

February • March 2016

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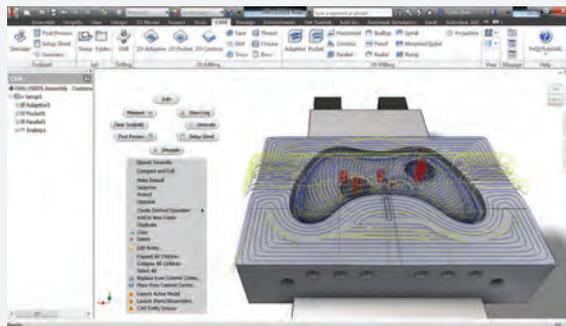
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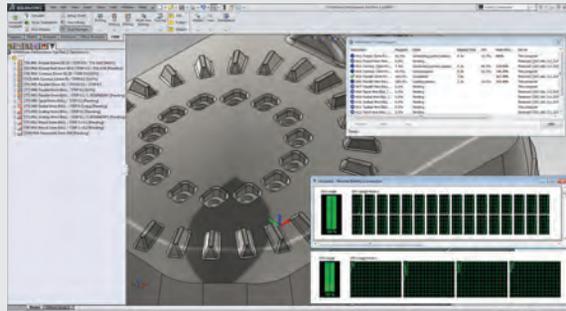
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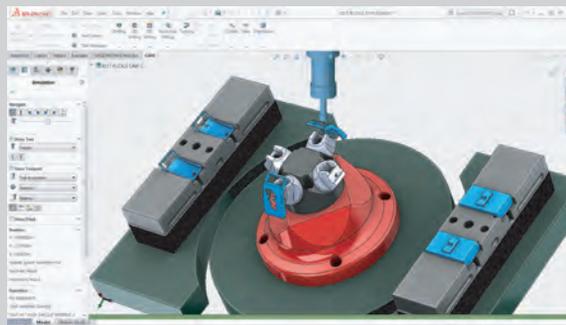
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Selway CAD/CAM Applications

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CNC West

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Coming in April/May 2016
Software and Controls —Don't miss this issue! It will be an idea-packed focus on developments in computer controls, networking, automating plant management, the latest in CNC software, hardware and machine control technology.

Editorial: March 23, 2016
Ad Space: March 25 2016
Ad Material: April 4, 2016



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Feb/March 2016

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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From Lift Trays to Rats

The February/March Aerospace and Defense issue has always been my favorite issue. Back in the day it was also our WESTEC issue when that show was every March. It was by far and away our biggest issue of the year. Now though without the show we still put on a nice issue as aerospace and defense are such important industries to companies in the western region.

When I think of aerospace I think BIG and think plane...or BIGGER. But this issue we have articles on companies who make small components for the aerospace industry. Our cover article tells the tale of a family business that makes a shaft for the Ram Air Turbine AKA RAT Systems for aerospace, one of three companies to do so. Accurate Grinding and Machining has used their aerospace expertise to also create some of the world's finest fishing reels in their huge facility in Corona, Ca.

Another feature articles describes how for 3 decades Asil Aerospace makes the tray table in the seat in front of you. Chances are when you pull back the pocket to look for the safety card or get your elbow hit by the drink cart moving up and down the aisle, Asil Aerospace had a hand in making that happen.

Rancho Dominguez, California based KT Engineering recognized over 5 years ago that they would be doing more and more titanium work so they bought a couple of Mitsui Seiki 5 axis horizontal machines to help with this process and have not looked back. For this company planning is key.

Aerodyne Precision Machine is in Huntington Beach, CA. otherwise known as Surf City USA. It only makes sense then that a company in a city know for its tubes in the surfer community makes transfer tubes which are part of the mechanism that controls the flaps on a plane. As an example each 737 requires 8 of them plus spares. So as you can imagine this keeps the shop quite busy.

As always thanks for reading this issue and hope you get something out of it. And if you need to look up a story and don't have a copy handy remember each issue is on our web page too at cnc-west.com

Sincerely

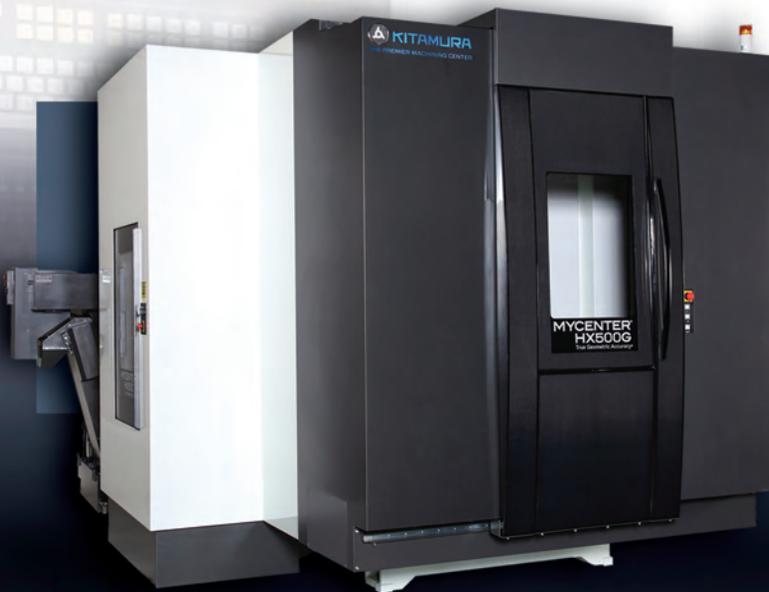
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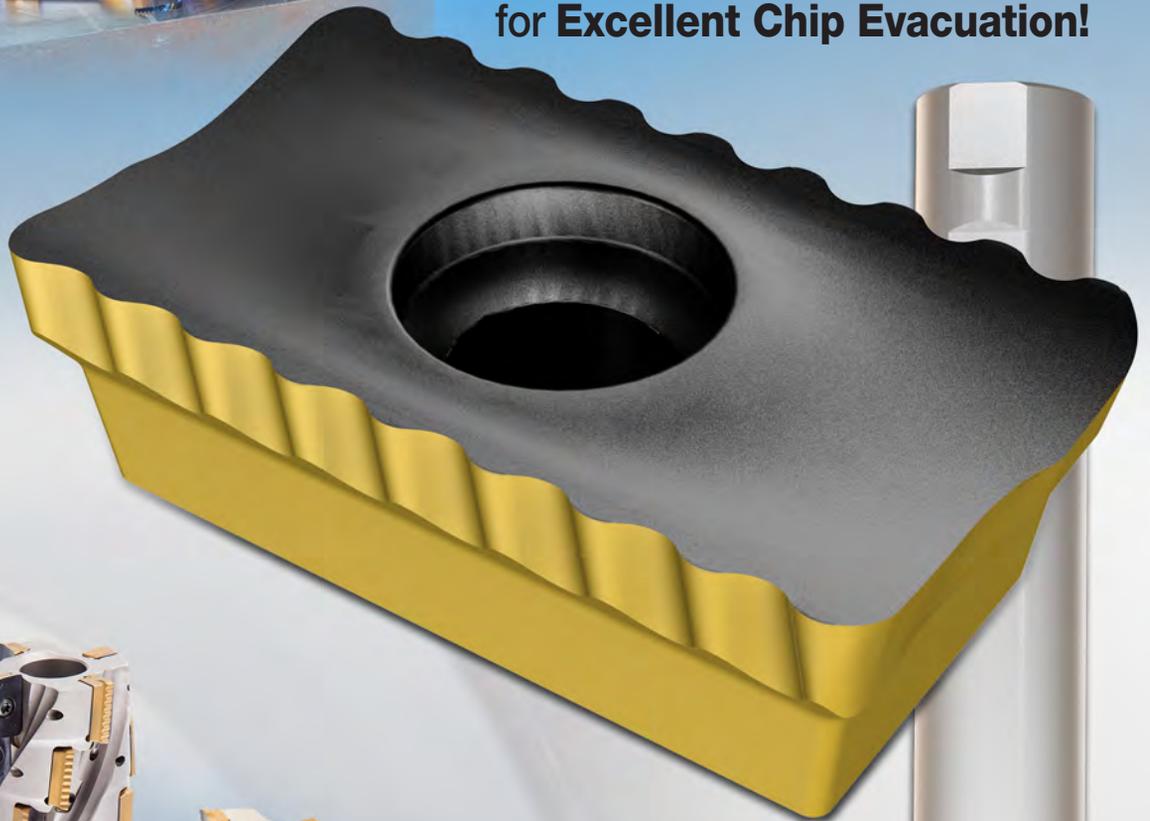
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Northrop Grumman to Get Some Work For San Diego

Northrop Grumman Aerospace Systems will be given \$8 million for an exercised option for software related services benefit MQ-8B Fire Scout unmanned aircraft systems. All of the funds will expire at the end of the 2016 fiscal year. The majority of the labor, 90 percent, will be conducted in San Diego, while the remaining work will take place in Point Mugu, Calif. All of the work should be finished in December 2016.

Air Force Awards General Atomics-ASI \$338 Million Contract

The U.S. Air Force plans to spend \$338 million in 2016 on logistics support for its fleet of Predator and Reaper unmanned aircraft.

The service announced a contract for that amount with Poway, CA. based General Atomics Aeronautical Systems Inc. on Dec. 18. The cost-plus-fixed-fee contract runs through the end of 2016.

Under the new deal, the contractor will provide program management, logistics support, configuration management, technical manual and software maintenance, field service representative support, inventory control point management, flight operations support, depot repair and depot field maintenance. The Air Force Life Cycle Management Center at Robins Air Force Base, Georgia, awarded the deal.

A few days later, on Dec. 23, the Pentagon announced a similar deal between GA-ASI and a foreign military customer, the Royal Air Force. The contractor logistics support deal will run through March 2017 and is worth \$57 million.

Northrop Grumman Awarded Three-Year, \$93.1 Million Contract

Northrop Grumman Corp. recently got a Defense Department deal to develop an unmanned aircraft called TERN.

The Pentagon's R&D arm has inked a three-year, \$93.1 million agreement with Northrop Grumman to develop the system, which could be used to gather intelligence or deliver weapons.

Northrop was one of two contractors working on the project's second phase. The other was AeroVironment of Simi Valley, CA.

The deal calls for Northrop to develop a prototype aircraft that can be launched and recovered from a small ship. Northrop would have to design, develop and demonstrate enabling technologies for TERN, short for Tactically Exploited Reconnaissance Node.

Northrop's unmanned systems office in Rancho Bernardo, CA. will be the program office. Rancho Bernardo is also home to unmanned aircraft programs such as Global Hawk, Triton and Fire Scout.

The Pentagon announcement also said that an unnamed El Cajon, CA. business will conduct some work on TERN.

Kaiser Aluminum To Put \$150M in Spokane Facility

Kaiser Aluminum Corp in Foothill Ranch, CA. said it will spend \$150 million on equipment upgrades at its Spokane, Wash. facility over the next five years. The investment will reduce costs, increase efficiency and expand manufacturing capacity, according to the company.

The Trentwood rolling mill produces aluminum coil, sheets and plates for the aerospace, automotive and general engineering industries.

President and Chief Executive Jack Hockema said he expects continued growth and an increasingly competitive environment in markets served by Trentwood.

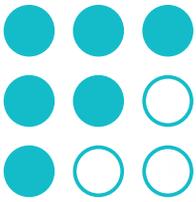
"Initial spending has commenced in 2015, and equipment is on order to move forward on the project in 2016," Hockema said in a news release. "We expect to begin to realize a reduction in conversion costs and a 5%-10% increase in capacity by early 2018."

FedEx Corp. Commits to Buy 16 Boeing 777s

Memphis-based FedEx Corp. has committed to buying 16 Boeing 777s as part of a fleet modernization program — a potential investment of an estimated \$5 billion.

Fulfillment of the 16 additional aircraft order will begin in 2020, with an anticipated delivery of three planes

Continued on page 104.....



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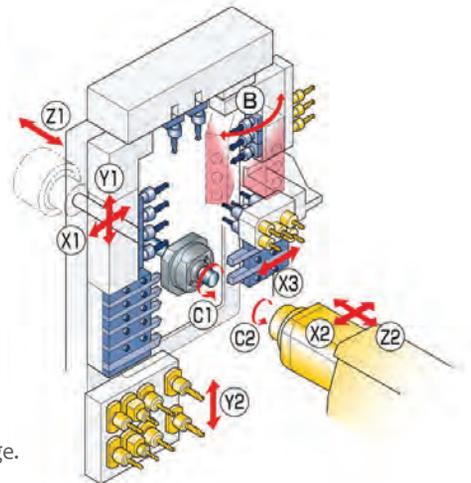
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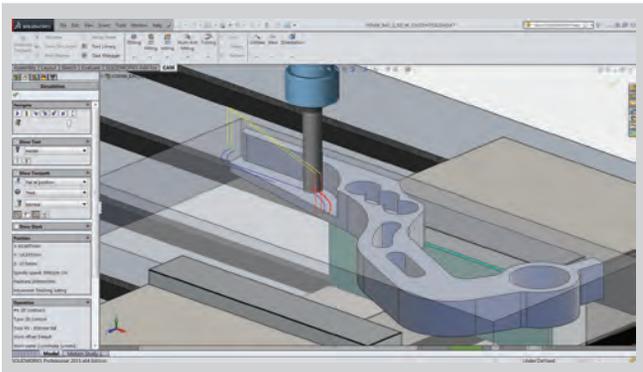


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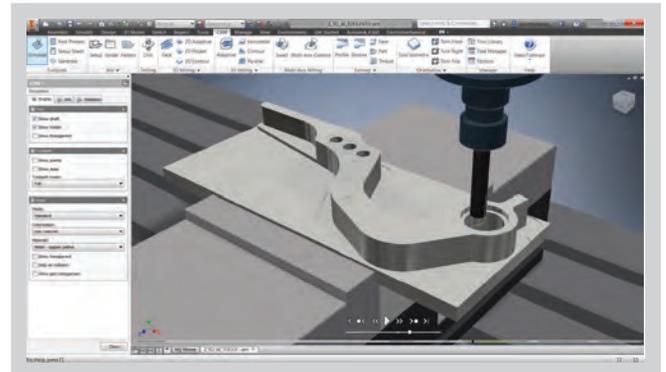


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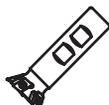
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Kit B208	8"	0.551	12MM	0.984	2"	KT-8200F	\$ 39.68	RKT-8200A	\$ 84.48
					4"	KT-8400F	\$ 67.48	RKT-8400A	\$ 150.00
Kit B210	10"	0.630	12MM	1.181	2"	KT-10200F	\$ 44.31	RKT-10200A	\$ 124.97
					4"	KT-10400F	\$ 72.75	RKT-10400A	\$ 201.19
Kit B12	12"	0.709	14MM	1.181	2"	KT-12200F	\$ 63.49	RKT-12200A	\$ 169.18
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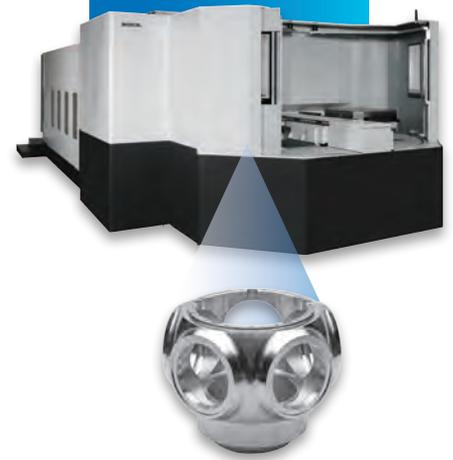
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Colorado Built Juno Spacecraft Breaks Solar Power Distance Record



“Jupiter is five times farther from the sun than Earth, and the sunlight that reaches that far out packs 25 times less punch,” said Rick Nybakken, Juno’s project manager from NASA’s Jet Propulsion Laboratory in Pasadena, Calif. “While our massive solar arrays will be generating only 500 watts when we are at Jupiter, Juno is very efficiently designed, and it will be more than enough to get the job done.”

