jobs were safe, clean, and high tech
- 84% believed that manufacturing jobs offered good pay
- 84% thought that manufacturing careers could be exciting and rewarding
- 71% planned to tell friends, family, or colleagues about careers in manufacturing

## Getting Involved

While many manufacturers develop their own MFG DAY plans, working with others can be beneficial.

## Collaboration.

Most MFG DAY events are plant tours in which you open up your doors to an eager audience. However, if you're in an industrial park and near other manufacturers, you may be able to collaborate to offer a "mini expo" of your manufacturing community.

## Education.

Just because you're not manufacturing doesn't mean you can't get involved! Many technical colleges hold educational fairs for their students and invite local manufacturers to set up booths or speak about their operations.

MFG DAY has got people talking!

If you don't want to just take our word for it, here's what some others in the industry are saying about MFG DAY:

We need to get kids excited about manufacturing... we need them desperately... that's really what National Manufacturing Day is all about, to fertilize their curiosity.

—Gary Johnson, VP, Ace Clearwater Enterprises

I get all my students jobs... in order to get them jobs, I need to know what's out there.

—Max Lizarrago, Prof. Industrial Design & Eng., Mt. San Antonio College

National Manufacturing Day will be observed Friday, October 5. It's a celebration of the work we do, and gives science, technology, engineering, and math students insight into manufacturing today so they can help build the manufacturing world of tomorrow.

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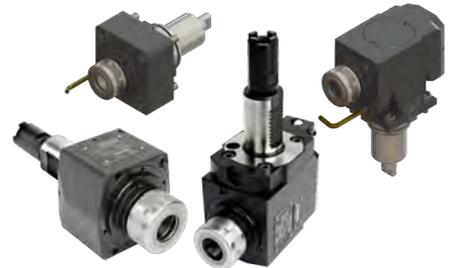
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# IMTS 2018 Provides a Great Gathering of Resources for Additive Manufacturing



Trying to analyze the state of Additive Manufacturing (AM) technology might feel like trying to assemble a jigsaw puzzle as the pieces are being set. Each player in this fast-moving arena presents a piece of the puzzle, and potential and current adopters have questions that range from as basic as choosing a material to as advanced as how to accurately confer properties on a molecular level.

“To obtain a true sense of what is possible today and, in the future, IMTS 2018 – The International Manufacturing Technology Show, offers an unprecedented concentration of Additive Manufacturing resources,” says Peter R. Eelman, vice president – Exhibitions & Business Development at AMT – The Association For Manufacturing Technology, which owns and produces IMTS. “In such a short time, the history of IMTS has become synonymous with AM technology breakthroughs.” At IMTS 2018, Eelman predicts that one of the hottest AM topics of discussion will be how to extend the digital thread from design through processing to final part.

Held Sept. 10-15 at Chicago’s McCormick Place, the AM resources at IMTS include the Additive Manufacturing Pavilion and a second AMT’s Emerging Technology Center focused strictly on Additive Manufacturing, both located at the entrance to the West Building in an expanded exhibit space. The AM Pavilion now boasts 56 exhibitors, up from 21 two years ago, plus several exhibitors in other Pavilions who will showcase additive-related technology.

During show years, IMTS hosts the Additive Manufac-

turing Conference presented by Gardner Business Media on Sept. 11-12 and the AppliedAM – Where Additive Minds Meet symposium presented by EOS North America on Sept. 12. In addition, at least six of the technical sessions presented as part of the IMTS Conference will focus on AM technology.

“IMTS is valuable for any company that wants to stay competitive,” says Glynn Fletcher, president of EOS North America. “Moving into production with additive manufacturing is a new experience for everybody. That’s why we bring a large team of experts who know the technology and equipment, from engineers to service techs. There’s no other

place where you can have access to so many experts at one time. It’s a truly unique experience.”

The theme for EOS’s IMTS 2018 exhibit is an “Additive Mile” that takes visitors through the progressive steps of a journey in additive manufacturing: prototype, looking at material options, selecting and optimizing part design, scaling up, production, integration into a facility and ongoing service and upgrades.

## *Learning about New Trends*

“Additive manufacturing is about solving the problem of high-cost, low-volume manufacturing,” says Ed Israel, president and co-founder of Plural Additive Manufacturing. “There’s been a huge void in the marketplace for companies that couldn’t afford the technology but would benefit from producing good prototype parts and serial manufactured parts using 3D printing. IMTS 2018 is the best place to learn how.”

Israel says that he thinks of Plural as an additive manufacturing integrator that works with customers to help them with any aspect of AM, from parts design all the way through high volume parts production. To help people find the right ways to apply AM, whether within an existing assembly or for new product development, Plural has developed a cost-per-part calculator.

“The big issue that will drive additive manufacturing is bringing cost per part down to a point where it can open up new markets, improve margins or accomplish other business

objectives,” believes Israel. “We can help companies determine whether additive has value before they invest in it.”

Glenn Redding, director of engineering for ESAB Welding & Cutting Products, agrees, saying that, “Additive manufacturing can be investigated and explore for unique applications and pain points for manufacturers dealing with high-mix/low-volume parts and who are driving for improved operational efficiencies.”

He notes that AM could help manufacturers provide additional resources to manage special requests from customers, respond faster by eliminating the need to produce tooling and do so without disrupting primary production capacity. In fact, many believe that today’s fastest growing segment for AM, both polymer-based and metal-based, is for creating jigs, fixtures and other job aids that reduce cost and time-to-market.

“When people see how additive manufacturing fits with current operations and understand the symbiotic relationship between the additive and subtractive technologies, it gives them confidence to move forward,” says Eelman.

Ted Toth, senior technical advisor, Rosenberger North America, has attended every single IMTS since 1974. He says that, “from a job shop perspective, you can see additive as a threat or an opportunity. Job shops need to embrace and understand additive processes, so they can support post-process machining of metal additive products.”

### ***Tooling Trends***

“People are beginning to see that they can very quickly and locally print their own tooling and therefore increase the innovation and decrease the overall cycle time to develop that next big product,” states Bill Peter, director of the Manufacturing Demonstration Facility (MDF) at Oak Ridge National Laboratory (ORNL), a long-time collaborator with IMTS for creating demonstrations for the Emerging Technology Center.

Peter notes that the United States lost about 37 percent of the die and tool industry in less than a decade and currently imports 70 to 80 percent of its tools. Having demonstrated success with polymer molds, the MDF is now examining how to move forward with metal 3D printing.

“We want to look at cost-effective feed stocks and increase the deposition rate of additive systems that could make tools,” he says, noting that tooling greatly affects lead times and the cost and rate of innovation.

To directly address this point, Vader Systems will demonstrate its Magnet-o-Jet™ technology to melt and “jet” a continuous aluminum wire (e.g., no powder) to create metal parts. Vader has a partnership with the Rochester Institute of Technology, which is helping co-develop the technology and new materials, such as aerospace grades of aluminum that are traditionally non-weldable and difficult to print with other AM processes.

“I cannot overstate the rate of growth in AM technology,” says Jennifer Moran, director of sales and marketing

for Vader Systems and four-time IMTS attendee. “At IMTS 2014, many people didn’t understand basic concepts of AM. Now, people understand nuances between technology and want to discuss specific applications and materials. We bring the entire Vader team, from C-level executives to mechanical engineers, so people who have different levels of interest, from financial to technical in nature, can get answers and move forward.”

### ***Software for Additive Manufacturing***

In a snapshot, the industry has gone from using AM for prototyping, to building jigs and fixtures and finally to serial manufacture of end parts. It’s a recommended path of technology adoption, as it helps companies become familiar in digestible increments. As companies move forward, however, they need to invest in AM-specific software.

“Originally, machines, materials and CAD/CAM software were made for prototyping. Now we need tools that are more robust to produce desirable, repeatable parts,” says Duann Scott business development & strategy, Additive for Autodesk. Scott explains that AM is an umbrella term for many different technologies and each technology has its own problems to solve.

“With our Nebfabb® suite of additive manufacturing software, we can streamline workflow from design and optimization, preparation and simulation and then processing,” Scott says.

One of the issues that many users of AM grapple with is that they don’t understand what happens during the build process, and that induces more trial and error time.

“What we’re seeing in metal printing is that there’s a lot of thermal distortion in the parts from the energy directed to the powder,” says Scott. “Autodesk software can simulate the build process and look for distortion, compensate and create successful prints for those parts.”

While Doug Dingus, Plural’s director of service, has more than 20 years of CAD and related software experience, he will attend IMTS for the first time this year.

“Jumping into the additive manufacturing scene feels to me a lot like CAD did in the 90s,” he said. “If you look back at solid modeling and how it changed so many industries, this looks exactly the same way. AM is on the cusp of a big explosion. I think IMTS is the place to go, because that’s where all the industry players will meet.”

With all the possibilities at IMTS 2018, “I believe the best way to accomplish your objectives is to have a plan going into the show,” says Jeff Holtzapfle, business development manager, Additive Manufacturing, Morris Group, which represents Desktop Metal and other manufacturers. “I think if you use the MyShow Planner and make appointments with exhibitors, you’ll have a much more successful time at IMTS.”

# Boeing Showcases the Future of Aerospace with Successful Farnborough Airshow, Announcing \$100 Billion in Orders and Commitments

Boeing strengthened its position as the global leader of the aerospace industry, booking historic orders and showcasing its innovation and strategy for growth at the Farnborough International Airshow. At the close of the industry portion of the show, Boeing announced a total of \$98.4 billion in orders and commitments for commercial airplanes at list prices and \$2.1 billion in commercial and defense services orders and agreements.

“Boeing led the way at Farnborough, demonstrating value for our customers, capturing important new business in products and services, and announcing the unique strength of our strategic partnership with Embraer. We also invested in our European communities and launched our new Boeing NeXt organization—proving the future is built here, at Boeing,” said chairman, president and CEO Dennis Muilenburg. “We will continue to win in the marketplace thanks to our talented team, who innovate across our enterprise with One Boeing collaboration and deliver on our proven portfolio with relentless customer focus.”

Boeing marked an outstanding week for order capture in commercial aviation, with customers announcing 673 orders and commitments in total, reflecting a continued resurgence in demand for freighters and strong order activity for the 737 MAX and 787 passenger airplanes. Boeing secured 48 orders and commitments for the 777F, five for the 747-8F, reflecting continued strengthening in the cargo market globally.

Customers also continued to demonstrate a strong preference for Boeing’s passenger airplane portfolio, with 52 orders for the 787 and 564 for single-aisle 737 MAX, including a major commitment from VietJet for 100 airplanes and strong demand for the largest variant of the MAX family, with 110 orders and commitments for the 737 MAX 10.

On the services side of the business, Boeing secured commercial and government customers including Antonov, Atlas Air, Blackshape, Cargolux, Emirates, EVA Airways, GECAS, Hawaiian Airlines, International Water Services, Malindo Air, Okay Airlines, Primera Air, Royal Netherlands Air Force, United States Air Force, WestJet and Xiamen Airlines.

At the show, Boeing also revealed its 2018 Com-

mercial Market Outlook, raising its 20-year outlook for commercial airplanes and services to \$15.1 trillion. The global market is forecast at almost 43,000 new airplanes, valued at \$6.3 trillion, and demand for \$8.8 trillion worth of commercial services through 2038. The strength of the cargo market, noted in the CMO, was underscored by more than 50 freighter orders and commitments at the show.

The Boeing 737 MAX 7 and the Biman Bangladesh 787-8 starred in the daily flying display while the Air Italy 737 MAX 8, a Qatar Airways 777-300ER, and CargoLogicAir and Qatar Airways 747-8 Freighters were featured in the static display. The U.S. Department of Defense displayed the AH-64 Apache attack helicopter, the CH-47 Chinook heavy-lift helicopter and the F-15E Strike Eagle.

Additionally, Boeing and Embraer leaders held their first news conference together since announcing plans for a strategic partnership. Muilenburg, Boeing chief financial officer and executive vice president for Enterprise Performance & Strategy Greg Smith and Embraer chief executive officer and president Paulo Cesar de Souza e Silva presented details of the proposed partnership, which includes ventures in commercial airplanes and lifecycle services, as well as defense.

During the show, Boeing also announced its collaboration with artificial intelligence company Spark-Cognition to deliver unmanned aircraft system traffic management (UTM) solutions. This announcement coincided with the launch of Boeing NeXt, an incubator organization for future commercial mobility solutions that will shape the emerging world of travel and transport. Boeing NeXt will leverage the company’s research and development activities and investments in areas such as autonomous flight, smart cities and advanced propulsion, and address transportation challenges of the future by moving people and goods with proven technology.

Boeing also highlighted its commitment to future aerospace innovators with a \$5 million investment in Newton Europe to launch Science, Technology, Engineering and Math (STEM) education “Newton Rooms” across nine European countries.



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# Partnership between Boeing Portland and HAIMER at OMIC R&D

The Oregon Manufacturing Innovation Center Research and Development (OMIC R&D) continues to grow a strong membership base with the addition this month of HAIMER. With a total now of seventeen manufacturing industry partners and three Oregon public universities, the Scappoose, Oregon based R&D facility continues to build a world-class operation to develop advanced metals manufacturing technologies.

Through this partnership, Boeing -- with its center of excellence and main production plant for heavy metal machining in Portland, Oregon -- is intensifying its strategic partnership with HAIMER by sponsoring a joint membership at OMIC R&D. The partnership between Boeing and Haimer reaches back more than 10 years when Boeing started using HAIMER's Safe-Lock™ pull out protection system. With one of the largest titanium machining shops in the world, Boeing Portland has set the standard for cutting tools and tool holder applications for difficult to machine materials.

Due to its technology advantages, the Haimer Safe-Lock™ system has become the Boeing Portland standard for roughing in their milling operations. Haimer implemented an open licensing policy where additional American and other cutting tool makers offer this technology as a standard solution which are widely used in the Boeing machining operations. In fact, the Boeing Company has also received an IP, patent and trade mark license from Haimer to be able to quickly respond to their machining needs.

William Gerry, Global Technology program manager for Boeing Research and Technology said: "Boeing is very carefully vetting and inviting members to partner up and contribute to OMIC R&D. We are delighted about the new membership of HAIMER, who we know as a high quality tool holding, shrinking, balancing and presetting technologies company that Boeing has relied on heavily and exclusively for this service. HAIMER can support OMIC R&D and its members with state of the art technology and industry 4.0 connectivity solutions."

OMIC R&D is the fifteenth such research center established with Boeing leadership worldwide, and the first Boeing has sponsored in the United States. Its mission is to bring together manufacturing companies and higher education in an innovation environment

where "outside-in" applied research with faculty and university students solves real problems for advanced manufacturers while training the next generation of engineers and technologists. Member companies share machinery, equipment such as tools, and expertise.

Andreas Haimer, president of the HAIMER Group, explained during the official handshake at becoming an OMIC R&D member, "We are proud and happy to be closely associated with Boeing as a leading aircraft manufacturer and one of our biggest global customers. The investment and membership at OMIC R&D is a clear commitment to the community, our customers and the entire manufacturing industry in Oregon, the Pacific Northwest and American manufacturing. OMIC R&D is an ideal platform to share these kinds of best practices making American and Oregon manufacturers more competitive. Apart from Boeing Portland we also heavily support the leading U.S. Boeing facilities with our system technologies in Auburn, Seattle, Everett, Helena, St. Louis, and Fredrickson."

HAIMER joins eighteen other OMIC R&D industry and university members in the Scappoose facility. Craig Campbell, executive director of OMIC R&D said: "Outside-in advance manufacturing research activities from Oregon Institute of Technology, Portland State University, and Oregon State University are solving manufacturing problems sets at OMIC R&D to support our members. Due to the strong investments from state and local government, OMIC R&D has become a draw for global manufacturing companies and is realizing its promise as an economic driver for the state and region."

The OMIC R&D model focuses research on helping indigenous industries increase competitiveness while creating a real partnership with and integration into the local economy. As research activities expand with high-cost, high-value machinery added on to the production floor, OMIC R&D will increase state and regional commercial productivity in manufacturing and stimulate economic growth and development.

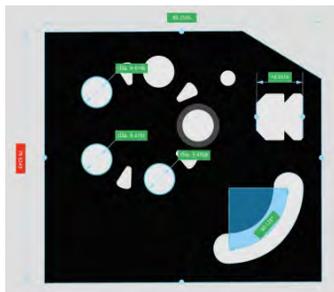
Coordinated with OMIC R&D's applied research projects will be hands-on "earn and learn" apprenticeship programs at the PCC OMIC Training Center, led by Portland Community College, and located in a nearby facility that PCC is building. While the Training Center construction is underway, PCC has a temporary delivery site at Scappoose High School.

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## Star CNC to Introduce a New Dimension for Machining Complex Parts — Booth #338874

Star CNC reinforces its 70-years as one of the world's most respected manufacturers of Swiss-type turning machines for the complex and precision machining of small parts at their IMTS Booth 338874 in the South Hall.

On display will be a wide range of machines, including two new introductions, equipped to meet the skilled workforce challenges facing manufactures today. Star CNC engineers continually improve machine performance, safety and ergonomic design to deliver maximum production efficiency and cost-savings.

Star CNC machines are known for their high operation efficiency, simple and logical operation, flexibility, rigid machine construction, B-axis versatility and Y-axis control for back working. Complex parts can be produced in one operation with the precision and accuracy required by critical applications in a variety of industries. Machining parts from difficult cutting materials is achieved with ease and precision. Star's proprietary motion control system further optimizes operations and significantly reduces idle machine time.

## THINBIT® MILL A GROOVE™

### —Booth #432172

THINBIT®, manufactured by Kaiser Tool Company presents the MILL A GROOVE™ line. The MILL A GROOVE™ line is a new system designed to trepan on a CNC mill.

According to the company, advantages of using MILL A GROOVE™ are: better sealing surfaces due to improved surface finish; groove diameters are concentric to spindle rotation, not table movement; elimination of secondary lathe operations for face grooving; lower cost per groove; increased strength due to greater cross-sectional area and custom inserts can



be made to match the groove form.

The MILL A GROOVE™ insert does not rotate about its own center, so the groove can be symmetrical or asymmetrical. Step grooves, convex and concave radius grooves, chamfered edges, angles and special profiles can be made with a single insert.

The MILL A GROOVE™ toolholders are designed to work in combination with boring heads and are available in common sizes with straight and 90° orientations.

Inserts for the MILL A GROOVE™ system are available from .004" through .150" in .001" increments.

Major diameters start at .300". Inserts are available in sub-micron grain carbide grades for ferrous and non-ferrous materials and HSS for composites and plastics. Inserts can be coated with TiN, TiCN, TiAlN or diamond film coatings. PCD and CBN tipping options for improved performance in hard or abrasive materials.

These tools, along with the entire THINBIT® line of cutting tools, will be on display at IMTS 2018.

## You Ji Heavy Duty Vertical Turning Lathe

### — Booth #S-338536

The You Ji VTL-1200ATC+C is a 49" table / 63" swing vertical turning lathe with full C-axis and live milling for heavy duty turning and milling of large sized workpieces. This heavy-duty VTL weighs in at 72,600 lbs. and features a rigid vertical column and a Meehanite castings base.

The X and Z axes are a box way design with Turcite B applied to mating surfaces and hand scraped. The ways are completely enclosed with a forced lubrication system. The Z-axis is a large 9" square ram made from cast steel that is extremely rigid.

The spindle construction incorpo-





# IMTS2018

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rates a high precision 24" O.D. / 18" I.D. Timken cross roller bearing. It has a 60 HP Fanuc high torque spindle motor coupled with the 2 speed ZF gear box.

The full 360,000 position Cf-axis table is driven by automatically engaged / disengaged worm gear with a separate servo motor and gearbox. The 2400 RPM live milling spindle features a 20HP spindle motor plus 2-speed gearbox.

The ATC stores 16 tools with a #50 taper tool attachment.

A Fanuc OiT-D control with manual guide i conversational programming is standard.

## Makino D200Z VMC High-Speed 5-Axis —Booth #338700

The Makino D200Z 5-axis vertical machining center combines the quickness of machine movements and accuracies with the latest software developments for high-precision, high-speed motion control. From roughing to high-speed finishing of multifaceted, contoured 3-D geometries, the D200Z boosts productivity.

The design of the D200Z packs speed and precision into a compact unit (1500mm wide by 2220mm deep. Both the standard 20-tool capacity automatic tool changer (ATC) and the optional 40-tool ATC fit within the same machine floor space, enabling companies to expand capability without loss of floor space.

Wide base castings and core-cooled ball screws serve as a base platform for all other machine components. The machine's 30,000-rpm, HSK-E50 spindle is designed with a high-tech spindle core and jacket cool-

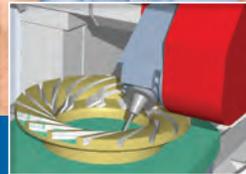
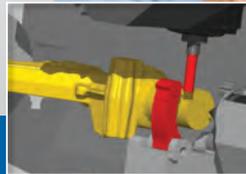
ing system to tightly control thermal growth, deflection and vibration during

high-speed machining operations. As a result, Makino reports the D200Z

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extends tool life and has exceptional surface finishes even in applications requiring fine tool blends and matches.

## LK Metrology To Feature CMM's And Multi-Sensor CMM Software —Booth #E-5060

In a partnership with Nikon Metrology, LK Metrology will join Nikon in their booth and feature their Altera “S” multi-purpose compact CMM, their Altera “M” high-speed production-type CMM with probe and laser

scanning, including applications of Renishaw PH20 and REVO2 probes. All the LK Metrology CMMs will be fitted with CAMIO8 multi-sensor CMM software and Renishaw Modus Software. In addition, a CMM robotic cell with an Altera “S” equipped with a Nikon L100 laser scanner.

The Altera “S” is LK’s multi-purpose CMM with advanced capabilities for the compact CMM class. The machine is multi-sensor ready, allowing the user to expand the capability of the CMM as requirements change.

The Altera “M” range of performance CMMs delivers exceptional



throughput and enhanced precision for production applications. Exclu-



**LK Metrology Inc.**  
12 Goodyear, Unit 105  
Irvine, CA 92618

**CONTACT: Scott Collier**  
Tel: 760-978-7091  
[scott.collier@lkmetrology.com](mailto:scott.collier@lkmetrology.com)  
Website: [www.LKmetrology.com](http://www.LKmetrology.com)

**ALTERA S is a premium multipurpose CMM with the most advanced capabilities in the compact CMM class. Innovative multi-sensor ready technology allows you to expand the capability of your CMM as your requirements change. LK Metrology’s range of premium quality ALTERA CMMs meet the varying needs of manufacturers, both today and in the future.**

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[IMTS.com/MollyTerry](http://IMTS.com/MollyTerry)

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sively designed for high-speed tactile probe scanning and laser scanner applications, the Altera 'M' is a popular choice for automotive and aerospace manufacturers.

Proven in the most challenging application environments, LK's CAMIO8 software continues to be the CMM software choice for many of the world's largest manufacturers. By leveraging the productivity benefits of CAMIO8, manufacturers can focus on accelerating lead times and improving product quality while reducing costs. Camio8's interoperability across CMM platforms, sensor technology and manufacturing sites, is a unique advantage.

## Hurco Expands BXi Line for IMTS

Hurco has added two new models to the BXi CNC machine series as part of the company's 50th Anniversary exhibition at IMTS: the BX50i (XYZ Travels 37.4" x 53.2" x 23.6") and BX60i (XYZ Travels 52.1" x 63" x 27.6"). The rigidity and thermal stability of the double-column design and the overall weight of the machines provide exceptional accuracy and outstanding surface finish capabilities.

Designed with the mold and aerospace industries in mind, the BXi machines meet the needs of any high speed machining application that requires tighter tolerances.

The BXi Series utilizes a double-column design – minimizing machine distortion and thermal deformation. The ladder design of the BX50i bridge provides maximum support to the head

casting; and the spindle center line is closer to the supporting structure, allowing increased rigidity.

The BX50i is equipped with a Hurco control powered by WinMax® control software and the patented mo-



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tion system called UltiMotion®. Hurco reports the control supports multiple programming methods: conversational programming; NC programming; and a Hurco-specific feature called NC/Conversational Merge.

UltiMotion is the sophisticated motion control system invented by Hurco that determines the optimal trajectory to run the tool, provides consistent programmed feed rates and reduces cycle time. UltiMotion includes up to 10,000 blocks of dynamic look ahead and is smart enough to adapt as required by the tool path.

## Kitamura Supercell-300G Horizontal Manufacturing Cell

—Booth #339148

Kitamura Machinery will showcase its new Supercell-300G 5-axis, horizontal flexible manufacturing cell at IMTS 2018. Attendees will be able to view the SUPERCELL-300G and its 20-station APC with work ID system and 174 tool matrix style tool changer.

Packing 20-pallets into a 151” wide footprint, the Supercell-300G is a space saving production center with the ability to run small to medium sized, complex, highly complex parts completely unmanned. With up to 80-pallets available Kitamura’s



integrated work ID system employs an IC chip on each pallet allowing for storage and communication of pallet work data quickly and accurately to the easy to operate pallet scheduling sub menu. Pallet table size is Ø7.9” round with a maximum height of 7.9”. The uniquely integrated design of the

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pallet pool system out front of the machine allows easy access and easy visibility of all pallets simultaneously. Kitamura's automatic work handling robot is exclusively designed for the Supercell-300G, allowing for smooth and swift pallet change out.

The Supercell-300G is designed with a 360° rotary table combined with a highly rigid integrated trunnion table with an A-axis travel of 30 to -120° for maximum flexibility in positioning the workpiece closer to the spindle. The 4th and 5th axis employs ultra-high precision roller gear cam technology along with a hydraulic clamping system designed to tackle more complex 5-axis simultaneous machining.

The standard 20,000rpm, built-in, dual contact spindle offers the benefits of high speed, smooth precision and the ability to handle a variety of exotic materials. The horizontal spindle design brings with it increased rigidity and easy accessibility to the workpiece. Positioning accuracy of +/- 0.000079" /full stroke, repeatability of +/- 0.000039".

Significant magazine tool capacity and ease of use can be found in the 174 tool matrix style tool changer (up to 314 tools available). The matrix magazine handles tools up to 13.7" in length, Ø5.9" in diameter and weighing 22Lbs.

## ZEISS to Show Wide Array of Products —Booth # 135502 & 135655

Experience the recently expanded X-ray solution line with the new Bossello 2D X-ray systems, get up-close demonstrations of the latest CMMs, sensors and automated solutions, plus see the ZEISS CALYPSO 2018 software features. ZEISS booths at IMTS include East Building, 135502 & 135655 (ZEISS X-ray Solutions), plus the North Building, Smartforce Student Summit 215406.

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## Verisurf Software to Debut 2019 Version —Booth #133345

Verisurf Software, Inc. will be presenting Verisurf 2019 software. Verisurf 2019 is the latest release of the popular measurement software for automated quality inspection and reporting, scanning and reverse engineering, tool building and assembly guidance. Enhancements in the new release focus on automated inspection and compatibility across the manufacturing enterprise, whether in the quality lab or on the shop floor.

“Verisurf 2019 allows users to create a single inspection plan that can be implemented across all devices, regardless of type or age,” said Ernie Husted, president and CEO of Verisurf.