Prior to Juno, eight spacecraft have navigated the cold, harsh underlit realities of deep space as far out as Jupiter. All have used nuclear power sources to get their job done. Solar

NASA’s Juno mission to Jupiter has broken the record to become humanity’s most distant solar-powered emissary. The milestone occurred at 11 a.m. PST (2 p.m. EST, 19:00 UTC) on Wednesday, Jan. 13, when Juno was about 493 million miles from the sun.

The previous record-holder was the European Space Agency’s Rosetta spacecraft, whose orbit peaked out at the 492-million-mile (792-million-kilometer) mark in October 2012, during its approach to comet 67P/Churyumov-Gerasimenko.

“Juno is all about pushing the edge of technology to help us learn about our origins,” said Scott Bolton, Juno principal investigator at the Southwest Research Institute in San Antonio. “We use every known technique to see through Jupiter’s clouds and reveal the secrets Jupiter holds of our solar system’s early history. It just seems right that the sun is helping us learn about the origin of Jupiter and the other planets that orbit it.”

Launched in 2011, Juno is the first solar-powered spacecraft designed to operate at such a great distance from the sun. That’s why the surface area of solar panels required to generate adequate power is quite large. The four-ton Juno spacecraft carries three 30-foot-long solar arrays festooned with 18,698 individual solar cells. At Earth distance from the sun, the cells have the potential to generate approximately 14 kilowatts of electricity. But transport those same rectangles of silicon and gallium arsenide to a fifth rock from the sun distance, and it’s a powerfully different story.

power is possible on Juno due to improved solar-cell performance, energy-efficient instruments and spacecraft, a mission design that can avoid Jupiter’s shadow, and a polar orbit that minimizes the total radiation. Juno’s maximum distance from the sun during its 16-month science mission will be about 517 million miles, an almost five percent increase in the record for solar-powered space vehicles.

“It is cool we got the record and that our dedicated team of engineers and scientists can chalk up another first in space exploration,” said Bolton. “But the best is yet to come. We are achieving these records and venturing so far out for a reason -- to better understand the biggest world in our solar system and thereby better understand where we came from.”

Juno will arrive at Jupiter on July 4 of this year. Over the next year the spacecraft will orbit the Jovian world 33 times, skimming to within 3,100 miles above the planet’s cloud tops every 14 days. During the flybys, Juno will probe beneath the obscuring cloud cover of Jupiter and study Jupiter’s aurorae to learn more about the planet’s origins, structure, atmosphere and magnetosphere.

NASA’s Jet Propulsion Laboratory, Pasadena, California, manages the Juno mission for the principal investigator, Scott Bolton, of Southwest Research Institute in San Antonio. Juno is part of NASA’s New Frontiers Program, which is managed at NASA’s Marshall Space Flight Center in Huntsville, Alabama. Lockheed Martin Space Systems, Denver, built the spacecraft. The California Institute of Technology in Pasadena manages JPL for NASA.



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ACCURATE GRINDING & MANUFACTURING

Article by Sean Buur Photos by Sean Buur & Accurate Manufacturing



Dave, Jack and Doug Nilsen of Accurate Grinding and Manufacturing in Corona, Ca.

ROCKETS, REELS, AND RATS

David and Doug Nilsen grew up on the shop floor of Accurate Grinding and Manufacturing (AGM). Literally, the twins went to work with their grandfather at three years old. Now, forty something years later they are still on the shop floor tackling everything from aerospace to fishing reels.

“Our grandfather, Mike DeMarco started Accurate Grinding in 1950 out of a 5,000sq.ft. shop in East Los Angeles,” tells Doug. “Precision grinding was his specialty, and he figured out how to make a high precision turbine shaft back in the 50’s. He got hooked up with the guys at Garret making parts for the first jet engine.” At the time few people could grind with his kind of accuracy, and decades later they were still known as the go-to shop for precision shaft grinding. With a little outside encouragement Mike added full production capabilities. Eventually he stepped up to complete shaft manufacturing. He took bar stock and turned it, milled it, heat treated and plated it. Sixty-six years later that formula is still working.

“Our dad, Jack Nilsen took a short term job with our grandfather, (his father in-law) and uncle Joe (our mom’s brother) in the early 70’s,” explains David. “After graduating from Cal State LA with a degree in drafting he went to work for McDonnell Douglas. The office he was working in moved so he picked up hours at Accurate. That interim job became a life long journey, and Accurate would not be the company it is today without his vision.”

Even though Mike and Joe’s idea of a shop was 20 guys running turret lathes and making manual parts, Accurate got their first CNC in 1978. “Our dad pushed hard for the Nakamura,” describes David. “As CNC started to get into the mix our dad was quick to see the value in it. He knew it was a transitional time for machining and you had to be in or out. We were in.” David and Doug got more involved in the business during high school, working after school and on weekends. They went off to college, but came back for the summer in 1989. That summer helped shape the future of Accurate Grinding and Manufacturing. It transformed how people fished, and put Doug and Dave

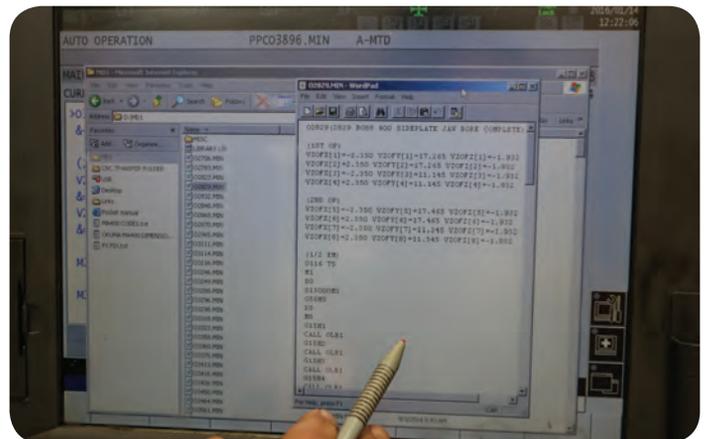


AGM is equipped with two Okuma horizontals, a ten pallet Okuma MA-400 with 154 tools and a two pallet Okuma MB-4000 with 218 tools.

on a new course, leaving the old ways of manufacturing in their wake.

Fishing was always a family activity and that summer the boys were doing a lot with their dad. “We were out shark fishing on a six pack charter called Bongos and noticed they kept bending gaffs,” tells Doug. “My Dad thought we could make a better gaff using what we knew from the aerospace business. We went to the shop and came back a few weeks later with a far superior product.” We hand built 180 gaffs and sold out that spring at a Fred Hall Fishing show in Long Beach. In March of 1990 Accurate Fishing was born. “We were young and learned a lot about doing business, but our big break came when we designed and manufactured our own upgrade kits for Penn Jig Master fishing reels. Sales of the upgrade kit in one month generated more money than the gaff business did in two years.” Their design improved on an already solid fishing platform, but more importantly led them into inventing their own reel. The reel they designed and patented is a TwinDrag, dual brake set-up that some feel not only sets the standard for reels, but also created an entirely new market of products.

All along aerospace has been a big part of the fishing business. Doug and Dave took what they knew from aerospace to make the reels, but in turn what was learned from manufacturing the reels helped elevate their aerospace program. They were forced to compartmentalize and think about how to process parts faster and better. “The way we handled aerospace parts was more traditional and old school,” explains David. “The fishing reels showed us we needed to modernize how we do things. For all our aerospace customers combined we have around 200 part numbers total, but each of our reels has 150 parts and we have 30 different reels. We built our own data base system with Filemaker Pro and implemented that back into how we treat our aerospace products.” Quality control for Honeywell and all the AS and ISO verification requirements are all integrated into these database files. Accurate’s computer system is a home-grown masterpiece and not a stock off the shelf management system. It mimics how they do business and is treated as a living thing that is always evolving. Everything is accessible by them and their management teams right off their iPhones and in real time.



The Okuma controls are a favorite feature to Dave and Doug. They love the multi layer touch screen and the ability to multi-task right from the machine.



AGM has had robotics since 2008 when they purchased the Okuma Captain with Fanuc robot and conveyer system. More robotics and automation are in the works.



AGM has three Tsugami SS26 Swiss screw machines, and a brand new DMG Mori NLX 2500-700.

Turning, milling, CNC grinding, Swiss turning, gear cutting, splines, ID, OD and surface grinding, polishing, gun drilling, and commercial anodizing are all part of the Accurate package. They take a piece of solid bar stock and transform it into everything from rocket engine parts to fishing reels. “We specialize in aerospace parts that other shops don’t want to do, close tolerance, high risk, shafts and carriers,” describes Doug. “Our niche is round with holes and gun drilling. It’s not that other companies can’t necessarily do the work, it’s just that they find the parts too technical, with too many process and too many items to control. For us that’s normal, but others don’t find the challenge to their liking.” A typical part for the local rocket company might require 2 tenths all over tolerances, gun drilling, multiple heat treats, threading, grinding, plating, gears and thin dense chrome

Accurate is a second tier supplier to Boeing, and first tier to industry staples like Honeywell and SpaceX. Every one of SpaceX’s rockets has two or three Accurate Manufacturing parts in when they lift off. “We are proud to be a part of all our aerospace customer’s programs,” adds David. “We like making things that get shot into space. When we get on a plane we know we delivered the best parts possible and that’s important.” All Boeing two engine aircraft have what is called a Ram Air Turbine or RAT. Accurate machines a shaft for the RAT system. It is a complex part and Accurate Manufacturing is only one of three companies manufacturing them. The RAT is part of the safety system, and will power vital systems (flight controls, linked hydraulics and flight-critical instrumentation) in the event both primary and auxiliary power sources fail. “The pilot who dead stuck the plane into the Hudson River would not have been able to do so without the RAT. All the parts func-



AGM moved into their 30,000sq.ft. location in 2002, more than tripling their size.

tioned perfectly and lives were saved, that’s important to all of us in the aerospace game.” The joke is that Accurate is full of rats, but in this case, three decades worth of RAT experience is a good thing.”

Uncle Joe retired in 1999, and total control over Accurate Grinding and Manufacturing was now in the hands of Jack and his sons. Soon after David and Doug started the hunt for a larger manufacturing facility. “We were over being in Boyle Heights with two small buildings,” tells Doug. “Dad went on a fishing trip in 2002 and we decided to pull the trigger on a 30,000sq. ft. building in Corona.” Jack came back from his trip to find a note on the door saying your office is 60 miles east of here. He knew they were planning a move, but had no idea it would all happen while he was gone. “We had been there since 1950 and there was a lot of stuff to move and throw out, but it was a great decision and one that allowed us to grow as a company.” Without space restrictions they were able to bring larger machines on board. “Moving forward the goal was to go larger and with more automation. Now one guy is out running 3 or 4 machines instead of one guy on one machine.”

A quick look out at the shop and you will quickly see a trend. “We have three Tsugami SS26 Swiss screw machines, and a brand new DMG Mori NLX 2500-700, but most of our primary manufacturing machines are Okuma mills and lathes.” Four Okuma Crown turning centers, an Okuma LU-15 twin turret

lathe, and the Okuma Captain with Fanuc robot and conveyer make up the turning department. Milling is done via a new Okuma Genos 560 vertical and two Okuma horizontals, a ten pallet Okuma MA-400 with 154 tools and a two pallet Okuma MB-4000 with 218 tools. They bought their first Okuma in 1998 and became instant fans. One machine quickly turned into five within a two year period. They’ve been very impressed with the Okuma build quality, the accuracy of the parts, and the controls.

“We love the Okuma controls,” praises David. “They’re intuitive, not overly complex, and deliver very high performance.” The newest control includes the THINC®-OSP control system allowing you to add third party apps like you would on your phone. “We just got the Genos M560 vertical with a P300 control and love it. The Genos machines are super quick thanks to the way the table and head move together, but the control includes features we find very useful, like multi-layers of touch screens, multi-tasking, and cut and paste right from Notepad.” The best machines are nothing without support/service. Doug and David are quick to commend the local Okuma distributor Gosiger on both. “We’ve worn out spindles and been back up and running only days later. We buy a lot of machines from Kevin Larson and Gosiger for a reason, they are fantastic when it comes to meeting our machining and service needs.”



Accurate Grinding and Manufacturing’s niche is round with holes and gun drilling. Here we have three parts that need a description from Doug and Dave. I know what is a rat, the others must be a mouse or a Capybara.



For 66 years AGM has turned simple bar stock into everything from rocket parts to fishing reels.



Beginning last year, AGM began rebranding and setting their sights on increased aerospace work through reconnecting with customers and hiring a sales team. “Aerospace jobs have existed in this company since 1950 with zero to one sales guy,” explains Doug. “By hiring three new sales people in the last year we’ve already seen a return on our investment. The opportunity to do more for our existing customer base has always been there, it was just something we never went after.” Fishing and aerospace complement each other at AGM. Last year’s fishing season was the best California has ever had. Sales for 2016 are projected to see a 30% increase, so balancing sales in aerospace is key to their overall continued growth. Doug and Dave look at company sales like a staircase. When you take one step up with your right fishing foot, the left aerospace foot has to follow. Some times you lead with the left and sometimes the right, but they always have to be close for you to keep moving forward and not trip and fall.

It is hard to tell if Doug and Dave are Fishermen with a manufacturing problem, or machinists with a fishing addiction, but one thing is clear, they love what they do and it shows in their work. “We lucked out having a family business that gave us an outlet to create,” finishes the brothers Nilsen. “It would have been a lot harder to start a fishing business from nothing, but on the flip side the fishing has helped elevate everything we do in aerospace.”



Doug and Dave used their aerospace manufacturing experience to invent the Accurate Fishing reel, a TwinDrag, dual brake setup that some feel not only sets the standard for reels, but also created an entirely new market of products.

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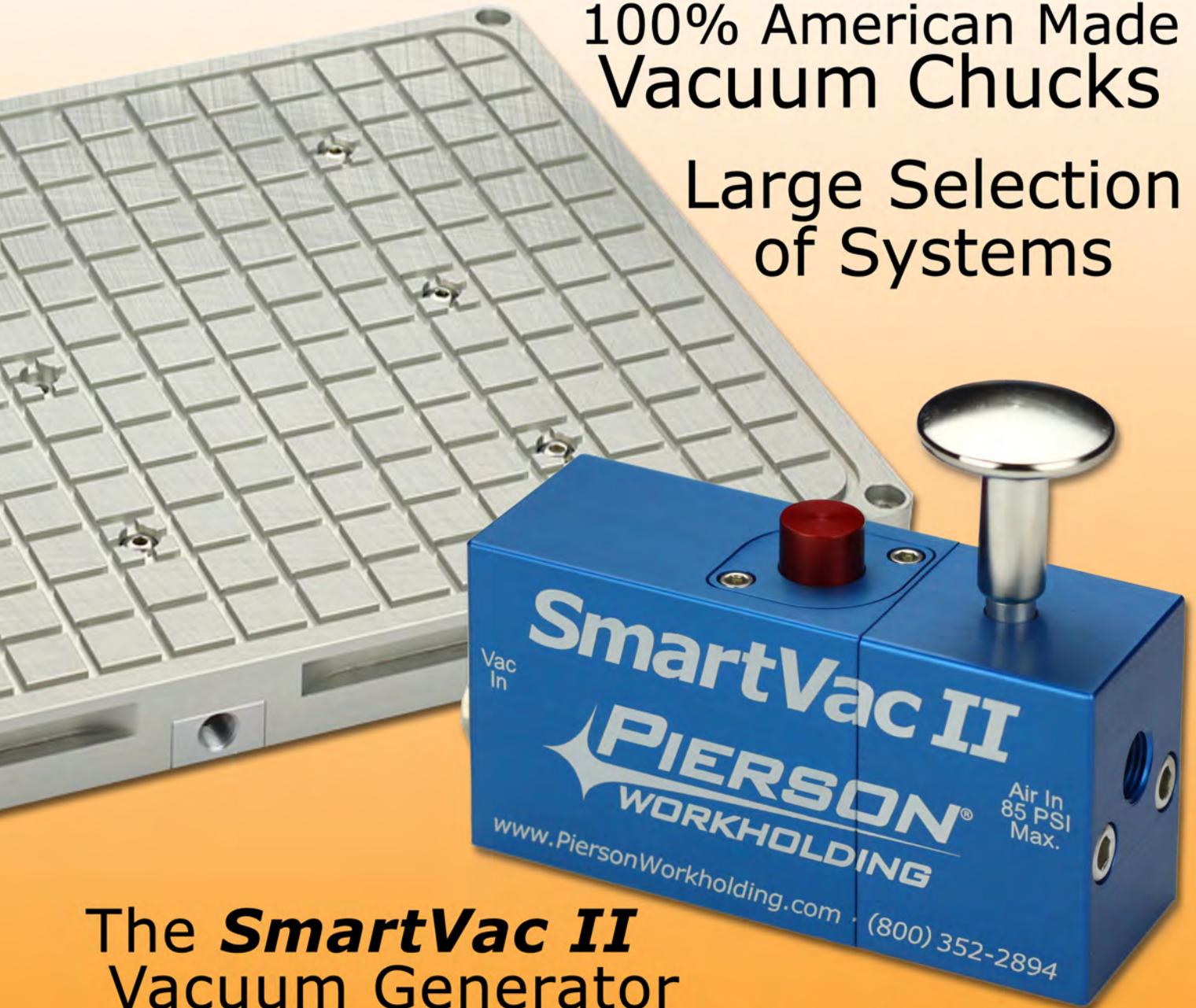
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AERODYNE PRECISION MACHINING INC.