Verisurf 2019 can be used to program and operate new and legacy CNC CMMs; the same inspection routine can also be used with portable arms and trackers. “This universal compatibility provides increased productivity and continuity between first article and production inspection, as well as the flexibility to move between the quality lab and the shop floor,” added Husted.

## Methods to Exhibit Digital Optical Comparators —Booth #339119

Methods will showcase digital optical comparators along with many other machines at their booth

at IMTS. VisionGauge second generation digital optical comparators are drop-in replacements for traditional optical comparators and work directly with CAD data. The advanced CAD AutoAlign™ and CAD Auto-Pass/Fail™ tools eliminate operator error and can automatically collect complete electronic documentation including measurements, statistics, and pass/fail results, and produce a high resolution image of the part with its CAD overlay, directly on the shop floor.

Extended Travel Digital Optical Comparators 700 Series and 500 Series will be shown, each featuring a new, larger, high resolution 53” single monitor. The 700 Series has a 24” x 24” x 24” envelope and tilt and rotary axes based in a trunnion configuration, accommodating parts weighing up to 100 lbs.

## Renishaw to Feature New Generation of Software —Booth #135509

Renishaw will feature a new generation of software for the company’s XR20-W rotary axis calibrator at IMTS 2018. CARTO 3.0 allows users to quickly capture and analyze machine performance data from rotary axes.

For the first time, the Renishaw XM-60 multi-axis calibrator can be used with the XR20-W rotary axis calibrator, providing one easy to use and intuitive software solution for all Renishaw laser calibration products.

Combining the capability of XR20-W and XM-60 with CARTO 3.0 reduces the calibration of a 5-axis machine tool from several days to within half a day according to a company spokesman.

The new software allows multiple



error types to be analyzed over different time frames, building up a comprehensive overview of a machine’s performance. CARTO 3.0 automatically stores complete datasets for each machine tool within a single database. By independently comparing the different errors associated with each axis, over different time frames, users can plan preventative maintenance schedules.

With Renishaw’s CARTO software suite, data is more visible, usable and actionable.

CARTO release 3.0 is available to download free of charge from [www.renishaw.com/carto](http://www.renishaw.com/carto).

## Jergens Inc. To Introduce Numerous Quick-Change Workholding Products and Custom Design and Build Capabilities —Booth #432154

Jergens Inc. will display their many new innovations including top tooling; a new line of pallets, risers, receivers and adapters; and the company’s capabilities to support customers with custom design and build solutions.

Additionally, Jergens will display its entire range of quick-change workholding including Ball Lock®,



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Drop and Lock®, FixturePro®, Zero-Point System® (ZPS) and OK Vise. To illustrate how the company's core products can be located and relocated via automation, a robotic demonstration featuring a Toshiba TVL 700 will be running every day of the show.

A next generation multi axis 130mm self-centering vise will be introduced at the show. The new vise actively reduces jaw lift. The unique vise also has an easy centering adjustment and uses a screw with trapezoidal threads.

Also, on display will be the ad-



dition of Jergen's Quick Loc™ line of pallets, cubes and rotary receivers. These low-profile pallets are configured in industry-standard pull stud patterns of both 52 and 96 millimeters.

Jergens will have products and personnel on hand to promote the company's custom design and build workholding capabilities. The expanded effort combines with existing Fixture-Pro®, multi axis, and other workholding products. Custom design and build capabilities improve Jergens' time to market.

Jergens will automate several fixtures and workpieces on a Toshiba TVL 700 robot and a Lyndex-Nikken five-axis rotary table.

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## Heimatec Set to Introduce New Tool Program for Automatic Lathes —Booth #432427

Heimatec announced the availability of their Citizen tool program at IMTS 2018. Made especially for longitudinal turning lathes and optimized to the required machine parameters, users can now use the tools for maximum efficiency and cost-effectiveness.

Given the many uses of turning lathes, Heimatec created a wide range of both static and driven tools. During its development, an optimal adjustment to the machine parameters, as well as a precise design for the ma-

chine parameters was carried out.

The purpose of this development was to construct a coherent and continuous tool system based on the improved Heimatec technology. The result is a program of processing instruments with long service life and the highest processing quality. To achieve this, Heimatec relies on the superior spindle bearing technology and ground gear components. Furthermore, Heimatec's housings and spindles have maximum stiffness.

In addition to Citizen, Heimatec continues to develop special tools and solutions, as well innovative ways to integrate the user experience.

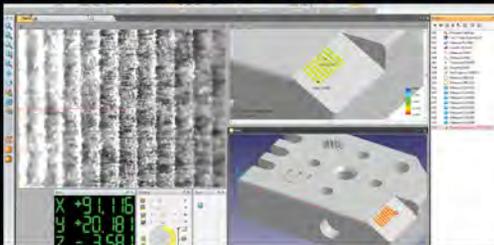
## Tornos Technologies to Show Full Range of Technologies

### —Booth #339053

This year at IMTS, visitors in Tornos 1,500 ft<sup>2</sup> booth will experience a full-range of technologies from single-spindle to multi-spindle, along with its very own Industry 4.0 software, TISIS. Six machines will be displayed in Tornos' booth: US Premiere –SwissDECO 36, MultiSwiss 6x16, Swiss GT 26, SwissNano with a patriotic American flag decal, the Esco NM6 Flexi, and an original 100-year-old Swiss lathe, No. 20, made in 1917.

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Three Tornos products will also be represented in Tornos' distributor, Methods Machine Tools' booth 339119: MultiSwiss 8x26, SwissNano, and Swiss DT 26.

Tornos will tell the story of its progression over 100 years, and entrance into multi-tasking, with the SwissDECO premiere. In line with the premiere of its multi-tasking machine, Tornos will be manufacturing a multi-tasking pen. Visitors will walk by machine stations and assemble the final product with each pen part custom made on Tornos machines.

## Takumi USA New Line of 5-Axis Machining Centers —Booth #338420

Takumi USA will debut its new line of 5-axis machining centers at IMTS 2018. The new Takumi line includes the U600 (XYZ/AC travels: 24.4" x 39.4" x 19.7"/ +30°-110° x 360°) and U800 (XYZ/AC travels: 31.5" x 39.3" x 29.5"/±120° x 360°). Both machines utilize a trunnion style, 2-axis table and the Heidenhain TNC 640 control. The U800 is a high speed gantry machining center over the high

torque table (800 mm platter) that features an 80 RPM twin torque motor A axis and a 100 RPM single torque motor C axis. The U series by Takumi was developed to achieve world-class performance for die & mold, aerospace and other high speed applications that require tighter tolerances.

The U800 will be featured at Takumi USA's booth during IMTS with a 5-axis simultaneous cutting demonstration of a 20" tall replica of the famous Venus De Milo sculpture. The reproduction will be produced in 4140 steel – showcasing the rigid machine



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construction, speed and superior part surface finish.

Additional booth events include a hybrid manufacturing process demonstration using a Takumi H12 in partnership with 3D Hybrid Solutions; and visitors will also learn how to “make more chips” with the Takumi Fanuc H control on the heavy-duty high-torque Takumi V11 machining center in a partnership with Greenleaf Corporation.

## Index Multi-spindle Automatic Lathe Debuts —Booth #338136

Index will introduce to North America its MS40-8 multi-spindle automatic with 8 CNC spindles, two back-working spindles for rear-end machining, deploying up to 18 CNC



slides (X and Z) and additional Y axes if required.

The MS40-8 handles bar stock through a new bar loader also at IMTS, the Index MBL40-8, or chuck parts. The 110 mm chuck allows machining of pre-formed, forged or extruded parts of up to 80 mm. For simple parts, the machine can be used as a double

4-spindle machine.

The heart of the Index MS40C-8 multi-spindle automatic lathe is the compact spindle drum with eight fluid-cooled motorized spindles with synchronized technology

The MS40C-8 is able to completely machine even very complex parts in one operation. Up to two pivoting synchronized spindles are each able to work on up to seven rear end machining tools: four of them can be live.

## Makino DA300 Vertical Machining Center —Booth #338700

Makino announces its latest full 5-axis machine solution, the DA300 vertical machining center, providing an ideal blend of speed, precision and flexibility for complex part applications. Inspired by the best design characteristics from both vertical and horizontal machine platforms, the DA300 delivers the highest productive capabilities for multi-axis workpieces in the smallest of machine footprints. These features make the DA300 ideal for single setup, multi-side accessibility, or full-contouring capability to quickly and efficiently tackle a wide variety of complex production part applications.

“The DA300 integrates numerous features that increase productivity and efficiency by providing significant reductions in non-cut time,” said Bill Howard, VMC product manager at Makino. “The machine provides a 50 percent reduction in spindle acceleration time, 15 percent reduction in positioning time, 40 percent reduction in tool-change chip-to-chip time

and includes a standard vision-type broken-tool sensor [Vision B.T.S.] that optically checks tools outside the work zone to ensure tool consistency and part quality while simultaneously reducing non-cut time during tool changes by 80 percent. Individually, each element reduces part cycle time and increases productivity; however, when all of these time savings are combined, the result is a dramatic advantage in reduced part-production times and increased profitability.”

The DA300 comes standard with a 20,000-rpm HSK-A63 spindle, delivering speed and flexibility. Additionally, the machine’s standard configuration includes a 60-position ring-type tool magazine with capacity for a wide variety of tooling as well as a Vision B.T.S. to verify the integrity of the tooling prior to use

## Haimer Basic End Mill and Power End Mill Series —Booth # 431546

The Power Mill end mill series is made from K20-K40 grade fine grain carbide developed to be matched with Haimer’s premium tool holders. Haimer’s premier end mill geometries utilize flute and helix designs to provide chatter free high-end machining. They have integrated Safe-Lock™ shanks for optional use with the Safe-Lock™ tool holding technology.

Its variable helix design provides vibration-free machining and a runout accuracy <0.0002”. Power Mill end mills are precision ground and fine balanced which provide consistent and repeatable performance and maximum

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This landing gear part is clamped on the I.D. with a T212 MANDO Adapt mandrel. The mandrel is being held in a HAINBUCH TOROK 65 chuck, which was mounted on a 5-axis machine.



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# IMTS2018

metal removal rates.

Haimer's versatile Basic Mill end mill is a high performance variable helix end mill. This end mill not only provides superior milling capabilities but is also specially designed to perform a wide range of applications normally done with a drill. This tool is designed to reduce harmonic resonance. Its variable helix design varies from front to back, making the Basic Mill Z4 (31° - 33° helix) perfect for roughing and finishing. Capable of making aggressive cuts in general steels, cast iron, alloy steels and stainless steels.

For added versatility, Haimer gave the Basic Mill Z4 a unique end gashing and flute design, which adds the capability to do steep ramping and plunging (drilling) operations.

## MCC to Exhibit the New Citizen Cincom D25

### —Booth #339419

Marubeni Citizen-Cincom (MCC) will feature Citizen's newest, state-of-the art, Swiss style lathe at IMTS. The D25 is equipped with double gang tool posts and B axis. The double gang layout enables short cycle times for high productivity at low part cost. In addition, the large number of tools, for both main and sub spindle, provides cost effective production of complex workpieces. The D25 features independent adjustable angle rotary tools to sub spindle, 3 x Y axis and 3 x Z axis, B axis for front-back machining, up to 59 tools, switchable operation for use with or without guide bushing, next generation CNC system with touch screen, and a variety of interface choices (USB memory, SD card, RS232, Ethernet).

MCC will also display several other Citizen Cincom and Miyano machines at IMTS.

## Hermle to Unveil Newest Automation and Industry 4.0 Technology

### —Booth #338136

Hermle Machine Company have many firsts planned for this years IMTS. The German-based machine tool manufacturer will exhibit three new five-axis machining solutions.

Smart manufacturing, flexible automation and Industry 4.0 will be a point of emphasis at this year's show. A planned demonstration via a partnership with Haimer Corporation will showcase advanced machine connectivity

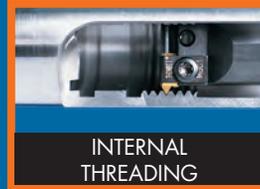
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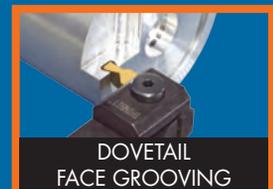
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and data transfer capabilities.

Machining Centers and automation technologies to be displayed include: Hermle's newest machine model, the C 650 is the largest machine on the Performance-Line and compliments the C 250 and C 400. C 650 uses a modification of Hermle's gantry-type design, with a mineral-cast machine bed. The swiveling rotary table can accommodate workpieces up to 1500 kg. The C 650 has an integrated tool magazine for 42 tools with two additional magazines.

The HS Flex handling system is a compact automation tool designed to fit both three-axis and five-axis Perfor-

mance-Line machining centers (C 250, C 400) as well as High-Performance-Line models.

The C 22 will be combined with RS 05 robot system to show the endless applications for a wide variety of machining tasks. The storage systems for the RS05 are completely adjustable. The HACS (Hermle-Automation-Control-System) and the HIMS (Hermle-Information-Monitoring-System) will be used.

The C 42 UMT machining center will be on display at the Emuge Corporation booth #431536.

## Exsys Tool to Spotlight Preci-Flex® Tooling System and Advanced Gear Solutions

—Booth #432061

Preci-Flex features a single base holder and multiple tooling adapters that utilizes the ER collet pocket. The short, compact design ensures maximum torque transmission and rigidity. Additionally, Preci-Flex's conical and flat-face planar interface allows the use of either an adapter or a standard ER collet, and enables collets, end-mill holders, expanding collet chucks and shrink-fit tooling to be mounted on a

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single base holder.

Among its spiral bevel-style gearboxes, Eppinger offers BT (bevel torque) and BM (bevel maximum torque) compact spiral bevel gears that bring high torque and maximum efficiency. Each bevel gearbox type offers minimized tooth clearance and optimal transmission properties via precision axes and bearing seats combined with Gleason bevel gears.