5 AXIS MACHINING IS A GAME CHANGER FOR SURF CITY SHOP

Article by Sean Buur Photos by Sean Buur & Aerodyne



Left to right: Ben Hanson (Mill Supervisor), Ron Whitlock (Production Manager), Eric Kaufman (Mill Supervisor), Rod Hazzard (Quality Manager), Mike Trollmann (Lathe Supervisor), Raymond Krispel (President), Jason Krispel (General Manager).

Aerodyne Precision Machining Inc. (APM) incorporated thirty years ago in Southern California's Surf City, Huntington Beach, California. What started out as a home based company in Raymond Krispel's garage has grown into a 20,000 sq.ft. manufacturing facility with 32 employees and well over a dozen CNC milling and turning centers.

"My dad Raymond and my uncle started the company back in the mid 80's," explains APM's general manager Jason Krispel. "Raymond knew someone working at Parker Hannifin and called him up right after they opened. Thirty years later Parker Hannifin is still our largest customer and we support efforts from three different divisions." Raymond has over 40 years machining experience, primarily in the aerospace industry. Over the years APM has built their reputation as a go to supplier for their work in high-pressure hydraulic systems, electro-hydraulic servo-valves, cylinders, and hog outs. "We've always been aerospace hydraulics oriented because that is what our customer needed," tells Raymond. "Transfer tubes came fifteen years after the company started, and that was our first big break.

Things really took off after that." Transfer tubes are part of the mechanism that controls the flaps on a plane. As an example each 737 requires 8 of them plus spares. When you factor in the number of planes brought on line every month APM has a lot of tubes to manufacture, so no wonder they are so good at it.

Eric Kaufman and Ben Hanson head up APM's milling department. Together with Jason they do all the programming, setup, and fixturing for their eleven 3, 4 and 5 axis Hurco milling centers. All three are young guys, Eric 34, Ben 37 and Jason 28. Ben graduated from NTMA training center with outside training in Solidworks 3d modeling and part programming, Eric has a degree in machine technology from Orange Coast College and Jason is a recent graduate from the University of Connecticut's hockey team and mechanical engineering school. Two minutes with these guys and you quickly realize that APM is a great place to work, and that these three are Hurco enthusiasts. "Milling is my thing," jokes Eric. "Ever since taking a machining class in high school I knew I wanted to work in this industry and to machine things out of metal. I had a knack for milling

Right - Eric is a self proclaimed Hurco enthusiast and feels the Hurco controls are some of the most user friendly in the business.

Below left - Simple jobs are made easier by being able to program on the machine.

Ben finds the conversational to be very useful.

Below right - APM has 11 Hurco milling centers including three 5-axis machines.

Bottom right - Hurco's integrated trunnion table makes 5-axis machining quick and accurate.

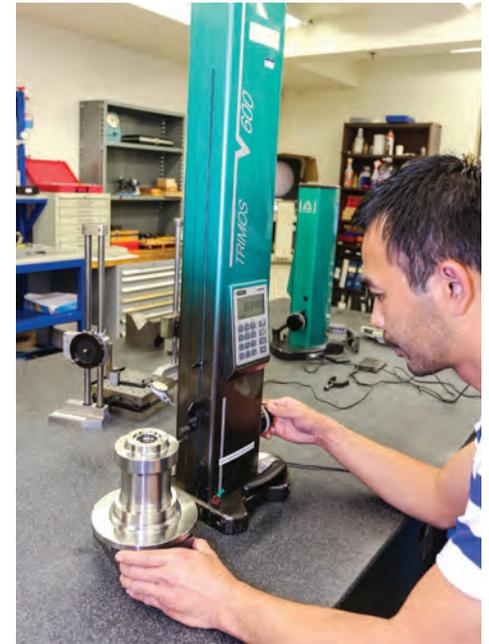


and working here at APM has helped foster my abilities." Eric has been with APM for over eleven years and co-manager Ben has been part of the family for more than seven. Their fleet of Hurco milling centers range in age and axis from a 1986 running DOS on the controls to a brand new 5 axis VMX30U machine.

APM is one of the larger Hurco shops in Southern California, and just made the jump to 5 axis machining three years ago. "We've been dealing with Machinery Sales for a couple years," explains Eric. "Garry Frost, his sales staff and service team do a great job supporting the Hurco product line, but it took us a while to finally pull the trigger on our first 5 axis." After seeing it run at an open house, APM ordered a Hurco VMX42U. It is a 24hp machine with 40 tools and Hurco's integrated trunnion table. "Combined setup and training was less than two weeks," adds Ben. "We were cutting chips on actual jobs before the training crew even left." APM discovered that the 5 axis not only changed the way they machined parts, but also how they looked at jobs. "We are taking a part that used to have 8 operations and now only two at most," explains Eric. "Besides the time savings we have seen a huge bump in overall accuracy. For example we have a job that requires doing a deep drilled hole at a complex compound angle. The hole is 3/16th in diameter and over 8" long. The position on the part is rela-



tive to other features. Taking it on and off for multiple operations always left us on the higher end of the tolerances. With the new 5 axis machines we are spot on every time." APM liked the first machine so much they also added two VMX30U's to their line up. The two new machines have the same horsepower as the first, but just have a slightly smaller table. "We think differently now as programmers," explains Eric. "Before, Ben or I would look at a part and think machine, flip, machine, flip and so forth. Now it is as simple as put it on the 5 axis."



Left - Jason is the general manager and a jack of all trades. He can program, run and setup the mills and lathes along with anything needed in QC. Right - Aerodyne's quality systems are in accordance with AS9100 & ISO 9001 / 9002. Henry Nguyen performing a first article inspection of a part using a Fowler Trimos.

All of the milling department programmers love the Hurco controls and find them to be one of the biggest selling points of the machines. "The Hurco machines in general are very user friendly, especially the controls," describes Eric. "The controls are intuitive and easy to use. Walk up to it and you see Windows. It is recognizable to all the young people getting into the industry. Hurco's Max 5 control has amazing multi-tasking features." Ben agrees with Eric on ease of use and adds his own thoughts on usability. "Over seven years ago I came to Aerodyne and had never run a Hurco. Thanks in part to Eric, I picked it up pretty easy and now it is my preferred system. Hurco's conversational comes in handy. Being able to program right on the machine is convenient. I don't have to come all the way back to the programming command center just to make a small change. Simple stuff is made simpler by being able to do it on the machine." Eric feels there is an unfounded fear of different controls in the industry. "I think a lot of people are scared to try something different," describes Eric. "Hurco controls are

my forte, and I've taught everyone in the shop how to use them. Within a week or two at the most they are pro level users. It doesn't make any sense to my why some operators are so resistant to change, especially when it makes their jobs easier."

By adding the 5 axis Hurco machines into the mix APM saw a tremendous gain in accuracy and productivity. Their goal moving forward is to continue down a technology driven path. "I worked part time here in high school and summers during college," describes Jason. "I've been full time now three years and see a big change in this company and how we go about producing parts. The 5 axis machines set in motion a technology trend that we hope to continue for the next few years." Jason has spent his short time at APM roaming around the shop learning the different aspects of the company. His title is operations manager, but right now he is in procurement, scheduling, and customer service. "Jason is truly a jack of all trades," describes Eric. "He takes on everything for the challenge. He can program, setup, and run our mills and lathes, he worked in quality,



It is no surprise that a company based in Huntington Beach, CA has a thing for tubes. Transfer tubes were a big break for the company 15 years ago and now is one of their most mass produced parts. Transfer tubes are part of the mechanism that controls the flaps on a plane. A 737 uses eight of them per plane.

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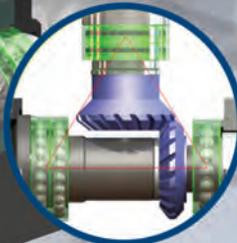
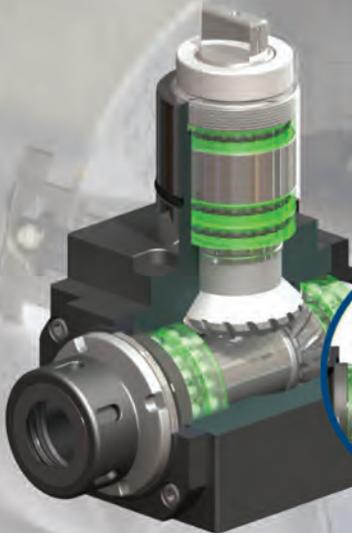


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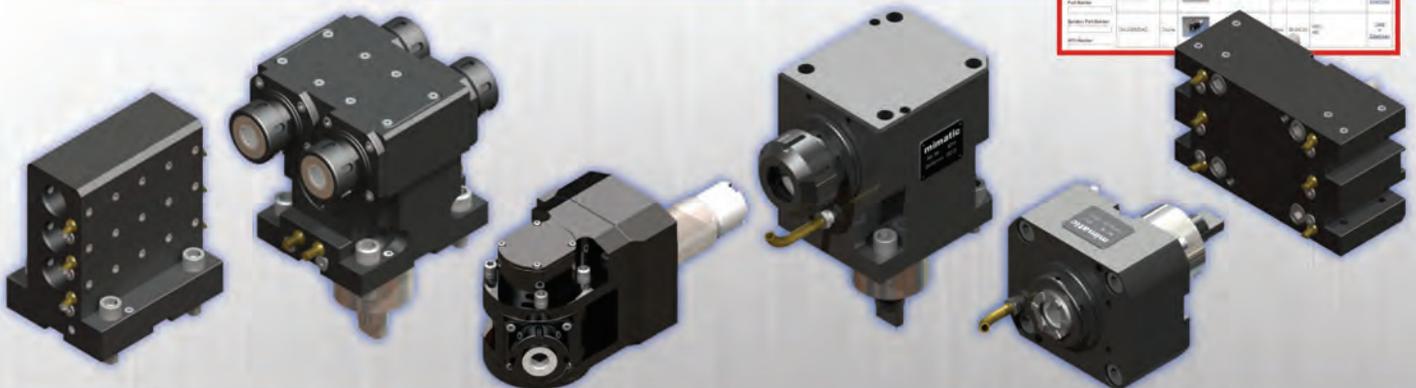
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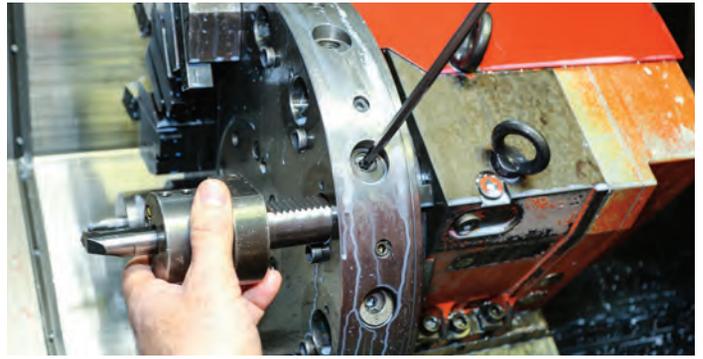
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APM's turning department includes two C-Axis and seven 2-Axis Lathes. The C-Axis Lathes are equipped with twin spindles and live tooling. Quang Do is setting a tool with the touch probe on the Takisawa Lathe and turning department Supervisor Mike Trollmann shows off a small Aerospace part that is machined on the Emco C-axis Lathe in one operation.

programming the Mitutoyo CMMs and now he is in the front office." Jason predicts lights out manufacturing and robotic automation will yield APM another big bump in capabilities. "Optimizing the machines and how we go about machining the parts is a key focus point for us moving forward," explains Jason. "The next step will be lights out manufacturing with the goal of having two full shifts with palletized systems." Eric chimes in with "and robotic automation." "Yes and robots, Eric wants to play with robotics, and we want to challenge the guys on the

shop floor with new and exciting parts to manufacture." When the robots do come you can bet that Jason will be in the crease right next to Eric and Ben.

To their customers, Aerodyne Precision Machining's 30-year reputation is built on high quality parts, on-time delivery, and excellent customer service. Even without robots this family business offers employees open lines of communication, room to grow and a tight knit team atmosphere that makes coming to work fun and exciting.



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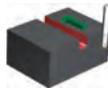
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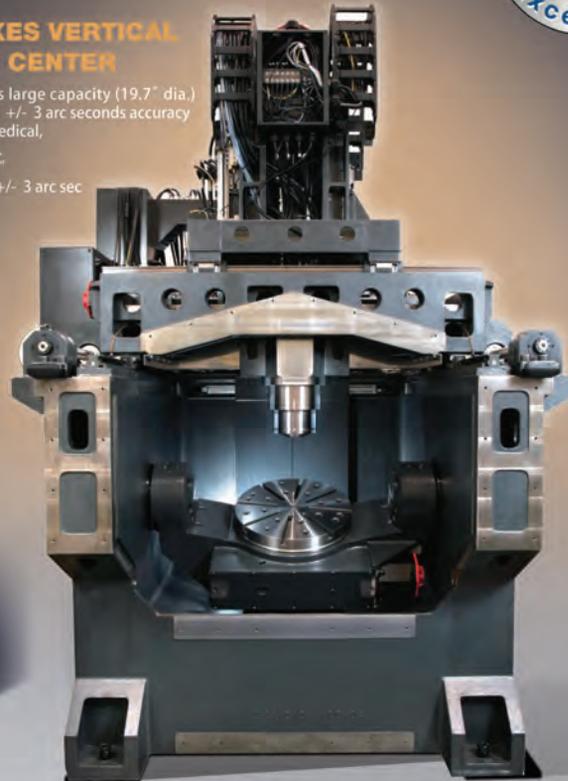
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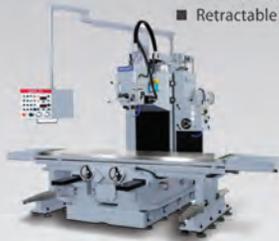


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- 20 HP vertical head, 7.5 HP horizontal
- Wt. 28,600 lbs



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- 24" x 14" x 18" travel (Box Way models)
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- 24 tools ATC, 12,000 rpm, Fanuc or Siemens Control



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2 axes NC surface grinder

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- 35 HP motor, 8,000 rpm, CAT 50 spindle
- Fanuc Oi-MD CNC control



Box Way Vertical Machining Center

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- Box Ways, Fanuc Oi-MD CNC control



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SHARP



John Tajirian president of KT engineering in front of one of the company's Mitsui Seiki machines.

Strategic Planning Key to This Award-Winning AeroDef Manufacturer's Success

When visitors first meet John Tajirian, President of KT Engineering (Rancho Dominguez, CA), they are struck by his warmth, expressed in a genuine smile and an earnest greeting. After spending several hours immersed in KT's environment, learning about the company and its staff, customers, and methodologies, it's apparent that Tajirian's consideration, intellect, and family-instilled work ethic pervade throughout the company. The manufacturing area is clean and orderly with an undercur-

rent of purpose-driven energy. CNC machinists clearly know the nuances of the equipment and the minutia of their tasks. Engineers walk briskly carrying SPC reports, slight furrows at their brows – countenances of concentration. Assemblers work adroitly, handling freshly finished parts with care. Machine tools buzz, coolant splashing their interior windows. All the elements – place, procedure, people, production – pulsate. But then, they must.

They make jet fighter parts here.

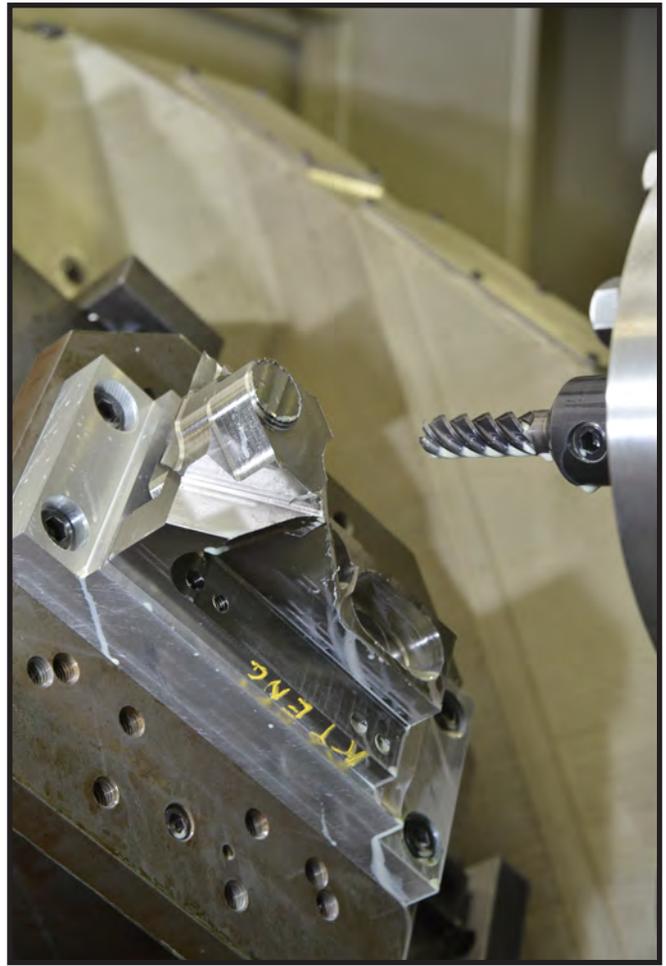
Established 30 years ago in 1986, KT Engineering is a vertically-integrated supplier that offers OEMs a single source to design, produce, assemble, and deliver a range of components, many for defense programs. Its wall of awards and certifications from the major aerospace OEMs are notable endorsements for KT's part production expertise in this sector. The company is also licensed for the International Traffic in Arms Regulations (ITAR) for exporting products out of the country. Tajirian is most proud of winning Lockheed-Martin's coveted Supplier of the Year award recently because it represents many aspects of the relationship, not only part quality and delivery, but also characteristics such as cooperation, receptivity, communication, and responsiveness.

Planning is paramount

It's an honor over a quarter-of-a-century in the making, with the ongoing refinement of a certain approach to the parts-making business that works at KT Engineering. That approach in a word: Planning.

"Even when we get an order in that isn't due for a year, we schedule a meeting usually within ten days of receiving it," said Tajirian. Applying the just-in-time production theory as it's described in text books can put a subcontract shop in an awkward position at times. Our idea of just-in-time is three to six months ahead preferably."

That being said, KT Engineering can fulfill emergency orders from existing and even new customers quickly, thanks to all the planning the staff does for material, tooling, and redundant machine tools on the floor of the 25,000 sq. ft. facility. Further sustaining that philosophy of thorough preparation, most of the company's 26 employees have support and planning roles to champion all the activities done in advance of production, as well as post-production follow-through -- finishing, assembly, and shipping. For example, when the company receives a project (often via Exostar, the secure collaboration media channel predominantly used in the aerospace industry), one of the early tasks is to place an order for the raw material. The team determines a shipping date, which could be months ahead, and follows-up with the



Aerospace parts made on a Mitsui Seiki horizontal machining center

material source at plotted intervals to ensure the inbound date is still on target. Regarding equipment redundancy, several of CNC machines are duplicates of the same brand, perhaps stepped in size, from 3-axis VMCs to heavy duty 4- and 5-axis HMCs, some less than two years old. The company even has two CMMs, which is unusual for a manufacturer of this size.

"We are a subcontract business. We have to be flexible and ready for whatever work comes in. Having redundant and diverse machinery is one of the many ways to be prepared and respond," said Tajirian.

KT holds two production meetings a week – another uncommon occurrence at a company of this size – to review all of the open purchase orders and assess the status of incoming vendor orders. Additionally, Tajirian facilitates at least one planning meeting each week that also includes two programmers well-versed in Mastercam, the general manager, and the project manager. They discuss how a part will be processed. The group reviews the CATIA models as they come in from the customer and all of the guidelines, including quality parameters, heat treating, finishing requirements, which equipment it will run on, material grades and dimensions, fixturing, special tooling needs – all the aspects required to process the part.

"There are myriad requirements in aerospace," Tajirian



said. “What we’re doing, I’m sure all subcontractors have these kinds of meetings,” Tajirian said. “It’s when we do it in the process and how we execute the project that keeps us on target that really differentiates us and has helped us become a reliable, certified supplier for these major aerospace military programs. In fact, we just scored another 100 percent on a recent client report card. It’s a tangible acknowledgement for a methodology and philosophy here that involve intangible activities.”

Constant production improvements

About six years ago, KT Engineering anticipated the trend for more demand of titanium parts from its client base and prepared by researching the typical parts and the work envelope required for 80 percent of the work that would be outsourced. The company purchased two additional Mitsui Seiki – five-axis horizontal mills with trunnions -- as a companion to its two other legacy 4-axis Mitsui Seiki HMCs.

“We have gained a lot of experience in titanium since then. This is another aspect of planning – we listen to our vendor resources about what they are seeing in the marketplace and the technology solutions that are truly working. We also visit the OEMs in our target sector and note what they have on the production floor or, perhaps more importantly, wish they had on the floor. Mitsui Seiki advised us on the comprehensive titanium-cutting solution, including tooling, such as the Kennametal Harvey® cutters.”

KT’s early-and-often planning approach might be intangible, but quantitative data is not, and their esteemed clients evaluate KT’s part consistency, among other factors, in numerical terms. To that end, Tajirian and his team are continually looking for ways to improve part precision. The two CMMs – supported by the latest PCDMIS and CATIA software – and the other gauging devices in the cool, quiet quality room get a healthy work-out at KT engineering. The company is certified to both ISO 9001:2008 and AS9100C. Quality technicians measure part accuracies, monitor productivity gains, track all parts via a barcode system, and compute and appraise the trend analyses. For instance, a titanium hinge used in an aircraft wing assembly used to take 32 hours to produce; now it’s down to 18 on the 5-axis trunnion HMCs. Tolerances were held before, thanks to KT’s skilled machinists, however the part had to travel to and from five different machines, which increases the risk of going out of bounds with varying positioning values of each piece of equipment. Plus the extra physical handling added more unproductive time to the statistics. An unforeseen benefit: finer surface finishes are also being achieved, which translates to less bench time.

“The ample work envelope on the trunnion machine allows us to cut two parts out of the titanium block now, and cut five sides in one setup,” said Tajirian. “That has also improved our efficiency. As for the quality impact, the rigidity and accuracy are exceptional. On the bores we are achieving a plus or minus two ‘tenths’ – better than half a thousandths,



and true positioning of less than a thousandth. The customer asked for plus or minus one thousandth of an inch, but is getting even greater accuracy and at no additional cost. Each piece of equipment here has its place, its areas where it's the optimal choice. For titanium, it's the Mitsui's. For aluminum, it's the SNK's."

A tool presetter with optical magnification and a shrink fit system are the centerpieces in a well-organized tooling area at KT Engineering. Tool presetting contributes to time savings and human error reduction. Tooling adjustments that can take up to 15 minutes in the machine can be made offline in less than a minute on a presetter. The data is transferred directly to the machines rather than an operator having to manually input the figures. Tajirian said that shrink fitting the tools has extended the tool life and run-out on the high-torque trunnion machines cutting titanium significantly.

"Everyone is noticing how much our tool life has improved on titanium," he said. "By at least 15 percent."

As a back-up check, machinists use a separate mechanical presetter to verify that the tooling dimensions are indeed correct. While this step takes extra time, it provides additional insurance to avoid potentially costly errors during machining.

Content, competent workforce

For many employers, people represent the most challenging aspect of managing a company. KT Engineering is committed to continually provide training to its diverse

staff to expand the employees' knowledge, capabilities, and confidence. Further, Tajirian has cultivated an atmosphere of respect, dedication, integrity, and striving to always improve mainly by presenting those ideals in himself for others to follow. And they do. Examples of his generosity to his staff are personal and astounding.

"It's just a way of expressing my thanks for their dedicated, persistent effort every day and the value they bring to everything we do here," said Tajirian.

Going forward

As with most subcontract manufacturers, KT Engineering would like to expand its client base, but at a manageable pace to maintain its extraordinary level of customer satisfaction.

"About 99% percent of our work is in aerospace and defense," Tajirian said. "Serving additional industries would diversify our base, which we welcome, but in no way would it dilute our aptitude and interest in our core market, particularly with our growing knowledge in titanium machining now with the Mitsui Seiki equipment. We are extremely dedicated and proud to be a member of this critical, complex supply chain and will do what we need to do to ensure we keep evolving to become even better partners to our current, and new, customers."

At KT Engineering, it's evident that plan is well underway.

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ASIL AEROSPACE INC.



Article & Photos by Sean Buur

Operation manager Chris Penta and owner John Demerjian of Asil Aerospace Inc. with their new Akira Seiki V2.5 they bought at the end of 2015.

When people think of aerospace they often only think of flight controls and engine parts. Some of the parts we think the least of are the ones ordinary people come in contact with every time they fly. Chances are when you pull back the pocket to look for the safety card or get your elbow hit by the drink cart moving up and down the aisle, Asil Aerospace had a hand in making that happen.

“We don’t say we are a CNC machine shop,” explains Chris Penta, operations manager at Asil Aerospace. “We are a sheet metal fabrication & CNC house that specializes in aircraft interiors like lavatories, seats and galleys.” Since 1985 Asil has become as diverse as their customer’s needs. They offer everything from Engineering, Reverse Engineering, CNC machining, sheet metal and fabrication, assembly, spot welding, vacuum forming, commercial welding, honeycomb composites, CNC punching, plastics, to CNC sheering and notching. According to Chris, “Some customers came to us for CNC but then needed sheet metal and riveting, while others seek us out for assembly and then are stoked to see we can also do CNC and Sheet Metal. We are a one-stop service center for many of our customers. They like not having to send me a part for

CNC then off to someone else for sheet metal, then back to another guy for assembly. “We have it all.”

John Demerjian came to this country in 1976 from Syria with nothing. He spent the next few years trying to provide for his family in a new land and saving enough to start Asil Tool in North Hollywood in 1985. The name was derived by spelling his daughter (Lisa’s) name spelled backwards. He incorporated in 1997 and became Asil Aerospace. John is obsessed with everything being perfect for the customer. It is not uncommon for he and Chris to be at the shop well into the nighttime hours, ensuring all goes as planned. The 13,000 sq.ft. facility runs two shifts a day, six days a week and has a dozen employees. Chris doesn’t look at it as work, but more as an adventure and fun. “I like dealing with engineering issues, customers, and employees,” tells Chris. “Problem solving means never a dull day, never the same thing. A new day, and a new challenge make coming to work fresh and new. Chris started at Asil only 8 years ago with zero experience in manufacturing and machining. His eagerness to learn saw him quickly progress to operations manager. “John put me in the shop and said figure it out,” laughs Chris. “Business was slow at the time and I came in hoping my sales background could help the busi-

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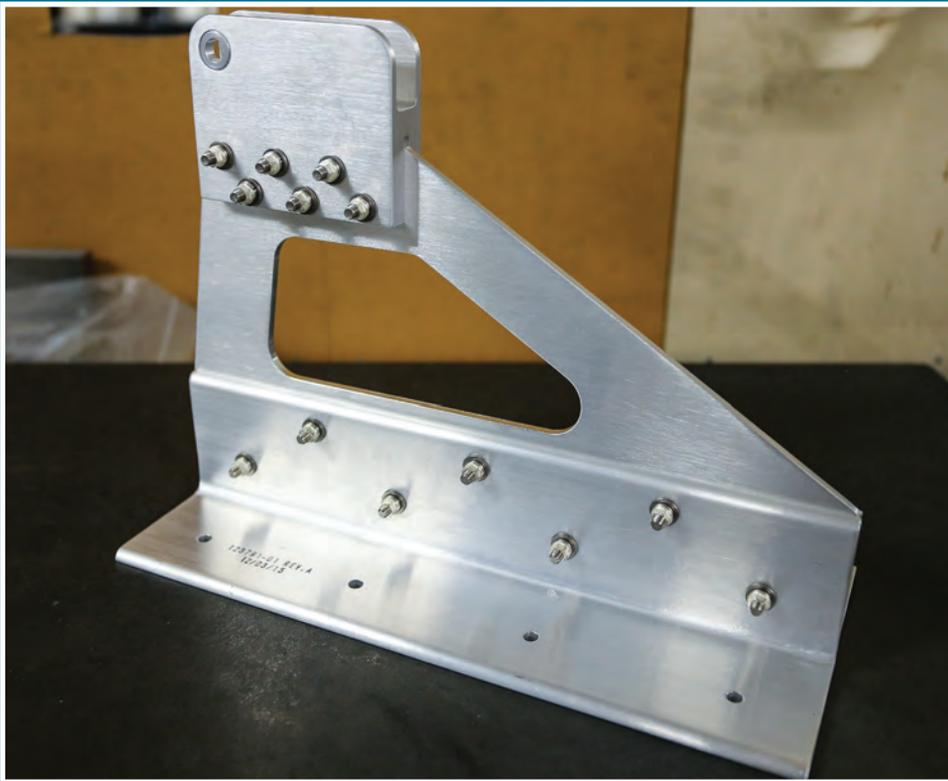
ness. He took a chance on me, he saw something in me, and I found something within myself that makes working at Asil the perfect fit for both of us.”

Chris found that the enthusiasm that paid off for him learning the ins and outs at Asil were not the asset he had hoped for out in the field. “To some, young means no experience and nothing else,” clarifies Chris. “They can’t see past your youth regardless of your knowledge. I’d walk into some bigger clients and they were reluctant to give me a chance. Please give me an opportunity to earn your business, but no one would.” Becky Ganssle, a buyer at Zodiac Aerospace was the first to let Chris into the ring. “Becky handed me a drawing and said to let her know what I can do. She was the first one to give me a chance and I appreciate that opportunity. If you look at that wall you will see we have hundreds and hundreds of orders from them now. It all started with that one drawing. We exceeded expectations on that first part and continue to do so, now we are one of their top vendors and shows hard work pay’s off.” As our name grew we have been able to connect with many top tier suppliers, Asil is grateful for each and every customer that we have.

Asil Aerospace has grown tremendously in the last decade, adding more and more CNC capabilities into the mix. “When I started we had one Akira Seiki V3 XP,” tells Chris. “It was new technology and many of our long time employees were skittish to work on it. Once they saw a complete new guy jump on it and pump out jobs they were less afraid of the change. They figured if I could use it anyone could.” Since then Asil has added three Ganesh manual CNC machines that they love and two more Akira Seiki machines. “We added an Akira Seiki SR2 that we got from Rene Castillo at So Cal Machine early in 2015,” expands Chris. “We fell instantly in love with it and added a V2.5 in December. The Akira Seiki brand has been amazing, very little down time and needs minimal service. If we do have an issue Rene has his people out the same day for service.” Chris finds that usage of non specialized or proprietary nuts, bolts and fasteners to be handy. It allows them to replace items by just going to the hardware store. “Not having to order some special bolt from Germany or Asia is a little thing that we appreciate, but for us the real value in Akira Seiki comes from the total customization of the machine.” With Akira Seiki you don’t have to purchase all the bells and whistles if you only are



Since their first Akira Seiki purchase in 2001 Asil Aerospace Inc. has been a fan. They recently added two more Akira Seiki mills to increase capacity. They also have three Ganesh manual CNC mills and a variety of CNC presses, punches and shearing. As a sheet metal fabrication & CNC house Asil has to be as diverse as their customer’s needs



Asil Aerospace Inc. specializes in aircraft interiors. A majority of their parts require multiple processes like machining, welding and assembly.