Eppinger's planetary gearbox line offers PE (planetary eco) and PP (planetary precision) planetary gearboxes for applications that require low backlash, high efficiency, shock resistance

and a high-torque-to-weight ratio.

## Compact and Super-Size Kitagawa Rotary Tables —Booth #432071

Kitagawa rotary tables from Tecnara Tooling Systems offer high production capacity and an exceptional array of guaranteed accuracies.

The TP Series tables are intended for the exceptionally large workpieces. The TP530 is a large, ultra-light and compact table with a 13.6" diameter through-hole. The newly introduced

TP430 is a smaller version with a 10.8" diameter through-hole.

The super-compact CK Series features thin bodies and small footprints. The CK160 is 3.9" deep, this provides a wide machining area.

MR Series tables feature guaranteed accuracy within 20 seconds in most models, a triple disc air clamping system, and high-speed table rotation up to 50 rpm for the model MR120. TX Series tables feature a built-in air booster for maximum clamping force.

Kitagawa TT and TW Series tilting rotary tables employ a dual axis de-



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sign that permits any compound angle and eliminates additional set-up. All Kitagawa rotary tables feature large diameter worm gear.

## Envision the Future with GF Machining Solutions —Booth #338754

GF Machining Solutions will demonstrate a wide range of innovative

high-speed milling, EDM, laser texturing, additive manufacturing and micromachining technologies along with automation, tooling and connectivity solutions.

Headlining the event will be the North American debut of the new Mikron MILL P 500 U high-performance milling solution. It has powerful and dynamic material removal capabilities and high stiffness. It also enables con-



tinuous machining of complex forms and tough materials..

Manufacturers will also experience many other advanced solutions in GF Machining Solutions' booth such as: the AgieCharmilles CUT P 350 wire-cutting EDM machine, the Liechti go-Mill 350 5-axis machining center for the aerospace industry and the AgieCharmilles LASER P 400 U all-in-one five-axis machine that incorporates both a fiber nanosecond laser and a femtosecond pulsed laser to allow texturing, marking and engraving of a surface with a single setup.

Also shown will be the MicroLution ML-5, a compact, ultra-fast, ultra-precise five-axis laser micro-machining platform for micron-scale machining, Tooling, automation and software solutions from GF Machining Solutions' System 3R brand including, the System 3R WPT1+ compact part changing robot. Step-Tec's new HVC140 CoolCore Spindle HSK-E40 targeted to mold and die production and high-end parts production as well as its new HPC290 spindle for heavy-duty milling of structural parts, blisks, fir-tree disks and blades for aerospace will be shown.

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**Measurement Travel:** 16" x 18" x 14"

Also 20" x 20" x 16" (optional)

**Scale feedback:** 1 micron resolution Renishaw Scales

**Software:** CMM Manager or with video with Quadra-check IK5000 for video

**Non-Contact vision (optional):** 1/3 Color CCD with zoom

**Zoom Magnification:** 10X to 100X or 20X to 200X

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**Tactile Probe:** Renishaw MCP Indexable probe

**Accuracy:** 2+L/200um. U3=4+L/100um.

**Construction:** Granite



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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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Length	Height	Width	Part Number	Reg. Price	PROMO!
6"	2"	3/4"	VJ-601-10	\$ 155.20	\$ 110.26
6"	2"	1"	VJ-602-10	\$ 172.30	\$ 129.73
6"	2"	1-1/4"	VJ-603-10	\$ 203.80	\$ 158.93

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Jacobs Equiv	Cap.	Mount	Part Number	Mfg List	SALE!
8-1/2N	1/64-5/16"	2JT	LAM-L40070B	\$123.72	\$86.60
11N	1/32-3/8"	2JT	LAM-L40071B	\$132.13	\$92.49
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
-	1/32-1/2"	6JT	LAM-L40626B	\$192.22	\$134.55

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Dia	LOC	Shank	OAL	Part Number	Price EA
1/8	3/8	1/8	1-1/2	YG-EMUGMF68901	\$ 12.73
1/4	3/4	1/4	2-1/2	YG-EMUGMF68905	\$ 21.75
3/8	7/8	3/8	2-1/2	YG-EMUGMF68907	\$ 35.84
1/2	1	1/2	3	YG-EMUGMF68909	\$ 55.07
5/8	1-1/4	5/8	3-1/2	YG-EMUGMF68911	\$ 111.19
3/4	3/4	3/4	3	YG-EMUGMF68048	\$ 141.45
1	1-1/2	1	4	YG-EMUGMF68913	\$ 257.24

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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

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## Lexair Unload Pro 80-1200 Lathe Sub Spindle Part Unloader —Booth #43-1322

Lexair Incorporated introduces the Lexair Unload Pro 80-1200 sub spindle part unloader. The Unload Pro can handle unloading solid or tubing finished parts up to 3.15" diameter sub spindle length parts up to 48" length. Sub spindle extensions are available.

The Unload pro is equipped with an incline adjustable part storage magazine 40" deep for parts that can touch after unloading.

Standard unload configuration is an extraction rod equipped with an O.D. or I.D. collet, other unload clamping methods are available. If the part surface is delicate an unload tube fitted with nylon bushings can swallow the part to protect the surface while unloading.

## Methods To Show Machining Power, Automation Solutions —Booth # 339119

Methods Machine Tools, Inc. will have over 40 leading-edge solutions in

action at the show. In addition, several machines from new partners Niigata, Tornos, and Ocean Technologies will be shown for the first time by Methods along with an important new-to-market product line for Methods Machine Tools.

Ten engineered automation solutions will be prominently featured by Methods, including a high-speed gantry-loaded multitasking turning center, a precision wire EDM cell, a deburring / finishing operation and an automatic workpiece inspection cell. All solutions are integrated with



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robotic handling. Cell demonstrations will showcase the RoboDrill job shop cell, a deburring, buffing and finishing process, a smart bin picking cell with vision and part recognition, high flexibility multi-machine EDMs, an automatic shearing process preparing extruded aluminum stock to length prior to feeding parts to a RoboDrill, a Häberle productivity system extending tool magazine capacity on a RoboDrill, and SCARA robots in action. Nakamura-Tome AS-200 and Kiwa Triple H-40 collaborative robot cells will also be featured.

CNC Machines to be featured include the Nakamura SC-300IIMYB that has an extremely rugged machine structure. The Yasda YBM 7Ti 5-axis CNC horizontal jig borer with a 2-position automatic pallet changer is a high precision machine.

Also shown will be the Fanuc advanced series D21SiB, D21MiB and D21LiB RoboDrills. The latest generation RoboDrill Advanced models with fast servo motor-driven ATC's , an impressive extended Z-Axis stroke, optional servo door on the front and side, and much more. New tool monitoring solutions, Fanuc RoboDrill-LINKi and Fanuc MT-LINKi Integration servers, will be shown.

Fanuc CiB Series wire EDMs feature the Fanuc 3li-WB control with new iHMI User Interface, advanced Automatic Wire Feeding, and a new economy mode.

Kiwa Japan has improved on its KH-4500 horizontal machining center with the new compact KAI design, while retaining large machining capacities.

Also on display will be the compact HMC Kiwa Triple H40 with quick work changer, loading and unloading work pieces using a collaborative Fanuc robot. While shown as a single

machine demo, the Triple H40 is designed to work in an automated mul-

iple machine line. The Kiwa-Methods KMH-300A series horizontals will be

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running live cutting demonstrations on 6-pallet and 2-pallet machines.

## Renishaw Presents Its Latest Smart Factory Solutions

—Booth #135509 & 431607

Renishaw is showcasing its diverse technology portfolio and extensive experience in automated process control. Renishaw is demonstrating its range of smart factory process control solutions.

A high-productivity machining cell, featuring fully integrated process control, will be on display at Renishaw's main booth (No. 135509). This exhibit will demonstrate how high levels of automation and connectivity can be incorporated into CNC machining operations.

The multi-sensor capability of the REVO™ system on CMMs will be demonstrated.

On CNC machines, SupaScan uses the latest OSP60 probe to offer fast workpiece set-up cycles. The system can also monitor surface condition .

The increased flexibility and application range of the Renishaw Equator™ gauging system will be exhibited. The new Equator 500 accommodates larger parts, and the introduction of IPC (intelligent process control) software allows manufacturers to automate process control and tool offset correction directly to CNC machines from any Equator gauge.

IMTS 2018 visitors will also see the latest developments in Renishaw software, which deliver improved ease-of-use as metrology moves closer to the point of manufacture on the shop

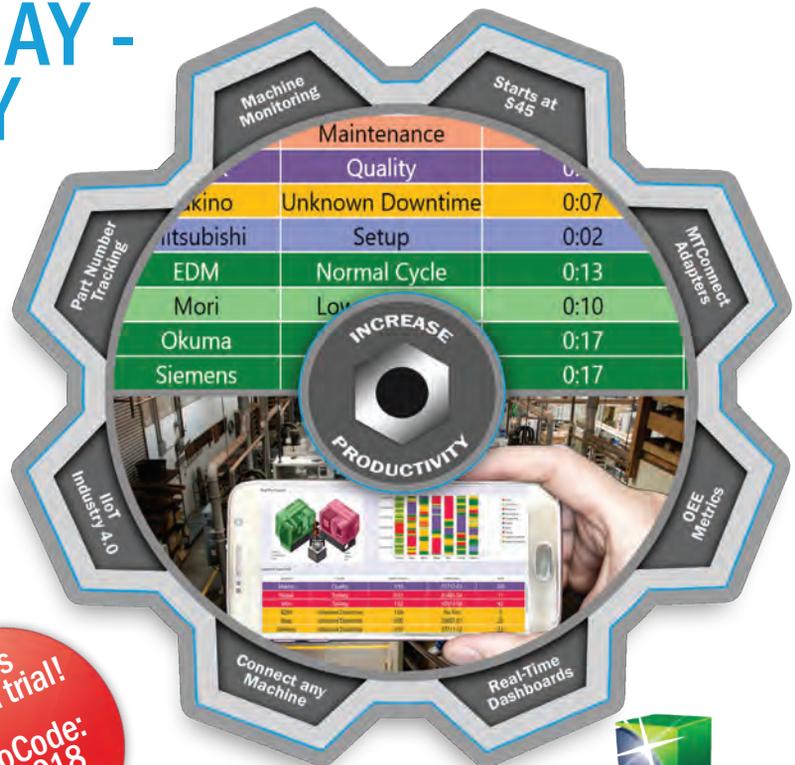
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Booth #133240



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floor. These include MODUSTM 2 software for CMMs and Equator gauging systems, mobile apps for on-machine probing and CNC controller-based apps for probing and reporting.

In the 3D Printing and Additive Manufacturing pavilion (West Building, Level 3), Renishaw is showcasing its latest AM system and software (Booth No. 431607). The new multi-laser RenAM 500Q increases productivity in the most commonly used machine platform size. Renishaw's suite of AM software includes QuantAM build preparation software, InfiniAM Central remote process monitoring and InfiniAM Spectral.

## Haimer New Microset Tool Presetting Machines —Booth #431546

Haimers' new Microset tool presetting machines not only reduce set up times they also allow you to increase your machine utilization at the same time by streamlining your tool setting processes. Designed for absolute ease of use with uncomplicated software and a thermally stable cast iron base, Haimer reports that Microset gives you the highest degree accuracy and process reliability from one operator to the next.

Haimer Microset tool presetting machines are industry 4.0-ready with post-processing capabilities and  $\pm 2$   $\mu$ m repeatability. Features include 'Release-By-Touch' with laser edge-finder, vacuum clamping, 1,000 tool data storage and an incident light.



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Whether your CNC control has AC or DC drives, uses Fanuc, Mitsubishi, Yaskawa, Glentek, Siemens, Baldor, etc. we can build your rotary table with a compatible motor for just about any 4th axis-ready machine on the market! If you need help getting a machine 4th axis ready, we also supply the parts you need; such as amplifiers, drives, cables and connectors.

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## 5 Minute Chuck Change Reduce Change-Over While Maintaining Preci- sion Accuracies

—Booth #431636

The centroteX System from Hainbuch America offers significant advantages to manufacturers processing multiple parts of varying sizes requiring various clamping methods.

According to Dale Sonnenburg, Hainbuch America engineering manager: "Hainbuch's reputation for precision workholding is built around versatile high-precision chucks designed for the fast change of collets, bushings,

jaws, and other clamping devices. The centroteX System takes this even further by facilitating the fast and easy changeover of the entire chuck. This not only increases the range of part diameters that can be machined but extends the capability of the machine tool in terms of process variability. Further, it allows for workholding devices to be quickly and accurately mounted on multiple milling and turning machines within a manufacturing plant"

At the heart of the system is a precision-machined adaptor/flange plate aligned with centrex interface, equipped with a bayonet mount and a drawtube adapter. This in turn ac-

commodates an extensive variety of chucks and holding devices that are easily connected and locked by six simple fasteners. Changeover time of the centroteX system is typically less than six minutes, while maintaining repeatability and changeover accuracy of < 0.002mm.

A second element of the system is the Monteq mounting aid for large and heavy clamping devices. Used with a suspension bar on a lathe or an overhead crane, the Monteq offers improved balance and ease of component handling during changeover.

Does your part require multiple operations that involve both milling & turning? Tired of changing out tools mid process on complex parts? Running out of floorspace? Then it might be time to get your shop a

# JOB SHOP IN A BOX

The C1 is a 6" Chucker Horizontal Turning Center with Tool Magazine & Y-Axis that combines the processing capability of a turning center & a machining center. It can completely manufacture parts with complicated shapes with a single chucking operation.