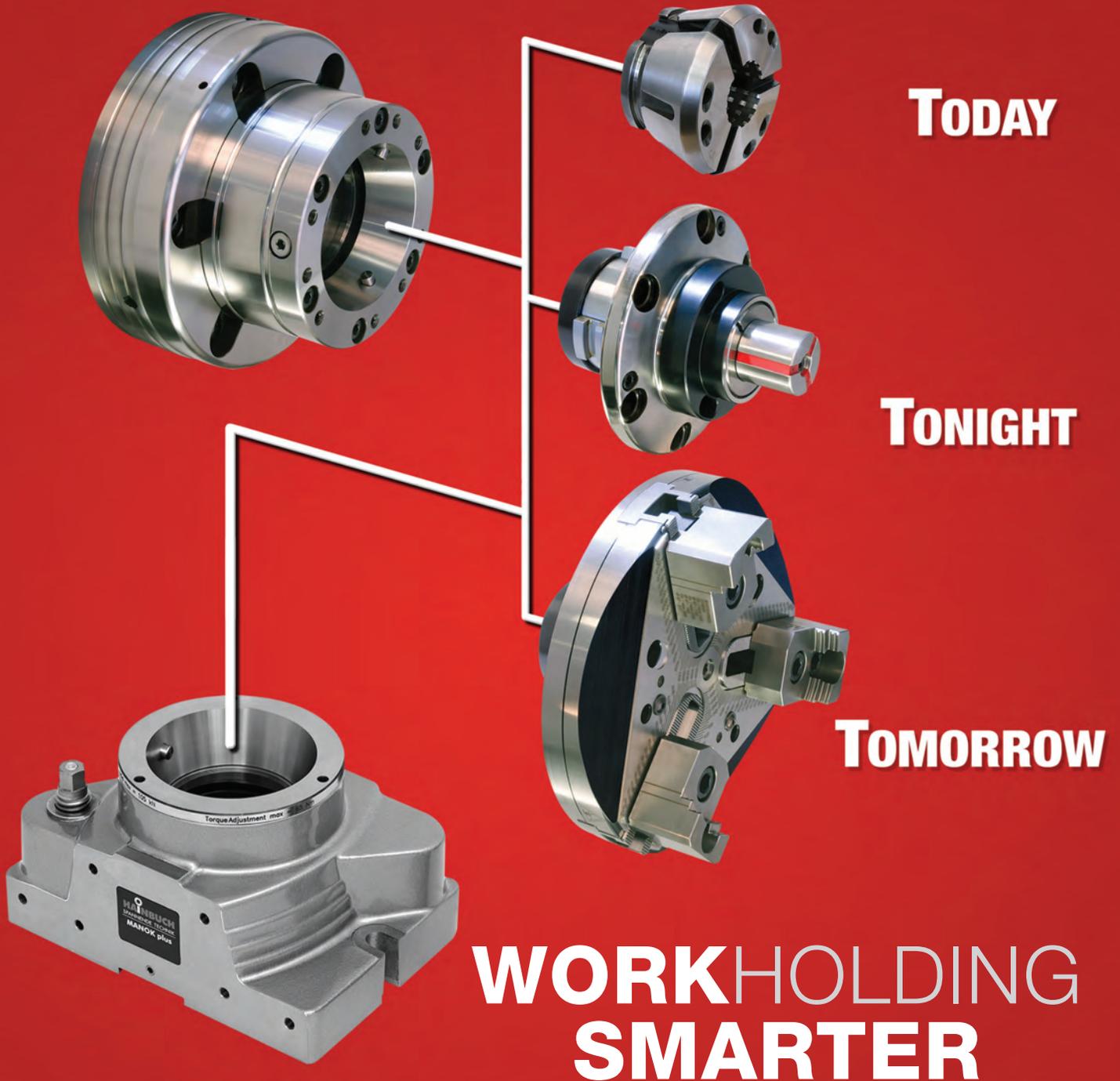
in need of two bells and no whistles. “We were able to save a lot of money over other competitive brands by building it just the way we wanted,” continues Chris. “Rene understands what our needs are and helps to custom build a package that fits our manufacturing requirements and budgetary hopes. You may want a USB reader or a specific controller, but not a chip hogger. Other brands up sell you into a package that might include both, but we have no use in having the hogger. With Akira Seiki we pay for only the features we want. Akira Seiki and Rene are rock stars and we can’t imagine being without them”

“It is difficult to find people with a skill set as diverse as we need,” explains Chris. “We need crazy guys who are well rounded with a plethora of skills and not just a button pusher.” After failed attempts at finding new employees online and at the local college Chris turned to a staffing company. “I quickly learned that I am not an HR specialist,” jokes Chris. “My hope is a staffing company will be a solution. It is great for us to audition employees with very little hassle. They screen prospects and place them predicated on the skills we are looking for.

Asil Aerospace has always been a family business and their employees are part of the family. “Finding people to work with, and next to every day is very personal. It is important to us that they do their job well and that they are people whom we want to spend every day with. All my guys know me as Chris and I know them, and their wives and their kids. Asencion has been working at Asil for 30 years and his son recently joined the amazing team. We have a father and son team out in the shop and we love that.” With so many machines and capabilities it is important to Asil that all their employees are trained in as many aspects of the company as possible. Twice a month they

do some kind of training. It might be FAA manual or safety on the CNC punch or it could be what to do in an emergency. “Never stop learning,” exclaims Chris. “One thing I really like about this business is that I learn something every day. We lead by example. Having John Demerjian as our go to man in the shop there is not much the Asil team cant accomplish.

Customers are a part of the Asil Aerospace team,” concludes Chris. It’s a team effort and we go about making the best possible parts hand in hand.” Quality is the highest priority at Asil Aerospace and they strive to continuously improve on everything they do. “As the operations manager, I am the face of the company. I visit our customers and I hold my head up high, proud of what we produce at Asil. If parts are not perfect they don’t leave the shop. I don’t want to ever be ashamed of representing Asil Aerospace in the field. I am comfortable taking on responsibility and acting independently to meet established objectives. I am a person who knows how to communicate effectively with others in order to meet goals and keep projects on track. My guys know this and they don’t let me down. Our parts represent us and the time it takes to put a nice grain finish down or scotch brite to remove tooling marks is worth its wait in gold. Most of the time a drawing won’t call out for a polish or for us to grain them, we just do it because of our reputation to deliver amazing parts.” Customers see the extra care and think Asil went the extra mile. But for Asil Aerospace it isn’t extra, it is just the standard service they provide to all their customers. “We are excited to keep producing top notch parts, looking forward to many more years manufacturing high quality parts to our customers.”



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Fagor Automation Promoted High Performance Aerospace CNC Systems at AeroDef

Fagor Automation USA Corporation, displayed the high performance 8060/8065 CNC platform to the Aerospace market at the recent Aerodef tradeshow at the Long Beach Convention Center.

Designed specifically with the Aerospace market in mind, the Fagor 8060/8065 CNC platforms are equipped with proprietary advanced features necessary for high speed machining, yet maintaining the best machining surface finish while providing maximum accuracy.

Each 8060/8065 CNC is offered with a 10" or 15" high resolution LCD TFT color or touch screen, Ethernet, USB and built-in touch sensitive mouse pad. The 8065 CNC platform is capable of controlling up to 28 axes + 4 separate spindles with 4 different execution channels and includes Auto-Tuning system set-up capability. In addition, the 8065 ability includes block processing speeds of <0.5 ms while analyzing the tool path with advanced high speed block look ahead utilizing nano-metric resolution. This combined with the Fagor adaptive real-time feed and speed control (ARFS) the CNC analyzes the machining conditions such as spindle load, servo power, tool tip temperature and adapts both the axis feedrate and the spindle speed for maximum machining performance productivity. The result is a reduction of cycle time coupled with a superior part finish. Extended spindle and servo motor life is also accomplished as well as improved tool utilization.

Equipped with the Aerospace specific HSSA (High Speed Surface Accuracy) machining system the a company spokesman said that users receives a double benefit of reduced mechanical stress on the machine. The On-board Bode diagram tool allows the measurement of the machines frequency response, allowing the possibility to actually filter the machine vibrations incurred by the various operating conditions and environment. CAD/CAM generated programs used to design parts commonplace in the Aerospace market are large and require a specific CNC System treatment in order to obtain the maximum speed with the desired precision. The solution implemented by the 8065 CNC system to process CAD/CAM generated programs consist of the combination of splines and polynomial transitions as well as the interpretation of the NURB format utilized by CAD/CAM programs. Fagor reports that this process helps achieve high feedrate machining while maintaining the accuracy required by all geometries to be machined.

Also introduced at AeroDef was the ability to interface seamlessly with Renishaw Inspection Plus software for machining centers. Inspection Plus is a totally integrated package of software that includes vector and angle measure options, print options and an extended range of cycles. This includes an SPC cycle, 1 or 2 touch probing option, tool offset compensation by percentage of error and output data stored in an accessible variable stack.

The 8065's Volumetric Compensation (FVC) feature allows for the mapping of the total work volume of the machine, ensuring the CNC understands the exact position of the tool at all times.

Also new, all Fagor CNC controls, including the 8060/8065 platforms are MT Connect capable. MT Connect is a manufacturing industry standard to facilitate the organized retrieval of process information from numerically controlled machine tools. It maintains a lightweight, open, and extensible protocol designed for the exchange of data between shop floor equipment and software applications used for monitoring and data analysis. Utilizing a Fagor developed MT Connect Adaptor, delivering this Machine Tool Data to Manufacturing Management is fast, easy and automatic. In addition, Ethernet communication allows the 8060/8065 to be quickly and easily set-up as another node within the computer network. Fagor also reports the 8065 also contains the capability of executing a program residing on another PC, through the Ethernet port.

All of this Advanced Technology is combined with Fagor Automations exclusive IIP Programming (Interactive Icon-based Pages) conversational programming made popular by the 8055 CNC series. The ICON key based conversational programming method simplifies programming by allowing the operator to choose the operation based upon an operation associated ICON key. The operator simply enters in the data directly off the blueprint. As with prior Fagor CNC systems, the ICON key brings the customer a single graphic assist screen that contains all variables necessary for the operation including finishing pass variables. Fast and easy operation is also accomplished utilizing an easy pop-up browsing operation philosophy ensuring your navigation through the CNC capability is simple and straightforward. Custom browsing is also allowed in which you have the ability to filter the information the operators wish to utilize and hide other non-essential information.

One that makes all possible Hanwha CNC Automatic lathe



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Electronic parts



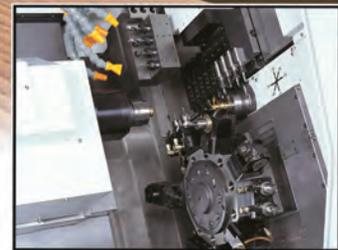
Automobile parts



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Multifunctional Model
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Turret Type
STL 32/35/38 SERIES



DMG MORI Unveils New Machines at German Open House

At their recent successful Open House in Pfronten Germany DMG Mori unveiled new machines and showed customers who came from around the world all of the enhancements and changes they have made to current machines.

Some of the new machines included the following.

With CELOS®, DMG MORI is offering a cutting-edge user interface that can be expanded with new APPs and updates, which provides an immediate solution to Industry 4.0. CELOS® is as easy to use as your smartphone, networks all machines within a manufacturing organization and simplifies the process from the idea to the finished product. 16 APPs help the operator prepare, optimize and process production jobs without any errors.

DMG MORI presented software solutions on their 5-axis and turn-mill machining centers to make complex machining processes an effortless reality. Thanks to parameterized context menus, complex processes can be directly programmed on the machine up to 60 percent faster. For the easy to learn and ready-made windows to enter data, programming is hardly needed. DMG MORI reports these technology cycles are ideal for application-specific shop floor programming.

A turning length of 120 in. made the world premiere of the CTX gamma 3000 TC 2nd Generation the largest turn & mill complete machining center in the now completely revised CTX TC series from DMG MORI. Like its smaller sister models, the machine tool manufacturer has also equipped this latest machine with a new compactMASTER® mill-turn spindle, with which 162 ft. lbs. achieves a 120 percent higher torque.

With a diameter of 7.9" the length of the compactMAS-



TER® spindle has been reduced by 2.8 in. so that it now measures only 17.7" The interplay of the 5.9 in. larger X-axis (-0.9 / +6.9 in.) and the 0.8 in. longer Y-travel of ± 8.3 in. brings an enormous gain in freedom for users. This enables, for example, the radial machining of workpieces with maximum diameters of 27.6 in. with 6.7 in. long tools (with the B-axis in a vertical position). The CTX gamma 3000 TC 2nd Generation is equipped with 36 tool pockets in its standard version.

The world premiere of the DMU 160 P duoBLOCK® 4th generation impressively complements the successful duoBLOCK® series from DMG MORI. The revised machine concept offers a clear plus in versatility. Added to this the high level of rigidity, extensive modular spindle range and innovative cooling measures DMG MORI reports this ensures perfect machining performance and a high degree of long-term accuracy. It is equipped with CELOS®.

As a highly stable universal 5-axis machine the DMU 160 P duoBLOCK® 4th Generation unites outstanding precision with maximum performance. With travel paths of 63.0 in. x 63.0 in. x 43.3 in. in X, Y and Z it has more than sufficient space for a wide spectrum of components, with workpieces weighing of up to 9,920 lb. The innovative wheel magazine with (depending on expansion stage) space for up to 453 tools (SK40/HSK63) ensures the necessary flexibility where tools are concerned. With regards to the spindles, the high-tech modular spindle range of the DMU 160 P duoBLOCK® 4th Generation ranges from the powerMASTER® motor spindle with 1,000 Nm to a gear spindle with up to 1,327 ft. lbs. and on to include the speedMASTER® spindle with high speeds of up to 30,000 rpm.

The world premiere of the DMU 210 P 2nd Genera-





tion with its optimized work area, which now measures 82.7 in. x 82.7 in. x 49.2 in., is the prelude to the new generation of portal machines from DMG MORI. A considerably higher level of rigidity and an intelligent cooling concept that includes a spindle growth sensor ensure maximum long-term accuracy for the DMU 210 P 2nd Generation, making it significantly more accurate than its predecessor does.

The DMU 210 P 2nd Generation is quick and simple to install thanks to its 3-point support and impresses in day-to-day production with 30 percent reduced energy consumption. The modular concept of the new portal machine includes an innovative wheel magazine that can hold up to 303 SK50 tools and the widest possible choice of spindles. The 738 ft. lbs. powerMASTER® motor spindle and the torqueMASTER® gear spindle with up to 1,327 ft. lbs. are available here especially for heavy-duty machining.

Another world premiere was the DMG MORI DMU 600 G linear with superior surface quality and high dynamics. These are achieved through the use of the innovative contactless linear-motor drive technology. The design of the machine has been optimized with regard to static and dynamic rigidity and ensures consistent temperature stability. Energy-efficient consumption is achieved by the use of innovative cooling technology and needs-based activation of units.

The DMU 600 G linear is designed for workpieces weighing up to 60,000 lbs., with a point load of 3,072 lb/ft². The table measures 196.8 in. x 118.1 in. in a work area of 236.2 in. x 137.8 in. x 59.1 in. in the standard configuration. The plunger with optimized interference contour enables travel of optionally up to 78.7 in. in the Z-direction. The modular spindle range includes a torque spindle with 12,000 rpm and 221.3 ft. lbs., a vertical head gear spindle for maximum torques of up to 1,844 ft. lbs. and a motor spindle with a high speed of up to 28,000 rpm.

DMG MORI has extended the high-precision machining centers in the DIXI series to include the smaller DIXI 125 for workpieces with diameters up to 49.2 in. Like its bigger sister models the DIXI 125 also impresses with a unique



volumetric accuracy of less than 0.0006 in. The basis for this are the manually scraped guide contact surfaces that achieve a flatness and straightness of three μm when mounted, perfect machine geometry and on-site volumetric measurement and compensation.

A 259-gal coolant unit with reference-guided temperature control and a powerful (also reference-guided) machine cooling unit for the main drive, feed drives, guides and machine structure together with a thermo shield that insulates against ambient influences guarantee the extreme thermal stability of the DIXI 125. This is further optimized by the individual thermal compensation of every single machine and the use of the spindle-growth-sensor (SGS) for direct measurement and compensation of spindle rotor displacement.

The completely revised ULTRASONIC 20 linear 2nd Generation has a new, functional design and a reduced footprint of just 37.7 ft². Improvements include the now optional 60,000 rpm speed of the spindle, the up to 47 percent (A-axis) more powerful drive motors, a 33 lb. higher load weight and the use of larger tool diameters of up to 2.0 in. Another highlight is the high-speed C-axis (1,500 rpm) for high-precision and productive internal and external cylindrical grinding of rotational-symmetric workpieces made of advance materials.

The ULTRASONIC 20 linear 2nd Generation supports users with a multitude of new functions. The ULTRASONIC parameters are automatically determined and tracked during processing. In the CELOS® control a CELOS® APP expressly developed for the purpose shows the ULTRASONIC technology cycles and key process parameters such as frequency, amplitude and output, enabling maximum utilization of the ULTRASONIC and machine performance.

Unisig Prepares for Big Manufacturing Changes



Unisig has increased the capacity of its U.S. manufacturing operations via a new Okuma machine that is reported to be the largest double-column machine of its type in North America. The machine rapidly processes the complex components that go into the company's large-sized deep-hole drilling systems.

Made by Okuma, the MCR-A5CII-35x100 double-column machining center features multiple heads that allow it to process five sides of a large part in a single setup. As a result, Unisig reports they are able to manufacture high quality components for its systems in less time and at a reduced cost than if it were to use a traditional vertical machine.

According to Anthony Fettig, CEO at UNISIG, the MCR-A5CII-35x100 further advances Unisig's engineering capabilities and productivity levels as the company continues to grow due to increased demand for its deep-hole drilling systems. "This machine allows us to keep semi-finished part production in-house and decreases labor intensive finishing work."

Overall, Unisig continuously looks for new ways to optimize its operations to support the evolving technology

demands of its customers in industries that include aerospace, automotive, defense, energy, and mold-making.

"While our world-class team of experts are the visionaries behind our products, we rely on the best possible technology to help bring our precision deep-hole drilling systems to life," Mr. Fettig said. "By investing in new

production equipment, such as the Okuma machine, we can reduce our set-up times, improve throughput and minimize costly production errors—all of which bring added value to our customers."

The MCR-A5CII-35x100 is a high-speed machining center with compact auto loading/unloading attachments for true 5-sided machining. The machine's solid, highly rigid double-column construction helps UNISIG achieve the tight part tolerances that are required for its large systems.

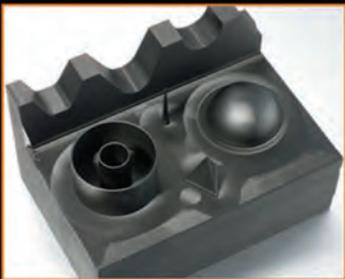
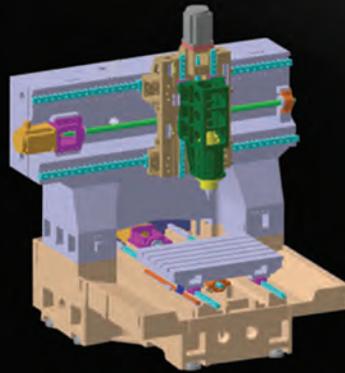
The Okuma machine has a 118" x 394" table, 61-ton weight capacity and a 6,000-rpm 50-taper spindle for rapid production of large parts. To ensure the safe, efficient handling of the parts, the MCR-A5CII-35x100 incorporates a Konecranes® 50-ton bridge-style crane with a 40-foot span and 17'1" clearance. This variable speed crane is operated by radio control.

To prepare for installation of the new machine, UNISIG modified its production facility to include a deep, specially engineered foundation that weighs 650 tons and has helical piers in the ground that will support the combined weight of the machine and the 50-ton crane.

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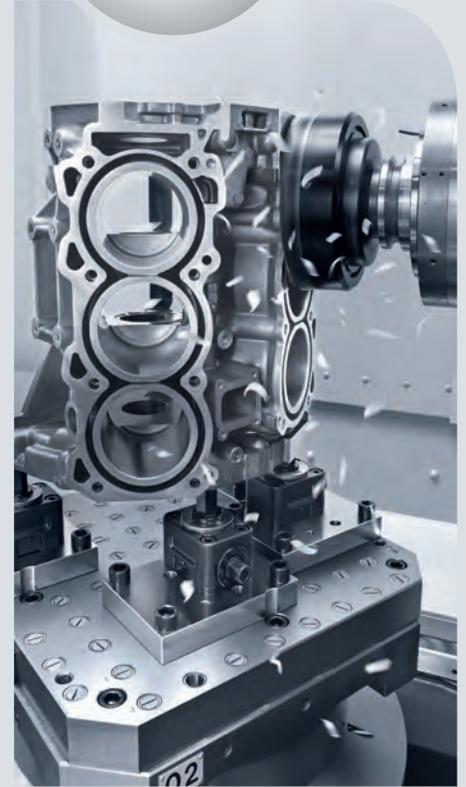


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Boeing Forecasts Demand in the Middle East for 3,180 New Airplanes Over the Next 20 Years



According to the PR Newswire Boeing forecasts airlines in the Middle East will require 3,180 new airplanes over the next 20 years, valued at an estimated \$730 billion. 70 percent of the demand is expected to be driven by rapid fleet expansion in the region.

According to the Boeing Current Market Outlook (CMO), single-aisle airplanes such as the 737 MAX will command the largest share of new deliveries, with airlines in the region needing approximately 1,410 airplanes. These new airplanes will continue to stimulate growth for low-cost carriers and replace older, less-efficient airplanes.

“Traffic growth in the Middle East continues to grow at a healthy rate and is expected to grow 6.2 percent annually during the next 20 years,” said Randy Tinseth, vice president, marketing, Boeing Commercial Airplanes. “About 80 percent of the world’s population lives within an eight-hour flight of the Arabian Gulf. This geographic position, coupled with diverse business strategies and investment in infrastructure is allowing carriers in the Middle East to aggregate traffic at their hubs and offer one-stop service between many city pairs that would not otherwise enjoy such direct itineraries.”

Twin-aisle aircraft will account for a little under half of the region’s new airplane deliveries over the 20-year

period, compared to 23 percent globally. This is demonstrated by the strong order book and deliveries for the 787 and 777, underlining how Boeing is meeting customer demand in the region by focusing on enhancing passenger experience and improving operating economics and capability.

Boeing’s presence and support for the Middle East also includes a growing aftermarket services business that continues to expand offerings to better support regional airlines.

Boeing’s Commercial Aviation Services is a leading provider of aftermarket services in the Middle East, supporting airlines throughout the lifecycle of their fleets from airplane introduction to retirement. Boeing’s Component Support Programs, a segment of Boeing’s GoldCare Services suite, are particularly successful with three new 787 operators in the region contracting Boeing to ensure reliable, timely, and cost effective component management.

“Over the course of our 70 year presence in the Middle East, Boeing has been working with customers to ensure we provide airplanes and services that support their aerospace ambitions,” said Tinseth. “Boeing is well-positioned to continue to address demand in the Middle East and provide airlines in the region with the capability to serve their expanding global networks.”

Boeing has forecasted long-term global demand for 38,050 new airplanes, valued at \$5.6 trillion. These new airplanes will replace older, less efficient airplanes, benefiting airlines and passengers and stimulating growth in emerging markets and innovation in airline business models.



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Productivity Improvements

The Selway Machine Tool Applications team is a highly trained and experienced group of CNC specialists. The individuals on the team provide solutions for the top manufacturing companies in the Western United States. Being an application engineer is a unique position. Every project provides a new challenge and constant interaction with new customer teams provides perspective from many points of view.



By Derek Goodwin

One of the most important tasks that the team performs is knowledge sharing. It is not unusual for Selway to send out two application engineers on a project to perform cross training. The team is in constant contact and rely on each other for different areas of expertise.

I recently asked the team what they see in their travels as the top productivity improvements that could be implemented in machining companies today. This is the feedback that I received:

Utilization of sub plates with clamping and locating features for vises and workholding devices. Machine setup is one of the largest hindrances to productivity. Reducing setup time should be high priority

Along the same lines, utilize quick change tooling on multi-tasking machines. In addition to quick tooling changeover; direct coolant delivery through the tool holder improves efficiency and eliminates the need to adjust flexible coolant lines.

Maintain tool libraries. The labor cost associated with assembling and disassembling cutting tool, collet and tool holder is a huge drain on productivity. Especially if the Machine Tool is idle while the setup person performs these tasks. Configure tool libraries in your CAM system to match the tool libraries in the tool crib. Maintain spreadsheets with ordering and vendor data.

Understand the high speed machining codes on your machine. Programmed feedrate is only one component of cutting time. You may program a feedrate of 200 inches per minute, but the machine controller has pre-defined acceleration and deceleration rates on the drive motors. It may take your machine six inches of travel to reach programmed feedrate. Significant cycle time reduction can be obtained using high speed codes in your CNC program. Allow the machine to run at maximum speed for roughing operations and tighten up the limits for finishing operations where high precision is required.

Maximize accuracy by probing. It's possible to verify correct position and material size in about 5-10 seconds. Many companies measure process capability of their vendors by tracking measurement data, even when parts are in tolerance. A tightly controlled process is a competitive business advantage.

Technical training. We often hear about vocational training for machinists that focuses on safety and practical machining skills. Add computer skills to that list. Modern CNC equipment requires highly trained operators and setup personnel. Additionally the software tools that drive the equipment, such as CAD/CAM and machine simulation require high level technical skills.

Written by Derek Goodwin, CAD/CAM Applications at Selway Machine Tool

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Product Review

Makino Rolls Out Hyper Technologies to Full EDM Product Line

Makino announced recently that its suite of Hyper Technologies, previously introduced for U-Series wire EDM machines, is now rolling out to the company's full line of wire EDM, sinker EDM and EDM hole drilling machines. In addition to providing improved performance, cycle times and machine operation, the standardization of Hyper Technologies across Makino's full line of EDM machines enables operators to learn, adapt and alternate between different EDM machine platforms and applications with speed and ease.

"In today's manufacturing environment, maintaining superior machine productivity and part quality is critical," said Brian Pfluger, EDM product line manager at Makino. "Our new Hyper Technologies support these priorities and completely revolutionize the EDM machining process. The Hyper-i control significantly boosts user-friendliness and efficiency on both wire and sinker EDM machines, while HyperCut technology reduces cycle time and delivers exceptional surface finishes and accuracy."

Hyper-i Control

The unified Hyper-i control system improves the interface between operator and machine by providing the same streamlined operation to both wire EDM and sinker EDM machines. While most wire and sinker EDM machines use different interfaces that require operators to learn separate control standards, the uniform Hyper-i control systems allow operators to more easily transition from one machine to the next and efficiently process work for any EDM application.

Makino reports they are designed to achieve new levels of user-friendliness, the Hyper-i control utilizes the most current interface technologies used by smart phones and tablets, including features like pinch, swipe and spread gestures that enable a more intuitive and efficient experience for the operator. Integration of on-board digital manuals, intelligent help functions, and e-Learning training system further enhance user friendliness for operators of any skill level.

The Hyper-i control also boasts intelligent functions like EZCut, which allows the operator to change machining speed with a convenient slide bar; an ECO Mode that enables energy reduction during machine idle state; and automatic creation of machine utilization charts to help measure and assess operational efficiency. The Hyper-i control provides added flexibility by allowing customization of the entire interface to accommodate operator preferences or to tailor functions for different skillsets.

HyperCut Technology

As the second member of the Hyper Technology family, Makino's new HyperCut Technology addresses the most demanding needs of any industry and reduces cycle times in EDM processes while lowering wire consumption or electrode requirements.

According to Makino in wire EDM processes, HyperCut technology cuts faster while using less wire, and reduces the total number of machining passes while achieving excellent part straightness, accuracy and superior surface finishes in even the tallest workpiece applications. Designed for use in both good-flushing and poor-flushing conditions in different wire sizes, HyperCut provides competitive flexibility to all applications. Unique to wire EDM, HyperCut technology achieves fine surface finishes of 3µmRz (16µinRa) with just 3-Pass Machining (1 Rough, 2 Skim Cuts) using standard brass wire.

A Makino spokesman stated, "The addition of HyperCut in sinker EDM machining guarantees the fastest possible machining speed, with reductions of up to 33% in machining time compared to conventional machining methods. HyperCut also maintains minimal electrode wear while providing exceptional accuracy and surface finishes. Unique to Sinker EDM, HyperCut technology can be utilized with any existing electrode, as the technology does not require any additional electrode reduction to achieve significant improvements in cycle time".

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Industry News

Hwacheon Names Robert Nedler Managing Director

Hwacheon Machinery America, Lincolnshire, IL, has appointed Robert Nedler to the position of managing director, in charge of sales, service and general operations at Hwacheon Machinery America covering



North and South America, according to the company. Mr. Nedler previously was vice president – sales and product manager – milling at Hwacheon. He has been with the company since 2012.

Mr. Nedler replaces Michael Huggett, formerly managing director, who has left the company.

A results-focused sales leader, Mr. Nedler brings to Hwacheon his more than 30-years' experience in identifying and successfully capitalizing on market opportunities, which he earned at the STARRAG Group, DMG and Yamazen, also co-owner of Tri-Star Automation a machine tool dealership.

Mr. Nedler said "As one of the world's leading providers of high-quality machine tools and customer service, Hwacheon will continue to deliver the products and services that make our customers more productive and more profitable. For more than 60 years, perseverance, honesty, and devotion have been the principles behind the success of Hwacheon. Going forward, Hwacheon will build on these principles to further improve its competitiveness in the world market."

Intelligrated Opens District Office in Southern California

Intelligrated, a North American-based automated material handling solutions provider, has announced the

opening of a district office in Ontario, CA, as part of its western regional sales and operations.

The location is situated in the Inland Empire, a major supply chain hub for the ports of Los Angeles and Long Beach, which account for 40 percent of all cargo containers imported to the U.S., according to MHI Solutions. The same report states that about 75 percent of goods from the two ports pass through distribution centers in the Inland Empire before heading to other parts of the country.

"Convenient, localized access to solutions development and project management support helps customers and businesses continue to reap even greater efficiency from their automated material handling systems," said Dave Stinson, vice president, western regional sales and operations. "The Ontario district office allows us to reach more clients and prospects in Southern California, Arizona, Nevada and Utah with even greater levels of personalized service and on-site support."

Autodesk Acquisition Expands Additive Manufacturing Software Portfolio

California based Autodesk, Inc. has signed a definitive agreement to acquire netfabb, a Lupburg, Germany-based developer of software solutions for industrial additive design and manufacturing. Autodesk will also make a strategic investment in FIT Technology Group, the parent company of netfabb and provider of additive manufacturing software and services. The two companies will collaborate to increase adoption of technology for industrial additive manufacturing.

"Autodesk has always been impressed by FIT's track record in creating powerful solutions to meet the challenges of industrial additive manufacturing and together we will

accelerate a new future of making things," said Samir Hanna, Autodesk vice president and general manager, Consumer & 3-D Printing. "We look forward to welcoming the netfabb team to Autodesk and helping designers and manufacturers worldwide take 3-D printing beyond prototyping and plastics, to reliably creating production-grade parts at scale."

"More than 80,000 designers, manufacturers, artists, researchers and developers worldwide currently use netfabb solutions as part of their 3-D printing process," said a company spokesperson. "Autodesk plans to support and expand this community by continuing to develop, sell and support netfabb software as well as integrate netfabb technology into Autodesk's solutions for product design and additive manufacturing."