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## Compact Tongtai High Speed Horizontal Machining Center

—Booth# S-338536

The new SH-5000P horizontal machining center from Tongtai was developed for mass production line formation. The new compact machine has a 35% smaller footprint than the previous model at only 90" wide.

The machine is a XY traveling column type design where the pallet moves in Z. The APC is a rotary type pallet changer and it exchanges the pallets in only 7 seconds. For pallet rotation in the machining envelope, a full contouring "B" axis precisely indexes the pallet every .001 degree and a hydraulic clamping mechanism is used to clamp the pallet in place. The B axis is high speed, with 90-degree index time of 0.76 seconds.

It features an ultra rigid Meehanite cast iron frame with an advanced 3 point leveling system. The 1.57" diameter ballscrews are class 3 with a double nut pre-loaded and pre-tensioned design allowing a rapid traverse rate of 2362 inches per minute. High-speed acceleration reduces non-cut time (X,Y,Z acc/dec of up to 1.0G). The ABS (Absolute Pulse Coder) servo system does not require zero return.

At the heart of the machine is a high power integral spindle with 15,000 RPM and spindle acceleration from 0-7000 in just 0.48 seconds and 0-15000 in only 1.9 seconds. Deceleration from 12000 RPM to stop is only .8 seconds. The spindle produces 50HP peak (10 min. rating), 35 HP in high and 25HP in low while producing 184 ft./lbs. of peak torque at only 980 RPM. It has a standard 60-station automatic tool changer. Tool change time is only

1.4 seconds tool to tool. Average chip to chip time is 3.0 seconds.

The Fanuc OiM-F conversational control is standard.

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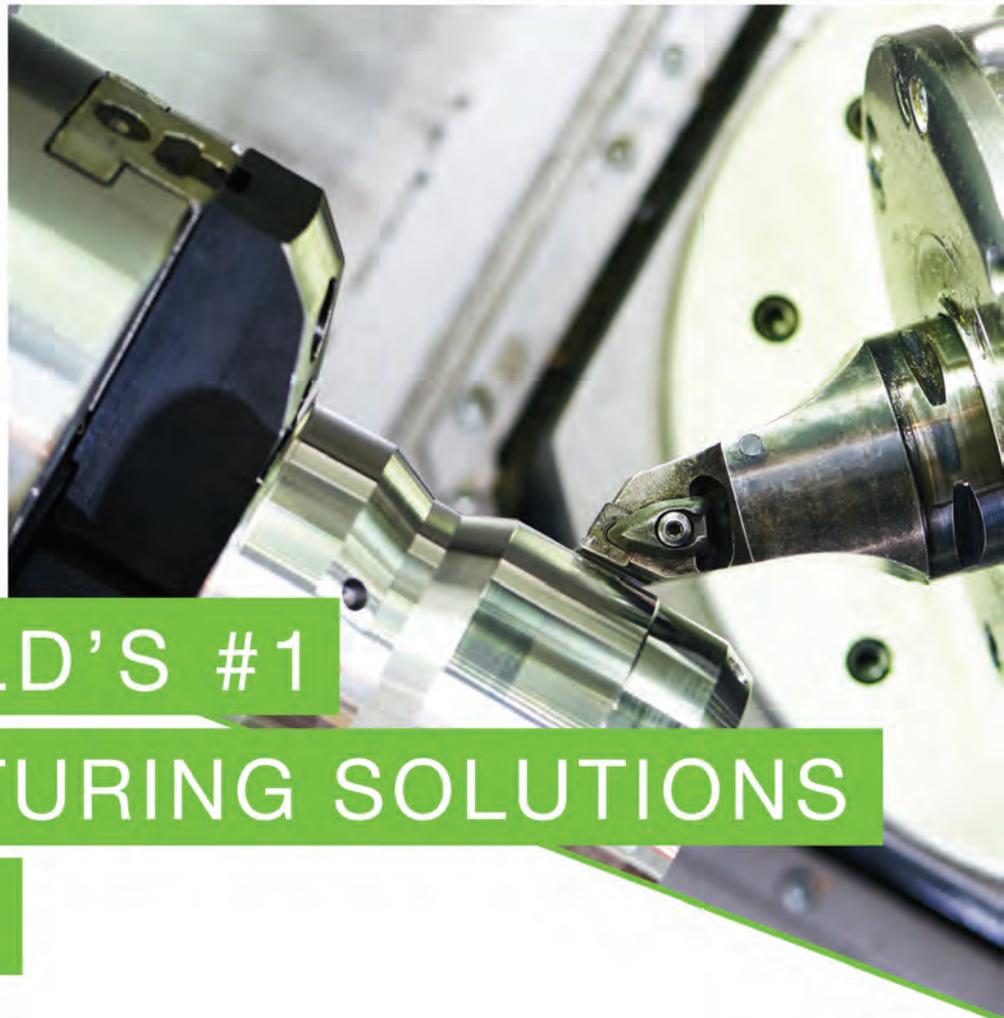
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# IMTS2018

# IMTS 2018 Preview

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## SMW Autoblok to Feature 5-Sided Machining Vises —Booth # 431700

Autoblok will be highlighting the Genius and Sintex precision vises for 5-axis machine tools in its booth at IMTS 2018. Both vises are equipped with SMW Autoblok's proprietary SinterGrip technology.

The patented SinterGrip technology on the Sintex precision vise requires only 3.5mm of clamping surface. SMW reports that this clamping design allows for obstruction free processing of all five sides of your workpiece and minimizes deformation risk. A series of solid carbide serrated inserts grip the workpiece.



The Genius precision vise features other unique technology in addition to the SinterGrip system. It uses traction clamping to grip the workpiece. The movement of the jaws is not on a base, but on hardened and ground shafts. These generate clamping force (up to almost 30,000 foot-pounds) right at the part, where it is needed the most.

The Sintex self-centering 5-axis vise is designed for a high degree of accuracy on flat workpieces. Its compact size, large opening range (up to 150mm), repeatable accuracy (+/- 0.01) and SinterGrip technology make it extremely flexible.

## DataXchange New Features

### —Booth #133240

Once again, Shop Floor Automations (SFA) will share a booth with Scytec DataXchange at IMTS 2018. They will display DataXchange machine monitoring features:

DataXchange Version 2018.04.10:




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# IMTS2018

# IMTS 2018 Preview

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The Data Entry screen provides operators with a simple interface to track machine downtimes and will now include a “notes” field to alert others on the shop floor of critical actions. For example, the machinist can put in notes to alert the Programming or QA Departments on specific issues.

E-Learning Program: Everyone learns at their own pace and time. Now, with E-Learning, DataXchange users can take online courses anywhere, any time. Configuring reporting options, software installation, initial configuration, shift options, modifying existing machine data, and understanding the machine data collection sources are

just some of the topics covered. The classes are a combination of videos and text modules with a quiz at the end of each lesson. The program is accessible for 12 months - courses can be repeated for refreshers, and unlimited users have access to the program with one username and password.

For OEE monitoring, DataXchange is an affordable, user-friendly option. Customers have the option of monitoring machine data on-premise, or they can pay month-to-month with a Cloud-based option. Customers can get text and email notifications of machine issues

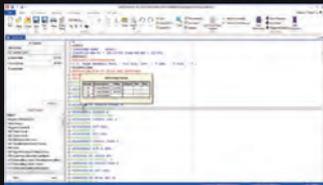
The biggest user-friendly feature

of DataXchange is the price, starting at \$45 per month, per machine. The software is also compatible with MT-Connect, OPC UA, Fanuc FOCAS, and ModBus.

## Unisig Spotlights Engineering Capabilities of Deep Hole Drilling —Booth #339159

Unisig will showcase the breadth of applications its gundrilling, BTA drilling, bottle boring and skiving/roller burnishing machines can accomplish.

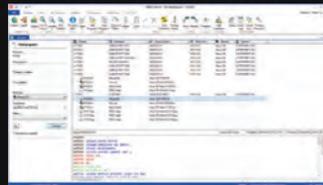
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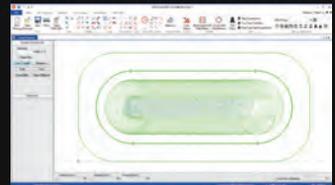
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Machine ID	Operator	Start Time	End Time	Status
HMC-204	Marv	03:52	03:50	Running
HMC-518	Wallace	00:07	03:40	Running
VMC-3Axis	Ingen	00:00	00:00	Running
VMC-48	Roark Jr	03:21	03:50	Running
507-5420	Stan	06:24	06:20	Running
509-0159	Dwight	00:08	02:45	Running
VTK-S	Ingen	00:00	00:00	Running

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# IMTS 2018 Preview

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In addition to a collection of work-pieces, Unisig will feature a custom machine from the company's research and development lab. The machine under power will demonstrate the extreme depth-to-diameter ratios possible with advanced machines equipped with the latest control technologies. This UNX machine possesses unique CNC motion control capabilities to produce

highly accurate off-center gundrilled holes.

The company will also introduce its expanded line of deep hole drilling and machining centers designed for mold makers.

These machines allow manufacturers to process large and small parts with four-sided machining capability in a single set-up.

## Haimer USA to Feature Full Portfolio —Booth #431546

Haimer USA will feature their entire product portfolio at IMTS 2018. Their products range from tool holders and tooling technology to presetting, shrink

fit and balancing machines.

Haimer is a leading developer of inductive shrink fit technology. Haimer power clamp shrink fit machines provide 360° gripping torque with repeatable balance at the touch of a button. It provides 0.00012" runout accuracy. Haimer reports they have the world's largest range of shrink fit machines and coils. Haimer Shrink Fit tool holders provide 0.00012" runout precision with a repeatable balance (G2.5 @ 25,000 RPM).

Haimer Mini Shrink Fit for micro-machining has an extremely slim profile design and a 3° taper for longer reach capability with shorter tool overhang. It has 0.00012" runout accuracy. Haimer ER collet chucks are fine balanced at G2.5 @ 25,000 RPM, with

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**10" Chucks**  
w/ A2-8 Mount  
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high runout accuracy, and come in a variety of lengths and sizes.

Haimer Tool Dynamic balancing machines and 3D sensors will be shown. Power Mill end mill series and the versatile Basic Mill end mill will also be shown.

The Haimer Safe-lock Anti-Pullout System provides reliable pullout protection that withstands even the toughest materials.

Haimer's modular interface Duo-lock for carbide cutting tool heads was created to combat the steadily increasing cost of carbide. The Haimer Cool Flash system guarantees optimal coolant delivery, even at the highest RPM.

# IMTS 2018 Preview

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## Methods Machine Tools' Own Line of Machining Centers Making Their Debut at IMTS

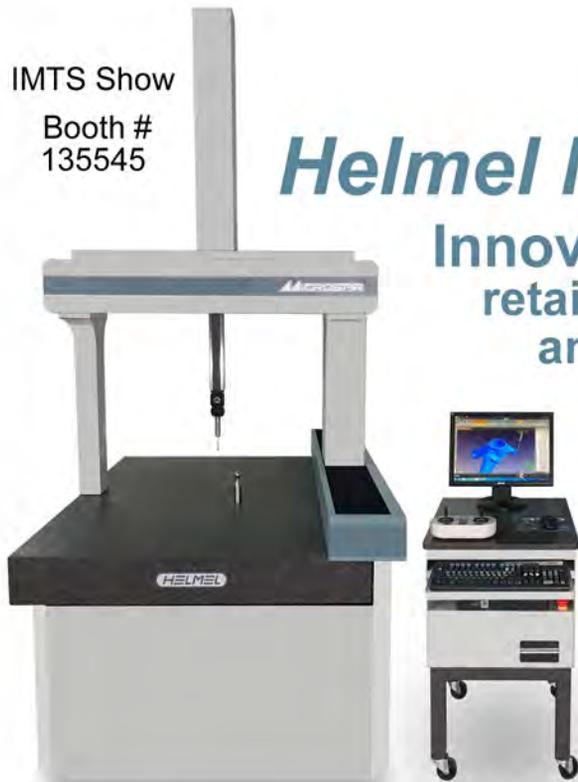
### —Booth #339119

The new MV 800H (15,000 rpm spindle) and new MV 1600 (12,000 rpm spindle) Vertical Machining Centers (VMC) have a 25hp BIG-PLUS 40-taper direct drive spindle with oil-air lubrication and spindle oil chiller. A rigid box-way construction in the Z-axis on the MV 800H offers superior rigidity and cutting performance. A heavy-duty 41,888 lb. MV 1600 machine construction is designed for exceptional cutting performance on

large, diverse, complex parts.

The new MB 650U 5-Axis machining center will also be on display. Designed for high accuracy, 5-axis simultaneous machining of complex parts, the MB 650U significantly reduces the need for multiple setups. Equipped with standard linear scales on the X, Y, Z-axes, rotary scales on the B & C-axes, and thermal compensation results in stable, high precision part production. The MB 650U has a 25hp BIG-PLUS 40-taper 15,000 rpm direct drive spindle with oil-air lubrication and spindle oil chiller for long spindle life.

IMTS Show  
Booth #  
135545



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## Henning Industrial Software Newest Additions —Booth #133256

Henning Industrial Software will present their newest additions to the Visual EstiTrack™ ERP shop management system with enhanced releases of Touch Scheduling Board™ and iVET™, their innovative mobile phone/tablet add-on application. In addition, Henning Software will be introducing their brand-new Visual EstiTrack™ ERP Ultimate solution. This alternative version is an entirely



new ERP system completely rewritten using Microsoft's .NET and SQL Server technologies.