New Executive Appointments at Fives Metal Cutting and Composites

Fives Group has appointed Stéphane Mayer as new head of the Metal Cutting and Composites business line. Mayer has held several aerospace leadership positions including president and CEO of Daher, and CEO of ATR. Stéphane is replacing Jean-Camille Uring who will be retiring at the end of 2016, but will provide consulting services for the chairman of the executive board.

Additionally, Fives veteran Wes Paisley has been appointed interim CEO at Fives Machining Systems, Inc., effective immediately. Paisley has been with Fives Group since 2005. He has served as CEO of Fives North American Combustion and CEO of Fives Intralogistics. He also serves on the board of directors for Fives Inc. Paisley succeeds Dan Janka, who has left the company to pursue other opportunities.

Industry News

Eurotech Adds Selway as West Distributor

Late last year Eurotech expanded its service and support distributor network with the addition of a new dealer. Selway Machine Tool is now representing Eurotech (Elite, Polygim and Spinner products) in California, Washington, Oregon and Nevada.

“Teamed together, we will work to supply these territories with Eurotech’s multi-axis CNC equipment, advanced technology, program training classes and certified engineering support,” said Jeff Walz, president, Eurotech.

GF Machining Solutions Partners with Community College of Denver

As U.S. manufacturing continues to struggle for skilled labor, GF Machining Solutions and Community College of Denver (CCD) collaborated to add 5-axis training to the college’s machine technologies program. This curriculum expansion, which recently drew the attention of the Obama administration, represents efforts to reduce the estimated 2 million manufacturing jobs expected to go unfilled over the next decade.

CCD offers specialized training on a variety of machine technologies and opened a new Advanced Manufacturing Center in the fall of 2015. The state-of-the-art 33,280-square-foot facility allows the College to increase enrollment in the machining technologies program. It utilizes equipment that enhances the educational experience for students while specifically targeting the rising demand for skilled machinists and machine operators.

CCD’s 5-axis training program features GF Machining Solutions’ Mikron HPM 450U, a 5-axis solution for universal, automated production that combines dynamics and stability. The machine easily adapts to suit a variety of manufacturing requirements and offers impressive machining capabili-

ties from simple drilling to complex 5-sided and simultaneous 5-axis machining processes.

“We continue to look for ways to help manufacturers overcome their labor challenges,” said Gisbert Ledvon, director of business development for

GF Machining Solutions. “Partnering with Community College of Denver to develop this type of hands-on learning program is one of the best ways to mitigate the brain drain that is occurring as baby boomers retire.”

According to Dr. Chris Budden,

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Industry News

dean of CCD's Center for Career and Technical Education, students now learn on leading-edge machine tool technology that is responsible for re-invigorating manufacturing in America. He added that the facility also looks forward to working with companies that have adopted 5-axis machines to train their incumbent workers.

Sandvik Coromant Appoints Sean Holt as President, Americas

Sandvik Coromant has announced Sean Holt as the new president of the Americas market area effective January 1, 2016. An experienced executive in the manufacturing industry, Mr. Holt was a key member of the Americas management team as the vice presi-

dent of engineering. He is now part of the global sales management team reporting to

Eduardo Martin, global vice president of sales, whom he succeeds as the head of the Americas organization.

About Sean Holt, Mr. Martin states, "Sean brings in-depth knowledge to all facets of our industry. From business development and sales to engineering and R&D, I believe that his experience and skillset will be significant in delivering high-value solutions to our customers."

Holt (45), has more than twenty



years of engineering, business development, sales and executive management experience. He joined Sandvik Coromant in 2000 as a sales engineer in Birmingham (United Kingdom). Since then, he has held several positions such as application development specialist and aerospace manager, market area Americas before taking on the position as vice president, engineering, market area Americas in 2014.

Prior to joining Sandvik Coromant, Sean Holt was a successful entrepreneur. He was Chairman of the Industrial Operations Board and is now a member of the Board of Directors of the Commonwealth Center for Advanced Manufacturing (CCAM). Holt earned his degree in Mechanical Engineering from the University of Nottingham.



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Industry News

Hwacheon Names Sales Directors

Hwacheon Machinery America, has appointed Bob Pellegrini and Dan Pierce to sales directors, according to Robert Nedler, managing director. “Dan and Bob will be in charge of sales and dealer support—Dan in the western U.S. and Bob in the eastern half of the U.S.” Previously Bob and Dan had been regional sales managers for Hwacheon since 2012. With a growing dealer base, Hwacheon made the assignments to help assure dealer success in bringing Hwacheon machining center and turning center solutions to their markets.

Well-known in the industry, Dan Pierce the senior sales director and Bob Pellegrini bring decades of successful

machine tool field sales and management experience to their new assignments. The positions are new at the company.

“One of our main goals is to support Hwacheon’s professional machine tool sales team and our growing dealer network, enabling them to deliver efficient solutions to shops in the general machining, mold and die, energy, medical and aerospace markets,” Mr. Nedler said.



Bob Pellegrini



Dan Pierce

Sharp Precision Machine Tools Hires California Regional Sales Manager- Steve Murphy

Sharp Precision Machine Tools announced that Steve Murphy has joined the team as a regional sales manager. He will be working out of the Ventura area to better serve Sharp’s clients in the north LA and Ventura counties.



Working with his father in their family owned machine shop, Steve learned at an early age how to operate manual mills, turning centers and grinders. Steve then moved into the media reproduction industry setting up sales and service centers across the



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Industry News

United States. After 18 years Steve was drawn to the renewable energy field and installed at the time the largest solar installation in the National Parks System in Yosemite, CA.

Steve has a vast sales and customer service background. He has been a national account executive for companies like Konica Minolta and The Ricoh Corporation. "We are very excited to have Steve added to our direct sales team in Southern California and expect great results with him on our team," said Joe Bockrath, national sales manager, Sharp Precision Machine Tools.

Samsung Machine Tools Announces New VP of Sales

Samsung Machine Tools, Inc. announces Michael Huggett as the company's vice president of sales. Huggett will be responsible for sales team leadership, driving market expansion and will also contribute to marketing, machine development and business strategy.

"I was attracted to Samsung Machine Tools because of their mission to be the leader in quality cost competitive machine tools and the commitment that Samsung has made to becoming a major player for the North American manufacturing community through consistent products, fast delivery and support," said Huggett. "I intend to apply my sales and marketing skills to build awareness for the Samsung brand while driving new business across the markets we serve."

Huggett comes to Samsung with over 23 years of sales and marketing experience. Huggett has lead and managed a variety of successful machine tool sales and marketing companies. His experience also includes technical sales and leadership roles with Hwacheon, Index, DMG Mori Seiki,

Hurco. This background will help Huggett to make an easy transition into his new position with Samsung.

Richard Layo, Samsung Machine Tools president and CEO, states, "We are very excited to welcome Michael to Samsung. Michael will be focused on new business development and the expansion of existing markets through Samsung's distribution network throughout North America. He will continue to support Samsung's client centric focus and expand our national sales team."



Nicole Bezic Now in Charge of Export Department at Lagun Engineering Solutions

Nicole Bezic has been promoted to taking over the export department at Lagun Engineering Solutions. Prior to that Nicole was working in the accounting department at the company. Her job will include overseeing the machines that are sold worldwide. She is also assisting the marketing department for domestic and export ads.

Nicole is a graduate of SC School of Business and has an MBA from Grenoble School of Business in England.

She speaks English, Spanish and French. She has quite a history with Lagun as her grandfather is the founder of the well known southern California based company.

In her spare time Nicole is a marathon runner and runs in events throughout the western United States.

CARVEsmart™ Announces Agreement with Orange Vise Company

CARVEsmart™, a division of Bellatex Industries technology, announces a special relationship with Orange Vise Company. This arrangement gives Orange Vise the exclusive opportunity to offer CARVEsmart patented features in the Orange Vise Integrated Jaw System (IJS).

CARVEsmart dovetail and clamp features are machined directly into the Orange IJS vise eliminating the need for master jaws. This saves 1.5" of opening. Conventional face mounted cap screwed jaws can also be used on the 6" IJS vise.

The 6" Orange IJS vise accepts all CARVEsmart dovetailed jaws. The fully machineable jaws result in a larger machineable workholding zone that permits holding larger parts deeper into the jaws of the vise for better performance.

The patented CARVEsmart system is designed for production and tool-room applications replacing the often cumbersome, conventional method of attaching vise jaws to a vise. Dove-tailed jaw changes are fast and easy with the "from the top" clamping system. The clamp assembly pulls dovetailed jaws tightly into two axes while a SMARTstop™ pin locates the jaw accurately in the third axis promising +/-0.0003" relocation. The SMARTstop slot and pin is internal to the dovetail allowing vises to be mounted side-by-side.

Extruded, aluminum dovetailed jaw stock is available in five profiles in lengths up to 94". It can be cut to any length the user requires. Steel options are 60/62rc hardened tool steel, 48/50rc A2 machineable tool steel, and 1018 steel. Specialty jaws are also available.

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- Dual coolant systems with flow confirmation monitoring

The full-featured control includes parallel part programs, MPG, manual program retrace, multi-color workpiece graphics, and extensive canned cycles.



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Industry News

Orange Vise have recently made major investments in equipment as part of the venture. Both company's products are 100 percent made in the USA.

Mitsui Seiki USA Launches New Website

Mitsui Seiki USA, Inc. announces that its website has been redesigned to make it easier for browsers to navigate and learn about the company's comprehensive, precise machine tool product line of horizontal and vertical machining centers, jig borers, jig grinders, and thread grinders. Visitors can also read and understand more about Mitsui's expertise and depth in certain industries and materials such as aerospace, energy, and hard metal applications.

Other features include quick links to events, latest videos, and the company's YouTube and other social me-

dia channels accessed from the home page. There is also background about the company and its world-class facility. The ways in which Mitsui Seiki achieves its renowned volumetric accuracy are also explained. Visitors can also sign up for the company's newsletter and request a quote on the new site. The URL is www.mitsuisseiki.com.

Free Online Mastercam University Course

CNC Software announced that Mastercam University, their online learning tool that gives both students and experienced users alike 24/7 access to Mastercam training materials, is providing free copies of their Mastercam X9 Update course to Maintenance customers.

This course is designed to help you

understand the new features in the Mastercam X9 release. Some topics that are covered in the Maintenance course are: Geometry – 2D bounding box, level & WCS modeless dialog, selecting geometry by level. Design – Dynamic transform, Gnomon manipulation, translate/rotate, select all entities. Solids – Solid positioning, mating faces, inserting clamps, rotate & translate fixture components and Offset – Xform offset, offset contour, analyze distance, create arc polar

Other topics include, Toolpath – Peel Mill, Dynamic Motion, 2D HST Blend, center start cut direction, extend entry/exit. Also Tool – New tool shape/types, Barrel, Threadmill, Slot Mill with new upper corner radius control and much much more.

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Industry News

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Methods Machine Tools Appoints GM For Phoenix, AZ Operations

Methods Machine Tools, Inc., a leading supplier of innovative precision machine tools, 3D printing technology, automation and accessories, has recently promoted Mr. Robert Nakash to the position of General Manager to head up Methods' operations in

Phoenix, Arizona.

Since 2007, Mr. Nakash has held the position of sales engineer at Methods' Phoenix, AZ branch. Prior to that, he was at Mori Seiki USA, Inc. in New Jersey for 17 years in various positions including regional manager, application/service manager, and application engineer. He began his career with a number of positions in CNC Programming at various tool and die/mold machine shops. Nakash has also received CMTSE certification from AMTA and is a graduate of Middlesex County College in Edison, NJ.

"With over 34 years of engineering and management experience in manufacturing and machine tools and eight years at Methods, Bob is a seasoned professional with a wealth of knowledge of Methods and machining," said Mr. Bryon Deysher, president & CEO, of Methods Machine Tools, Inc. "His

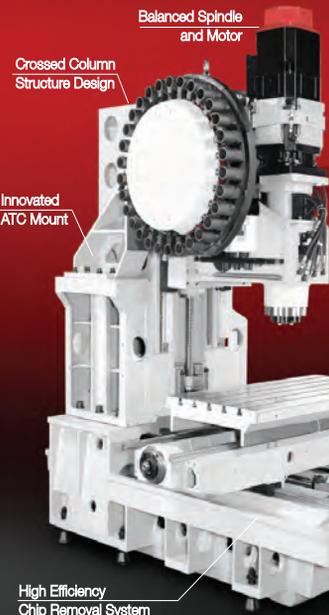
promotion to general manager of our Phoenix operations is well-deserved and his expertise will help us grow our sales, service and application support in this region."



Methods Arizona has recently implemented continuous improvement measurement tools and has attained a 98% customer satisfaction rating. Methods Arizona has over ten machines under power for customer demonstration in a state-of-the-art showroom and is also in the process of setting up a 3D printing lab for its new line of 3D Systems additive manufacturing solutions.

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New Products

New Tool Measurement and Inspection Models —Koma Precision

Elbo Controlli, distributed through Koma Precision, Inc., is continuing its advancement into the tool management market with a new generation of tool presetters. The newly designed E46L and E46L TW are tailored specifically to customer's requirements of a powerful tool measuring system.



The new models feature an increased measuring range up to 600mm on the Z Axis, a 22" HD touch-screen display along with optical autofocus and new electronic control. These models have been redesigned with a larger granite base for the best measurement accuracy and repeatability.

The company reports the high precision spindle system is fully interchangeable and utilizes a one piece cartridge with full mechanical tool clamping (pneumatically drawing the tool pull stud into the taper cone) - eliminating the need for adaptors and the errors associated with their use. The E46L and E46L TW are also equipped with Elbo Controlli's proprietary spindle-holder identification system (SP-ID). This technology enables the presetter to automatically identify the spindle holder after each replacement, eliminating operator error.

New for 2016 is Elbo Controlli's advanced tool management software package. CNC machine origin management and adapters. The intuitive user menu allows operators to quickly and easily measure and save tool data. The software allows operators to create unique CNC machine origins and send offset information directly to the

machine tool control. In addition, the software comes RFID ready to measure data to Balluff systems.

The E46L is equipped with an ad-

vanced camera system to measure and inspect tools quickly and easily. The E46L TW model is equipped with 2 auxiliary cameras for inspection of the helix and face of the tool.



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New Products

New High Power Alberti Angle Heads —Koma Precision, Inc.

Koma Precision, Inc. has introduced the new adjustable angle heads from Alberti – the manufacturer of high quality state-of-the-art angle heads. For over 35 years, Alberti has been providing an innovative range of products that are extremely reliable and enable manufacturing in strict tolerances.

The new Linea P high power angle heads have a completely new design and improved capacity. TCU-8 and TCU-10 can be adjusted to -105° to $+105^\circ$ with a digital display of the angle. They also feature an internal coolant capability. Despite the size, these heads can reach higher RPMs while



maintaining consistent temperatures. This line features a high performance, double torque version that enriches the HP angle heads family.

All Alberti angle head spindles with arbor are manufactured from one solid piece of hardened steel that that Koma reports increases resistance to bending

stress by 25%. This also enables the tools reach higher RPM without vibrations, thus resulting in higher speed and precision. The unique angular contact bearings ensure perfect concentricity and stability required to achieve higher performance of machining operations.

Intuitive Display Unit For Linear Scales —Mitutoyo America

Mitutoyo America Corporation has announced the KA-200 Counter, a multiple feature, intuitive display unit for linear scales. The latest version of the KA-200 Counter has been updated with many features including absolute and incremental modes, non-linear error compensation, function lock, ad-

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justable LED intensity, multiplier function and an option to output directly to spreadsheets using a USB card.

A large, crisp display is designed to allow the operator to read the numbers at a glance. In addition, an improved sub-display makes it easy to navigate through parameters. Operators can switch between absolute and incremental modes with the push of a button. Each mode offers 10 presets. A function lock holds the settings and prevents accidental changes of settings. A calculator function allows operators to calculate angles, distances and other measurements.