The newest release of Henning Software's Visual EstiTrack™ Touch Scheduling Board uses an intuitive touch screen interface to enable us-

ers to drag-and-drop scheduled shop order operations represented as cards within and between work centers. The Touch Scheduling Board™ is designed to emulate and replace the magnetic scheduling boards often found in shops. This planning/scheduling tool is designed to be deployed on large touch-screen monitors on the shop floor and is fully integrated into Visual EstiTrack™ ERP to make it much easier for shop floor personnel to prioritize operations, view/set statuses (Waiting for Setup/Tooling, Material, First Article Inspection plus

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On Quality Hold, On Customer Hold, Is Late, Is Late Customer Called and Operation Complete), move operations from one work center to another and allow employees to clock in and out of shop order operations from the Scheduling Board.

## Tsugami/Rem Sales to Exhibit its Newest Tsugami Machine Tools and Technologies —Booth #339410

Tsugami/Rem Sales will debut the SS38MH-5AX, a 38 mm chucker-convertible, b-axis sliding headstock lathe that performs full 5-axis simultaneous machining. The Tsugami SS38MH-5AX features a 40 tool magazine, 10 tools on the back tool post, and an optional 2 tools on the deep hole drill holder. The linear glass scales on the X1-, Y1-, Z1- and X2-axis slide is provided as standard, for high accuracy machining and repeatability.

The Tsugami M08SY Gantry and an innovative LaserSwiss are also new to IMTS 2018. The Tsugami M08SY with gantry is a heavy duty turning center with gantry, Y-axis, and sub spindle, available in 2 and 8 stocker options. The main and back spindles on the M08SY with gantry are equipped with integral built-in spindles.

Other featured Tsugami machines include: B0326-II – 32 mm, 6-axis convertible opposed gang tool Swiss-type CNC automatic lathe. A dual path FANUC 32i-B CNC slashes cycle time. SS327-5AX – 32 mm, chucker-convertible, sliding headstock Swiss-type lathe with servo-driven B-Axis. BW129Z – 12 mm, 9-axis Swiss-type lathe with 3-path control system and dual independent gang slides. B038T – 38 mm high performance turning center with rotary tool capability that

# IMTS 2018 Preview

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can perform 7 types of simultaneous machining operations. B0205-III – 20

mm, chucker-convertible, 5-Axis opposed gang tool Swiss-type CNC lathe.

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S206 – 20 mm, 6-Axis Swiss turn.

New to Tsugami/Rem Sales is Oscillation Turning for 20 mm machines. This technology will be demonstrated live on the Tsugami B0205. The benefits of Oscillation Turning include increased chip control by breaking chips; especially when cutting materials such as plastic, aluminum, Inconel, and copper. The Z-axis oscillates to break up chips and prevent bird-nesting by alternating cutting depths as the material is fed through the machine. This feature also reduces heat generation.

An additional new technology featured in the Tsugami/Rem Sales booth is Gosiger Automation's robotic loading system, which will be shown.

MachineMetrics will also be highlighted. Tsugami/Rem Sales recently announced an integrated partnership with MachineMetrics, for remote machine health monitoring and improved customer support.

## Q-Mark Manufacturing Inc. to Introduce Seven New Products —Booth #135501

Q-Mark, a premiere U.S. source for ruby and diamond probe styli, is introducing seven new products to meet the wide array of challenges they receive from their manufacturing clientele.

One of the new products is the ultralight M2 right angle stylus holder, used to measure internal grooves and perpendicular bores. Before this ultralight holder, CMM users were forced to use star hubs or knuckle joints with threaded styli to achieve right angle probing. Multiple parts were required, adding weight and limiting clearance. In contrast, the new ultralight holder

weighs just 2.40 grams and allows the use of any unthreaded stylus. Because no additional parts are needed, it's more rigid, and far less expensive than conventional setups. It reaches into tight spaces with ease, simplifying part set-up and programming.

In other news, Q-Mark is introducing replacement styli for Metrol high-precision touch probe systems, commonly used on CNC machines.

## Cecor to Have Live Sump Cleaner Demos -Booth #121023

CECOR will feature the SE15 single-phase electric and the SA5 air-operated units. Sump Shark sump cleaners help maintain machine tool coolant by filtering dirty coolant and making the cleaning process faster and easier.

An important part of coolant maintenance is filtering the metal chips and swarf from the coolant. Chips and sludge at the bottom of the sump can cause microbial growth which leads to smelly



coolant and the risk of dermatitis, which is an uncomfortable skin rash. Metal chips circulating through the machine can mar the work piece and the machine tool.

With suction lifts up to 26" Hg (350" water) a Sump Shark can suck up an entire sump of metalworking fluid entrained with sludge and metal chips in just minutes (or seconds depending

on sump size). The solids are caught in the onboard filter as the coolant passes into the tank. Pump filtered coolant out of the tank through the discharge port hose.

Cecor will be demonstrating the speed of the Sump Shark by sucking out a 30-gallon tank filled with water, metal chips, sludge and gravel. A Sump Shark sump cleaner is much easier to use and faster than pail and shovel, shop vac or diaphragm pump.

The SE15 can be plugged into any standard 110v electric unit. The SA5 conveniently operates on shop air. Sump Shark sump cleaners have overflow protection and all discharge ports are valved. Units come complete with hoses, quick-disconnect coupler, suction tools and filter bags.

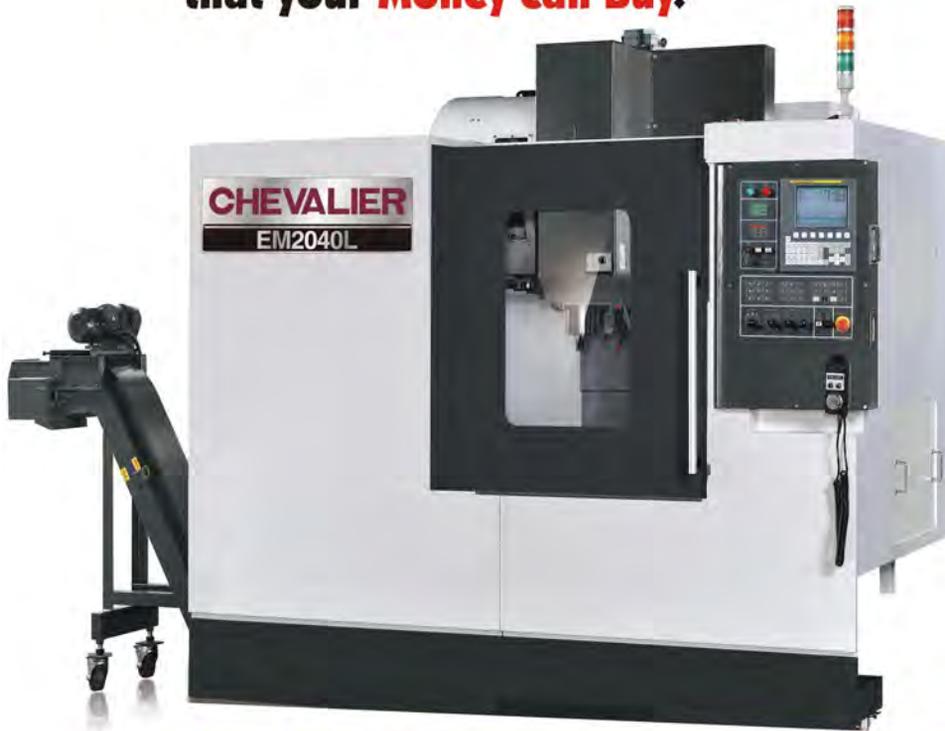
## Hurco to Celebrate 50th Anniversary —Booth #338319

Hurco will bring the party to McCormick Place to celebrate its 50th Anniversary with customers, industry partners, and IMTS attendees. Hurco will feature its latest CNC technology innovation on its 50th Anniversary Edition CNC machines.

"IMTS is the perfect venue to celebrate all of our loyal customers and all of the people who have been a part of Hurco's success this past 50 years to help us fulfill our founder's mission to make manufacturing companies of all sizes more productive and more profitable. We've designed the booth to honor our past while also celebrating the future with the latest technologies, including Industry 4.0, the Internet of Things (IoT), and the introduction of new control features, such as 3D Import. To honor the past, we will have

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IMTS2018

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the very first Hurco CNC machine model (KM1) on display in addition to a timeline mural highlighting key events that have shaped Hurco,” said Maggie Smith, Hurco marketing manager.

In addition to plenty of machine demos and technology previews, Hurco will toast the company’s 50th anniversary with a happy hour each day at 4:00 p.m. (CDT) and host a 50th Anniversary After-Hours Party on Wednesday, September 12 from 4:00 to 9:00 p.m. at the Hurco booth.

“We’re excited to use our 50th Anniversary IMTS events to showcase our

customers who make some really cool products. Beverages will be dispensed from a Bottoms Up Beer system, made by an Indiana company that is turning the beer industry upside down—literally! And our 50th Anniversary IMTS gift was made by Bottle Breacher, an Arizona customer, Eli Crane, who used his winnings from the television show Shark Tank to buy his Hurco VM20i”said Smith.

The Hurco booth will be divided into four quadrants: Automation, 5-Axis, 3-Axis, and Turning. In the Automation quadrant, attendees will see Industry 4.0 and the Internet of

Things (IoT) in action with Hurco CNC machine demonstrations in partnership with Erowa, Universal Robots, FANUC robots, Online Resources, and Industrial Controls & Automation. The 5-Axis quadrant will feature the latest 5-axis models and CNC technology that make the transition from conventional 3-axis machining to 5-sided machining easy and straightforward. The 3-Axis quadrant will feature our most popular CNC machines, the VMX6030i and the new VMX42Di with the direct drive spindle. In the turning quadrant, attendees will see the latest control software release that

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streamlines turning and milling. Hurco will also premiere its 3D Import feature with 3D DXF.

In addition to the 50th Anniversary parties and displays, Hurco will showcase the next generation 3D print head adapter that was first introduced at IMTS 2016.

## Affordable, Compact Robotic CNC Machine Tending Platform Debuts -Booth #33850

A new, free-standing robotic load- ing and unloading platform that makes

automation affordable for any size CNC shop will be introduced in the Okuma booth.

A product of Dayton, Ohio based Auto- mation within Reach, Load & Go is simple to install and operate, using an intuitive, menu-driven HMI that eliminates the need for ad- vanced programming skills.

Four parts drawers accommodate



a wide range of round, square or rectangular part IDs and ODs for low volume, high mix production runs to provide the versatility needed to meet changing customer demands. A rotary table version is also available. The ability to store part programs on board, the menu-driven HMI, and adjustable, universal part templates for quick part loading, enable complete changeovers in less than 10 minutes.

Because Load & Go is compact and self-contained, installation consists of simply locating the unit opposite the door of the CNC machine it tends, bolt- ing it to the floor and connecting elec- trical power, air supply and Ethernet.



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*WEBB Champ CNC Knee Mills starting at \$24,395*



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- R8 to 40 Taper
- 9"x42" to 10"x54" Table Available w/ New Acu-Rite 3500i CNC Package



# IMTS 2018 Preview

September 10-14 2018

## OMAX® to Inspire Next Generation at the IMTS Smartforce Student Summit

OMAX Corp. will be a proud participant in the Smartforce Student Summit at IMTS 2018. Using the new ProtoMAX® abrasive waterjet as a teaching tool for the next generation of manufacturers, OMAX will present a program of design, machinery, and innovation as students and teachers explore the advancements of abrasive waterjet technology. The summit will be held at McCormick Place, North

Building, Level 1, Hall C. OMAX will be stationed at booth 215115.

OMAX software engineers will guide students through a preliminary primer of Intelli-MAX Proto® LAYOUT®, a CAD program designed for the ProtoMAX. The OMAX software engineers will then show how the process goes from a designed piece in layout to a cut piece on the ProtoMAX.

Smartforce Student Summit is a program at IMTS designed for student and educators to explore careers in the manufacturing technology industry.

## New CNC Control, New Series of Bed Mills Launched —Booth #338032

TRAK Machine Tools will feature a new ProtoTRACK CNC and a new series of bed mills in their booth. “The new ProtoTRAK RMX CNC revolutionizes the popular ProtoTRAK style of machines designed for toolroom applications,” said a company spokesperson. “The user experience is transformed through a touchscreen interface that brings digital manufacturing to life. Context

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sensitive help delivers instructions the instant you need them to make the most of the advanced capability. Bulleted text, diagrams and videos are available at the touch of a soft key.

Innovative Defaults enable the user to teach the ProtoTRAK RMX their own programming and machining style.”

The Auto Geometry Engine features Tap-to-Guess where the user can tap a point on the on-screen drawing to approximate the beginning, end or center of a geometry. New Adaptive

Machining enables an operator to increase the metal removal rate by 500% or more through the selection of simple programming choice according to the company.

The new TRAK DPM RX bed mills will be shown and deliver premium performance for making parts in small quantities,” said the spokesperson.

“The milling machine provide the precision and strength for holding tight tolerances and the flexibility to work manually or with the CNC.”

Using the ProtoTRAK RMX CNC, graphics, control navigation and on-

board help are instantly available at the tap of the screen. Electronic hand wheels enable control of program run by enabling TRAKing. The Adaptive Machining capability increases machining speed while preserving tool life.

## Koma Precision To Show New Line of Alberti Angle Heads

—Booth #339153

Koma Precision, Inc. has introduced a new Index Line angle heads



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from Alberti. Alberti developed a combined system featuring a swiveling module and a standard angle head. "This angle head is the first and only in the world with the capability to index output at virtually any angle," said the spokesperson.

The main characteristic of the system is the possibility of rotating and then positioning the head automatically, using the controlled axis of the machine spindle. The technology inside the module allows the "anchoring" of the head with the machine spindle to achieve an automatic position in the machining direction and operate

like a standard angle head using the spindle rotation.

The system is operated by 6-bar compressed air through the stop pin or by a closed hydraulic circuit controlled by a piston. The entire system can be automatically exchanged by the tool changer and can mount heads with collet capacity up to a diameter of 10 mm. Now it is possible to use a single head for multiple operations to avoid additional workpiece set-ups or tool changes and to carry out various machining processes.

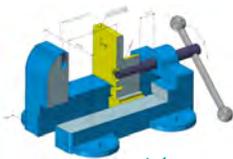
## Okamoto Double Column Surface Grinding Machine

—Booth #236834

The ACC-32•80ChiQ surface double column grinder is designed for high precision grinding of large components. It delivers both high accuracy and high efficiency. Ultra rigid double column design and construction stands up to prolonged heavy-duty grinding conditions. Double vee table way construction provides continued peak accuracy. With all its capacity, this grinder has a surprisingly small footprint.

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The ACC-32●80CHiQ provides a consistent high degree of flatness across the entire workpiece surface. An exclusive “Reform” mechanism automatically adjusts for crossrail

slide wear without CNC compensation. A Shift-Plunge grinding cycle assures fast, efficient stock removal and the grinder’s multi-level grinding capability enhances grinding flexibility. The standard powerful 30 horsepower spindle motor and 20” diameter concave grinding wheel easily handle tough grinding requirements.

The ACC-32●80CHiQ’s table size

(W x L) is 32” x 80”. Maximum pass width is 40”.

Maximum distance under standard wheel is 23.5”. Table load capacity including chuck is 5,512 pounds. Machine weight is 34,200 pounds. Larger capacity models are available.

Exclusive Okamoto iQ Software simplifies data input. All data input can be completed using only two data screens.

Some of the many standard features include a grinding wheel adaptor, hydraulic overhead wheel dresser with dress compensation, dresser stand with

diamond tool, automatic oil temperature regulator, spindle speed controller and more. Available options include coolant systems, electro-magnetic chucks, 24” grinding wheel, dynamic balancing apparatus and more.

## CNC Software, Inc. to Showcase Newly Released Mastercam 2019 —Booth #133340

Mastercam 2019 helps increase machining productivity and reduces

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overall production costs with new 2D through multi-axis milling automation features, CAD and model preparation improvements, expanded 3D tooling, Accelerated Finishing™, and powerful turning and Mill-Turn enhancements.

Mastercam 2019 series of automated 2D through 5-axis toolpath improvements. Re-engineered chamfering and holmaking strategies, plus the new multi-axis deburring provide time-saving automation and simplicity. New milling toolpath strategies, like the high speed Equal Scallop toolpath,

offers both machining performance and surface finish improvements. The new release includes additional support for the Sandvik Coromant PrimeTurning™ method, enhanced grooving, bar feed, and other features for turning and mill-turn applications, plus new lathe and Swiss-style machine support.

It increases efficiency and reduces job setup time and the preparation needed for part machining and programming. This includes enhanced CAD functionality and 3D model import support, improved part preparation

and fixture setup tools, additional PowerSurface capabilities, and expanded support for Model-Based Definition (MBD).

Mastercam 2019's expanded digital tool library capability delivers accurate, 3D tool assembly models, provides access to the latest cutting tool technology, and updates for Sandvik Coromant CoroPlus and Machining-Cloud platforms. Mastercam 2019 also expands Accelerated Finishing with support for taper and lens style tools.

Mastercam 2019 provides greater

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programming assurance and allows for better, more informed decisions before a job is run. These improvements include support for block drilling multiple holes simultaneously and better axis control in simulation.

Mastercam 2019 also improves job documentation and management, while helping to address quality and certification initiatives. New toolpath visualization capabilities and section view tools, improvements to view and setup sheets, and a wide array of system level enhancements improve efficiency in managing job workflow.

## DMG MORI Made in America Machines —Booth #338900

DMG MORI's North American manufacturing facility, located in Davis, CA, offers customers comprehensive local engineering and support for U.S. made machine tools. With a production capacity of up to 1,200 machines per year, the Davis location manufactures and assembles vertical machining centers (VMCs) such as the CMX 1100 V and horizontal machining centers (HMCs) such as the NHX 4000 3rd Generation and NHX 6300 2nd Generation.

The NHX 4000 3rd Generation machining center has a 21 RPP rotary pallet pool feature. It features spindle speeds of 20,000 RPM, power rating of 50 HP and maximum torque of 163 ft-lbs. A standard auto coupler hydraulic fixture interface enables the NHX 4000 3rd Generation to automate in a more efficient manner. This HMC handles workpieces up to 882 lbs.

The NHX 6300 2nd Generation is equipped with a standard 12,000 RPM, 75 HP powerMASTER spindle with maximum torque of 595 ft-lbs. An optional high-speed version from the powerMASTER spindle range has

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a maximum speed of 16,000 RPM and up to 1,042 ft-lbs. of torque for demanding heavy-duty machining. The NHX 6300 2nd Generation offers space for pallets up to 25 x 25", a workpiece height of 51" and maximum loading capacity of 3,307 lbs.

The CMX 1100 V VMC enables workpiece weights of up to 2,205 lbs. and provides a travel path up to 43.3 x 22 x 20.2". Rapid traverses are 1,417 IPM in X- and Y-axes, and 1,181 IPM in Z. The CMX 1100 V will be featured with a speedMASTER 20,000 RPM spindle with 50 HP and 163 ft-lbs. of torque paired with the MATRIS modular robot automation.

## JTEKT Toyoda Americas to Unveil Six New CNC Machines

### —Booth #338519

JTEKT Toyoda Americas Corporation will feature 15 machines at IMTS, six of which will be new, along with automation, IoT solutions and presentations. New machine exhibits include a 5-axis VMC for titanium machining, universal grinding machines with adjustable wheelhead, a multipurpose turning center with twin turret and twin spindle, and a production type machine for gear manufacturing.

Toyoda's new UA2090Ti 5-axis is designed to achieve enhanced structural rigidity and precision for large parts. It features a 2-axis tilting head, high torque A and B axes with gear driven design and hybrid box and linear guideway construction. Designed for heavy cutting applications, the Stealth VB215 features enhanced technology supported by Toyoda's cast iron headstock and vibration dampening technology. A compact Z-axis ram construction supports the VB's 6,000

RPM high-performance geared-head spindle.

A versatile universal grinding machine with a manually adjustable wheelhead for straight and angular applications, the newly launched GL4i-50 Switch features 45° swivel increment for flexible grinding of smaller diameter journals. Faster cycle times and a reduced probability of burning on face grinds are a result of stabilized grinding from a reinforced new bed design and New Toyopuc-Touch control. Designed for large part grinding applications, the GL4i-100 Switch has a 400 mm swing, increased part capacity and adjustable wheelhead.

The compact GS200H targets high production lines, offering improved productivity and flexible machining by integrating gear part processes of a lathe, gear skiving and machining center capabilities in one.

Making its U.S. debut, the Takisawa Taiwan MX-800 multi-purpose turning center comes standard with heavy duty twin upper T15 turrets, built-in twin spindle and twin Y-axis, 2" bar capacity (up to 2.5") and 8" chucks.

## Rantings of a Machine Tool Salesman" Book Signings at IMTS 2018

Scott Walker, chairman of Mitsui Seiki USA, Inc., has penned a book called "Rantings of a Machine Tool Salesman", a sometimes funny, sometimes serious, sometimes sentimental selection of the author's favorite bi-weekly newsletters that were included in each employee's paycheck envelope over the past twenty years. The topics range from the highs and lows of sales calls, balance sheets, holidays, winning and losing orders, hobbies, manufacturing technology, and business travel.

"It's about the business of selling machine tools, through my filter, so there's plenty of philosophy, inspiration, and wine tossed in," said Mr. Walker.

Mr. Walker will be signing books during IMTS 2018 on Tuesday, Wednesday, and Thursday – September 11, 12, and 13 – from 1 p.m. to 3 p.m. in Mitsui Seiki's booth 338519 in the South Building of McCormick Place. The book will also be available on amazon.com beginning Tuesday, September 11. The cost is \$23, which includes tax and a contribution to charity.

"I never planned on writing a book," said Mr. Walker. "As a dyslexic growing up in the 1950s and '60s, before the condition was addressed in the school system, I avoided reading and writing and didn't study much. What I did was listen and talk and memorize my way through school. Once I started painting in oils – landscapes mostly – something clicked in my brain, and I could read and write exponentially better. I'm always looking for the next good read and essentially kept a work journal in the form of a newsletter for 20 years."

For more information about Rantings, the book signings at IMTS 2018, or the availability on amazon.com, contact Sandra Fusco-Walker at trutal-lytoe@verizon.net.

## Heimatec Set to Introduce New Tool Program for Automatic Lathes

### —Booth #432427

Heimatec announced the availability of their Citizen tool program at IMTS 2018. This line includes both live and static tools for most Citizen lathes. Designed to optimize the machine's parameters, these precision



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tools are efficient and cost effective.

Heimatec's goal during the development of this line was to construct a series of tools that would offer the greatest possible processing quality and longest service life. To achieve this, Heimatec incorporates the highest quality bearings, ground gear components, spindles, and housings to produce superior tools with maximum rigidity.

In addition to Citizen, Heimatec is constantly striving to expand its tooling programs in an effort to maximize the machines capabilities and improve productivity.

## DMG MORI to Premiere Two Machines —Booth #338900

DMG MORI will be premiering for the first time in the U.S. two XXL machines: the DMU 200 Gantry and DMU 340 Gantry. Gantry series machines have been developed for highly dynamic universal applications of large components. Both models offer 5-axis simultaneous machining within a large work area with small space requirement.

The DMU 200 Gantry combines the machining of large components and enhanced dynamics and improves user

benefits in the aerospace and automotive industry as well as in moldmaking and the energy sector. With 5-axis machining of up to 30,000 RPM and optional ULTRASONIC or LASERTEC technology integration, more complex components weighing up to 22,046 lbs. made of aluminum or composites as well as welded components can be machined economically.

The work area of the DMU 340 Gantry measures 134 x 110 x 49" and provides expansion options to up to 236" in the X- and 59" in the Z-axis. Due to its gantry design, it also has compact dimensions.



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# Industry News

## HEIDENHAIN Announces New CEO

DR. Johannes Heidenhain GmbH announces the appointment of David Doyle as CEO of Heidenhain Corporation, effective Oct. 1, 2018. At that time, Doyle will assume full responsibility for the customer-focused operations for the U.S., Canada and Mexico. This change will complete the succession plan for Rick Korte, current CEO of Heidenhain Corporation who will be retiring at that time after more than 34 years of service.

“I am happy to announce the next phase of the succession plan for our North American operations, with the promotion of David Doyle to CEO,” said Korte.

Doyle started with Heidenhain Corporation in 2016 as vice president of sales & marketing, bringing with him more than twenty-five years of experience in international capital equipment business and technical support management. He currently is president and managing director.



“I want to thank Rick Korte for leading the company in tremendous

growth over these many years, and for the guidance he has provided to not only myself, but to the many staff members who have called Heidenhain home for so long,” said Doyle. “I am looking forward to leading the Heidenhain Corporation team through the next phase of development and to reaching our growth objectives in North America.”

## Verdant Commercial Capital Has Acquired Intech Funding

Verdant Commercial Capital, LLC (Verdant) of Cincinnati, Ohio announced that it has acquired Intech Funding Corp (Intech) of Monrovia,

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California. Intech is focused on financing and leasing for manufacturing companies nationwide.

Intech will operate as a wholly owned subsidiary of Verdant and maintain its operations in Monrovia. All of Intech's employees will continue in their current roles and capacities, including Jeff Glikman and Ric Rivett as president and senior vice president, respectively. This acquisition will give Intech opportunity for more growth along with a stronger capital base to expand. Intech is currently one of the leaders in machine tool financing with over \$1 billion in lending for manufacturing companies since 1995.

"I believe Intech and Verdant will be a powerful combination with greater strategic depth than we could have

accomplished on our own," Jeff Glikman, president of Intech said. "The combination benefits our customers, vendors and employees thus positioning Intech to be an even greater force in the marketplace."

## Phillips Precision, Inc Appoints Kenbil Engineering as Rep

Phillips Precision, Inc. announces the appointment of Kenbil Engineering as an authorized manufacturer's representative for the Inspection Arsenal™ & Laser Arsenal™ product lines in CA, AZ, NV & UT. Phillips Precision is excited to partner with the Kenbil sales team as an addition to their portfolio

of products.

## Allied Machine Partners With LA/NTMA Training Center

Allied Machine & Engineering, join forces with the Los Angeles chapter of NTMA (National Tooling and Machining Association) in an effort to provide top of the line resources and real-life precision machining expertise. In June, Allied donated several tooling sets to NTMA's LA training centers. The selection includes high-end cutting tools from their drilling, boring and thread milling product lines.

In coordination with LANTMA board member Darin Martinez, presi-

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# Industry News

dent Brian Grigson, and executive directors Carey Knutson, Kaity Van Amersfort, and Norma Meza, the tools will be used in training demonstrations and available for student use. Nate Craine, Allied's highly trained regional field sales engineer, will be volunteering to conduct classroom demonstrations throughout the year at both the Ontario and Santa Fe Springs NTMA Training Centers of South California.

"I am excited to get our tools on the machines and demonstrate best practices for holemaking & thread milling in real-world scenarios," Craine states. "We're proud to partner with the LA chapter of NTMA which has been accredited by the NIMS (National Institute for Metalworking

Skills) and is the largest of 35 regional NTMA chapters." Mr. Craine will present an overview of the unique nature of holemaking in metal, demonstrations of their GEN3SYS XT Pro & Revolution drills, Wohlhaupter Multi-Bore precision boring tool system, and the AccuThread thread mill.

## INDEX Corporation Further Expands Western Distributor Network

INDEX, as part of its ongoing revitalized sales, marketing and service initiative, has partnered with two new, highly qualified distributors in the western region of the United States.

The company's INDEX and TRAUB brands of precision turning machines are now represented by CNC PROS in the state of Arizona and Protek CNC in Southern California and Clark County in the state of Nevada.

"Our distributor network plays a vital role in providing a high level of responsiveness at a local level," said Tom Clark, president and CEO of INDEX in North America. "We are very selective in choosing distributors and both CNC PROS and Protek meet the high standards we set for our partners. Their addition to our network will be a significant asset to our customers in the western region of the country."

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# Industry News

open, productive relationships with customers. The company has attracted a highly experienced team and works with a wide variety of manufacturers.

Protek has served Nevada and Southern California for over twenty years. The company maintains an in-house team of service engineers who provide excellent service to its customers.

## Methods Machine Tools Key Management Appointments

Methods Machine Tools, Inc. has announced two key management appointments. Company president Jerry Rex has been named president

and chief executive officer, and Dale Hedberg has been promoted to vice president of operations.

Methods' Board of Directors recently appointed Mr. Rex as president & CEO of the company, after having served as president over the past year.



"Methods is pleased to appoint Jerry as president & CEO. With his strong skill set, machine tool industry knowledge and energetic management approach, we are looking forward to moving the company ahead through

his continued leadership," said Scott McIver, Methods chairman and 3rd generation owner.

Spanning 40 years, Mr. Rex's manufacturing career began with a machinist position at GE Locomotive and he steadily rose from roles in engineering and applications to production and sales management, and executive positions at manufacturers and machine tool organizations. Before joining Methods, he served as executive vice president of Concept Machine Tools. Prior to that, Rex was



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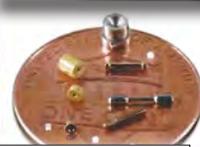
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# Industry News

president of Hegman Machinery, LLC, from 2013 to 2015. For the 20 years prior, he held roles including president of Morris South (Charlotte, NC) and vice president of Gosiger, Inc.

Methods has also announced that Dale Hedberg has been promoted from director / national product manager, to vice president of operations. Hedberg is now responsible for all of Methods' operations including production, shipping / receiving, inside sales, trade shows and continuous improvement. A machine tool industry veteran, Hedberg has been a Methods' employee for nearly 20 years.

## Robert Serrano Promoted to CEO At GenMill I GenTurn by Ganesh

GenMill I GenTurn by Ganesh has appointed Mr. Robert Serrano as president and new CEO effective immediately. With this new organizational change, Robert will not only continue to guide and advance the growth strategies at GenMill I GenTurn, but also work to innovate internal process efficiencies to better serve GenMill I GenTurn customers.

Robert came to GenMill I GenTurn by Ganesh 14 months ago from Methods Machine Tools where he was a sales executive known for building and executing business growth plans.

He has used his 28 years of experience working in the machine tool industry to guide the substantial progress that has been achieved at GenMill I GenTurn over the last year.

Harvinder Singh, previous CEO, is stepping aside to focus on machine sales, where his passion lies.

As Harvinder said, "Robert's vast experience in the machine tool industry brings the perspective required for our continued expansion. His experience building dealer networks in such a niche industry is impressive and we're very pleased to see the advancements that he has accomplished for GenMill I GenTurn thus far. We're excited to see how his added responsibilities will

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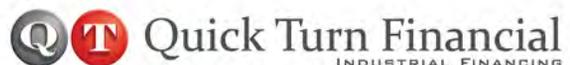
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## Industry News

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GenMill I GenTurn by Ganesh was founded in March of 1985 by the name “Ganesh Machinery” with only a 1,200 sq. ft. facility selling manual lathes and knee mills, GenMill I GenTurn by Ganesh has since grown into a well known name in the industry with a 15,000 sq. ft. facility supported by a 40,000 sq. ft. warehouse.

### INDEX Corporation Hires Three New Employees

INDEX Corporation has announced the hiring of three new employees to its North American team. Jim May joined the company’s senior leadership team as marketing manager and will be replacing Gary Jones, who plans to retire in early 2019. Rachael Davenport joined as applications engineer and Josh Julian joined as project coordinator. These new roles expand Index’s engineering and customer support teams.

“At INDEX, we firmly believe that our success lies not just in offering world-class products and technology, but in maintaining a team of exceptional people to drive our efforts,” said Tom Clark, president and CEO of INDEX Corporation.

With an MBA in marketing from Indiana University, May has 15 years of industrial marketing experience, having spent the majority of his career at a full-service manufacturing agency. Davenport holds a bachelor’s degree in mechanical engineering technology from Purdue University and has mechanical engineering experience spanning a variety of industries. Julian holds a bachelor’s degree in project management from the Embry-Riddle Aeronautical University, was a member of the U.S. Marine Corps and has experience with multiple aerospace companies.



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# ...Hotline Continued From Page 8

## Northrop Grumman Gets \$97M Signal Jammer Contract

The U.S. Navy awarded Northrop Grumman Corp. a \$96.5 million contract for radio signal jammers designed to foil improvised explosive devices (IEDs). Nearly all the work will be done in San Diego.

Northrop Grumman designed its common system to protect foot soldiers, vehicles and permanent structures.

The Naval Sea Systems Command of Washington, D.C. awarded the deal, which the Pentagon announced June 29. Work under the contract modification is expected to last until 2020.

Northrop Grumman could win more work bringing the contract value up to \$505 million and keeping its production line busy until 2022.

## San Diego Based Kratos Announces Foreign Task Orders, Contract Win

Kratos Defense & Security Solutions Inc. announced the receipt of multiple contracts on July 16.

The San Diego business said it received \$38.6 million in task orders from the Royal Saudi Naval Forces. Under the deal, Kratos will provide training on the subjects of surface navy operations and maintenance as well as damage control.

Kratos said its contract ceiling was raised to \$99 million to accommodate these and future task orders.

Separately on July 16, Kratos said it received a 10-year, sole-source contract from QinetiQ U.K. for high performance unmanned aerial jet target drone systems. The deal covers MQM-178 Firejet aerial targets, spares, ground support equipment, technical services and training.

## Boeing Makes Big Sale to FedEx

FedEx has ordered 24 more Boeing freighters, comprising 12 767Fs and 12 777Fs.

The Memphis-based cargo carrier said the 767Fs will be delivered between June 2019 and May 2022, while the 777Fs will be delivered between June 2020 and May 2025. The total order is valued at \$6.6 billion at list prices.

FedEx is already the largest operator globally of both aircraft types, operating 57 767Fs and 34 777Fs, according to Aviation Week Intelligence Network fleet data.

Boeing noted that the order pushes its widebody freighter sales in 2018 to over 50 aircraft.

## \$40 Million Contract for Fuel Tank Improvements at Washington Naval Base

The Naval Facilities Engineering Command (NAVFAC) Northwest awarded Burns & McDonnell a \$40 million indefinite delivery indefinite quantity (IDIQ) Architecture-Engineering (AE) contract. The firm will provide AE services for petroleum, oil and lubricants and fuel tank improvements at Naval Base Kitsap in Manchester, Washington, the host command for the Navy's fleet throughout the Pacific Northwest.

Funded by the Defense Logistics Agency, the scope for the program includes the design of six new, above-ground storage tanks that will be environmentally compliant.

## New Orders Give Renton, WA Plant a Boost

Boeing said two aircraft leasing companies ordered 40 additional 737 Max airplanes at the Farnborough Airshow giving the jet maker's Renton-made single aisle jet backlog a \$4.6 billion boost.

One of the buyers added an order for three 787-9 Dreamliners to the mix.

The first deal involved Aviation Capital Group (ACG), which is buying 20 737 Max 8 airplanes in a deal valued at \$2.34 billion at list prices, Boeing said in a news release.

ACG, a Newport Beach, California-based subsidiary of Pacific Life Insurance Co., now has 100 737 Max jets on order.

Continued on page 122

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# ...Hotline Continued From Page 120

## Oregon Training Facility Receives Grant

The U.S. Commerce said it's putting \$3 million toward a Scappoose, Oregon training facility that could create hundreds of jobs.

The Oregon Institute of Technology received the grant, which it will apply toward the Oregon Manufacturing Innovation Center. The Center, which counts several big hitters among its supporters, is set to create 978 new jobs, retain 512 jobs and spur some \$692 million in private investment, according to the Commerce Department.

Its local supporters include the Boeing Company, Daimler Trucks North America, Vigor Industrial, ATI, Blount International, Hangsterfer's Laboratories Inc. and Silver Eagle Manufacturing.

"OMIC will help students and workers learn the skills they need to work in today's economy, where advanced manufacturing is increasingly technical, while also advancing research and development that helps industries compete and thrive," said Rep. Suzanne Bonamici, the Democrat who represents the Scappoose area, in a release.

The money, according to the Commerce Department, will help retrofit, furnish, and equip an existing 34,000 square-foot building that'll house the manufacturing research and training facility. The idea is that it will help the area's metal manufacturers remain competitive.

## Ball Aerospace Completes Preliminary Design Review of NASA's IXPE Mission

A preliminary design review of NASA's Imaging X-Ray Polarimetry Explorer (IXPE) space-based astrophysics observatory was completed in late June at Ball Aerospace's Boulder, Colo. facility led by NASA's Marshall Space Flight Center, with support from Ball Aerospace, the Italian Space Agency (ASI) and other industry partners.

IXPE is a Small Explorer, or SMEX mission, which is part of NASA's Astrophysics Explorer Program.

"The IXPE mission is an excellent example of a highly-integrated government and industry working together for a common goal," said Jim Oschmann, vice president and general manager of Civil Space, Ball Aerospace. "IXPE will explore, and for the first time discover, hidden details of some of the most

unique objects in our universe, such as neutron stars and stellar and supermassive black holes."

Ball Aerospace is responsible for providing the IXPE spacecraft, mechanical and structural elements of the payload, observatory assembly, integration and test and mission operations for IXPE.

## Cubic Acquires San Diego Aircraft Builder's Assets

San Diego area Cubic Corp. has acquired an unmanned aircraft builder.

Cubic said on July 24 that it has acquired the assets of Shield Aviation also of San Diego. Financial terms of the deal were not disclosed.

Myles Newlove founded the company in 2008 and was its CEO.

Shield provides autonomous aircraft systems - specifically, the medium-altitude, propeller driven Ares aircraft. Going forward, Cubic plans to provide intelligence, surveillance and reconnaissance (or ISR) as a service, said Jerry Madigan, president of Cubic's ISR Systems subsidiary. The market for such services is growing, Madigan said.

Cubic already provides the data link as well as the command and control link for the Shield Aviation aircraft. It also provides similar services for other unmanned systems.

Cubic has hired Shield's 10 employees but not its founder and CEO.

## OSI Gets \$140 Million U.S. Customs Contract

Hawthorne, California -based OSI Systems Inc. signed a new five-year contract with United States Customs and Border Protection valued at up to \$140 million, the company announced June 26.

OSI designs and manufactures electronic systems and components for the homeland security, medical, defense and aerospace industries.

The \$140 million contract OSI received from CBP is for the service and maintenance of the department's cargo, vehicle, and parcel inspection systems. OSI received a \$25 million initial payment to provide support services, including maintenance services and logistics, the company said.

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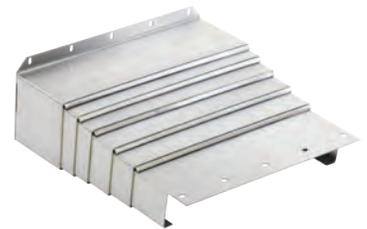


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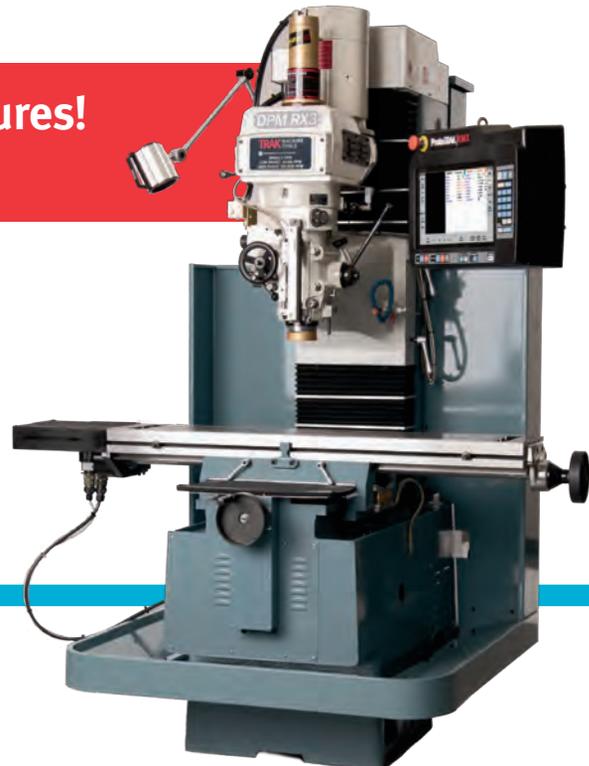
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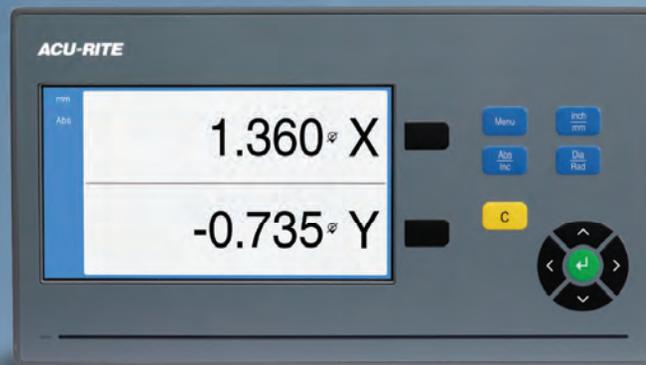


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