New 16" Front Mount, Large Thru-Hole Chuck —Gator

Gator introduces a new front mount 16" large thru-hole scroll chuck and fully finished base plate. This chuck and base plate combination provide solutions for all kinds of large thru-hole indexers, rotary tables, VTL lathe tables, and welding fixtures. "We kept getting requests from our customers for a better option for large thru-hole table applications. We worked closely with a leading rotary table manufacturer, and came up with this solution" said a company spokesperson.

This unique 3-pinion, low profile, forged steel body design, with 8.66" thru hole, and large gripping capacity make this chuck an excellent choice for gripping pipe, flanges or any other material with large diameters, and requiring high centering accuracy with

quick setups.

Chucks are produced to DIN/ANSI standards, and are provided with the

standard length master and hard top jaws. Special extended master jaws can be supplied on customer request.

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New Products

Steel base plates are provided with the set of T-nuts and bolts allowing the chuck to be mounted on 3, 4, 6 & 8 T-Slot round tables. All chuck parts and jaw guide ways are heat treated and precisely ground.

Turbo 10 PCD Milling Inserts for Smooth Finishing —Seco

Seco has introduced two new PCD-tipped milling insert grades – PCD05 and PCD20 – for use with its popular Turbo 10 cutters. Perfect for aerospace and automotive part production, these well-proven grades produce excellent surface quality in finish machining applications involving aluminum and titanium alloy workpiece materials.



These PCD grades are also highly effective in cutting polymers and fiber-reinforced composites.

PCD05 and PCD20 milling insert grades work alone or alongside carbide inserts in the same Turbo 10 cutter

body. When used with carbide inserts, the PCD insert grades serve as wiper inserts in fixed pockets. Conversely, running the PCD05 and PCD20 in one Turbo 10 cutter body optimizes their potential and ensures maximum cutting parameters.

Featuring solid carbide insert bodies, the PCD05 and PCD20 come in the company's X010 insert size with a corner radius of .016" and wiper length of 0.43".

The Turbo 10 cutter bodies that hold the PCD05 and PCD20 include precision milled pocket seats that Seco reports improve run-out, stability and tool life by providing optimal contact between the tool body and insert. Integrated through-coolant channels support high productivity and promote excellent chip evacuation.



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New Products



T-Based Machining Centers

—YMT CNC

The TB-Series line of vertical machining centers (VMCs) are designed for industries that demand heavy

machining applications such as automotive, mold shops, job shops and aerospace.

With the one-piece T-base design the X-axis is underneath the Y-axis slide way. This means there is no table overhang along the full X travel of the machine.

The heavily ribbed Meehanite casting is built for durable, rigid support and the extra wide box ways are designed for cutting stability and accuracy.

YMT TB-Series structural design also offers a small machine footprint and a chip disposal system.

The YMT TB-Series offers machine X travel of 47" to 86", and up to 39" for Y travel. A standard CT-50 taper 35 HP two range geared spindle that has 6,000 RPM deploys precision angular

contact bearings of extra rigidity on both axial and radial for very heavy cutting requirements. Coolant through the three axes ball screws is standard.

GF Machining Solutions and EOS Introduce Additive Manufacturing Tooling Solution

—GF Machining Solutions

GF Machining Solutions has introduced the AgieCharmilles AM S 290 Tooling additive manufacturing system. Representing its collaboration with additive manufacturing leader EOS, the AM S 290 Tooling is based on the proven technology of the EOS M 290 metal laser sintering system.



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New Products

The new AM S 290 Tooling was created to further extend the scope of solutions provided to mold and die manufacturers, and complements GF Machining Solutions existing lines of AgieCharmilles wire and die-sinking

EDMs, Mikron milling centers, Laser texturing centers and System 3R automation systems.

With the additive manufacturing provided by the AM S 290 Tooling, moldmakers can move thermal exchange closer to the surface of a mold,



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improving temperature homogeneity to reduce throughput times and increase part quality. The incorporation of additive manufacturing also lowers energy consumption and opens the door for programmers to improve part designs through conformal cooling and heating channels.

The ongoing collaboration between GF Machining Solutions and EOS revolves around optimal integration of additive manufacturing for mold and die shops. The AM S 290 Tooling features controls and software that allow for easy and quick integration with existing machine tools and measuring devices.

New Vertical Machining Centers With New Design —DMG MORI

DMG Mori reports the performance of the three models in the ecoMill V series is outstanding, even in the standard version: the spindle operates at a speed of 12,000 rpm and with torque of 87.8 ft. lbs. in these models. The rapid traverse speed of the X and Y axes is 36 m/min, and the rapid traverse speed in the Z direction is 30 m/min. The high positioning accuracy is 0.0002 in. (without direct scales), due to direct coupling in X / Y, no belt drive for no backlash. The tool-changing time achieves up to 1.3 seconds. The cutting speed has been increased by up to 25%.

An optimized machine structure also increases stability during machining, and a high degree of manufacturing flexibility is provided in the standard version by having 30 tool pockets

New Products

in the tool magazine.

All three ecoMill V models have a compact design and large working areas. They have a Y-axis travel distance of 22" and room for components with a maximum workpiece weight of 1,322.7 lbs. for the ecoMill 600 V, 1,763.7 lbs. for the ecoMill 800 V and 2,204.6 lbs. for the ecoMill 1100 V.

The new ecoMill V series has finishes made from anodized aluminum. The safety windows can be easily replaced from the outside if they become damaged. An optional window with access to the tool magazine also makes it possible to equip the tools during production.

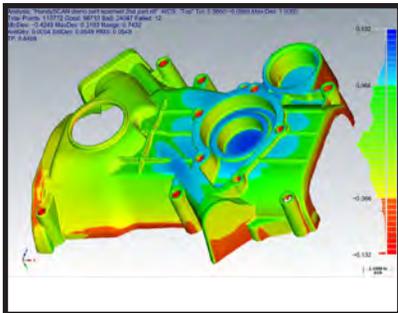
One additional highlight of the new ecoMill V series is the control variety. DMG MORI SLIMline Panel (15" / MAPPS IV on Fanuc) has an ergonomic design of the control panel. In addition, you can control workpiece shapes and toolpaths using 3D machining simulation on the 15" high-resolution TFT monitor.

New Version X9 Software for 3D Measurement

—Verisurf

Verisurf Software, Inc. announces the release of Verisurf X9, software for 3D measurement. The new release includes the addition of Verisurf SOLIDS,

a complete 3D solid modeling application, as well as major productivity enhancements to each of the



modules that comprise the Verisurf solution – CAD, MEASURE, ANALYSIS and REVERSE. Three components, which were previously cost add-ons, are now included in the Verisurf CAD module: creation and editing of solid models; raster-to-vector conversion of images and photos; true shape nesting of 3D geometry for use in composite materials, 3D printing and more.

New Speed Menu options for point cloud and mesh objects greatly reduce the time necessary to scan, align and inspect part data. In the improved point cloud display with shading, the fine details of live scans look great and appear in real-time, as the



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data is collected. Analysis functionality has been optimized for increased speed and accuracy when using large scan data with the capability to process and display one million points per second in real-time. These enhanced capabilities have enabled new productivity features, including a 'Do It' icon to run the macro for quick alignment, registration, analysis, and reporting.

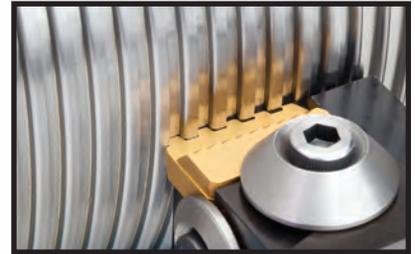
"At Verisurf our goal is to provide a comprehensive set of measurement tools so quality and manufacturing engineers can effectively do their jobs. With the release of Verisurf X9 we continue to close the gaps in being able to maintain a digital thread between design, manufacturing, and quality inspection," said Ernie Husted, president of Verisurf Software, Inc.

New Thread Chaser Insert Holder

—Seco

Seco developed its new thread chaser insert holder for operations that involve tough materials including the hard, gummy or high-chrome content ones used in the oil and gas industry. Such achievement is possible via a special carbide-pin locating system combined with a patented pocket seat surface pattern and high-pressure coolant capabilities.

Working in unison with top and axial clamps, the holder's locating system uses two horizontally oriented pins that rest at specific distances from the bottom of the insert pocket. The exact points on the insert where these pins make contact are the same points



that Seco works with when grinding the insert's threading profile.

The two-pin system ensures extremely precise insert positioning from insert to insert as well as plays a key role in the holder's increased rigidity and insert support. As a result, the holder helps reduce the number of threading passes required to produce a full thread profile.

The holder's pocket seat surface pattern features milled scallops that

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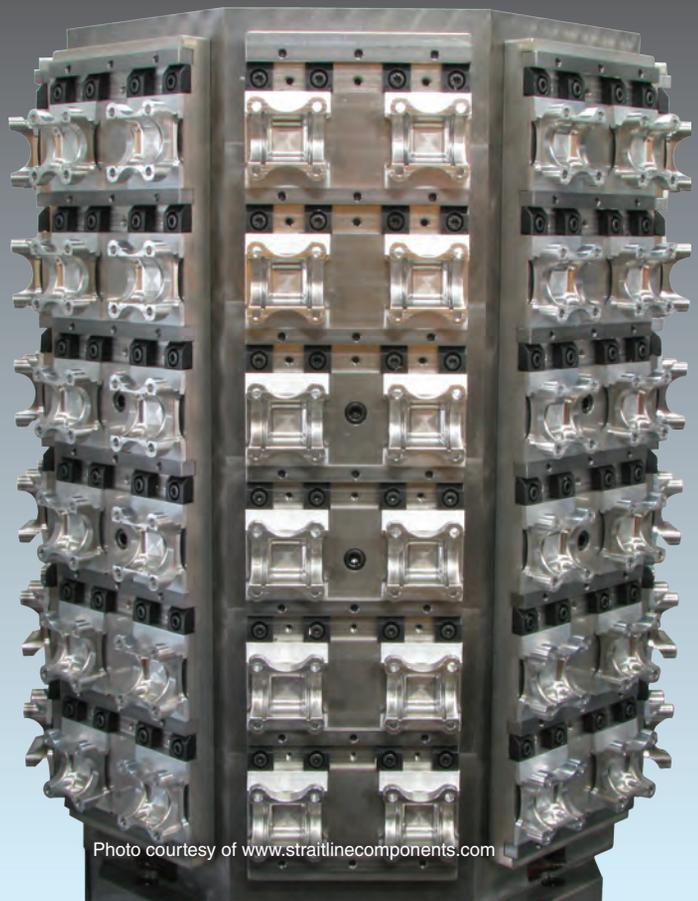


Photo courtesy of www.straitlinecomponents.com

New Products

provide even more chaser insert support. When the insert is mounted in the pocket, the clamping force acts on the scallop pattern and work hardens the seat surface to a hardness of 54HRc.

Seco also equipped the holder with high-pressure coolant directed at key cutting areas of the insert. Coolant enters the holder from the back end, travels through the insert cavity directly to the insert's chipformer and into the channels between each tooth.

High Resolution Rainbow Probe Optical Measurement Sensor —OGP®

Optical Gaging Products (OGP®), a division of Quality Vision International (QVI®), introduces its RP1500 Rainbow Probe optical measurement sensor to the metrology marketplace.

The company reports that the Innovative OGP Rainbow Probe technology provides high resolution non-contact measurement by analyzing the optical spectrum of reflected light to measure surface height changes. Rainbow Probe can measure transparent, translucent, fragile, liquid or easily deformable surfaces. A range of probes are available, each with a unique measuring range, working distance, axial resolution, accuracy, and spot size.

The newest OGP Rainbow Probe, the RP1500, offers many measurement advantages. It has a generous 32 mm working distance combined with an axial resolution of 40 nanometers. The RP1500 probe barrel is relatively small and is deployable under program control, making it easy to combine with other measurement sensors on a single metrology system.

The RP1500 is compatible with QVI ZONE3®, MeasureMind® 3D MultiSensor and VMS metrology software platforms. ZONE3, QVI's premium CAD-based 3D metrology software, features a clear, simple user

interface, and its kinematic model simulates the machine, part, fixtures, and measuring sensor, updated in real time. Built-in productivity maximizing tools, integrated GD&T functionality,

and visual validation of measurement intent offer speed and power to the measurement process. Visual representation of the Rainbow Probe scan is provided by plots of color surface maps and deviation whiskers.



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New Products

EcoFilter® Conveyor Introduced

—Jorgensen Conveyor

Jorgensen Conveyor states that the EcoFilter® Conveyor is the first competitively priced conveyor and filtration system for entry level and mid-priced turning and machining centers.

The EcoFilter® utilizes an innovative two stage metal chip removal and coolant filtration design. Primary large chip removal is done with a hinged steel belt conveyor and in a secondary process, fines are separated from the coolant via flow through a wedgewire filter cell. In the company's patent-pending, self-cleaning design, brushes wipe these fines from the surface of the wedge wire where they can then flow to the bottom of the conveyor. Finally, the conveyor belt's cleats scrape them

around and up the incline for discharge.

According to a Jorgensen spokesman, the EcoFilter® Conveyor has been well-received by their customers.

They report one customer uses a vertical machining center to do high-volume machining of aluminum parts. They had a serious chip migration problem where a high majority of the chips would migrate to the coolant supply tank. Tank baskets and screens needed cleaning multiple times a day and weekly machine shut downs were necessary to clean out the coolant tank which was virtually filled with chips. Machine supply pumps were fouling and failing due to chip migration into the pump inlets. Filters had to be put on the inlets which, when blinded off, caused the pumps to cavitate, leading to coolant foaming. The system would



often back up and coolant would flood the shop floor.

Now the company reports with Jorgensen's EcoFilter® Conveyor in place, they have enjoyed uninterrupted 24hr/5 days per week production. The wedge wire filter built into the conveyor has stopped the fines from getting into the tank and the coolant is



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New Products

no longer foaming up.

Compact Laser Texturing Machines Introduced

—GF Machining Solutions

GF Machining Solutions has expanded its line of laser texturing solutions with the LASER P 400 3-axis machine and LASER P 400U 5-axis machines. The machines provide easy, repeatable laser engraving texturing and structuring for small parts, such as watches, jewelry, cutting tools, small inserts and micromachined workpieces.

The range's fully digitized texturing process makes it easy to texture, mark, engrave and add functional texture to parts, molds and dies, even when dealing with complex 3D parts.

The modular concept of the LASER 400 family includes a patented, dual laser head that includes both a fiber nanosecond laser and femtosecond pulsed laser. This allows texturing and engraving of a surface with a single setup, as well as extends the range of materials that can be used.

With a footprint of just 48.4" x 87.8", the LASER 400 machines are easy to incorporate into an existing production environment. The LASER P 400 accommodates workpieces of up to 23.6" x 15.7" x 9.8", while the LASER P 400U accommodates workpieces with a maximum diameter and height of 4.7".

The LASER 400 family is automation ready and allows for unattended night and weekend operation. The machines easily partner with a System 3R pallet changer to further boost efficiency and flexibility.



Workholding Solutions For Brake Disc Clamping

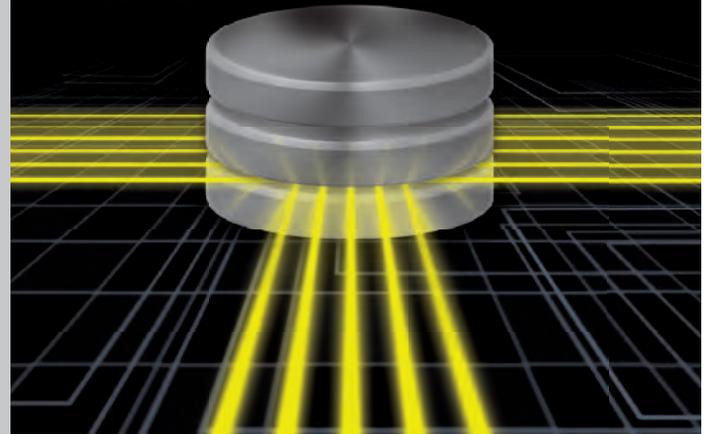
—Emuge

Emuge Corp., offers precision workholding solutions for the clamping of brake discs, where high accuracy and repeatability are requirements in the manufacturing process.

To guarantee the highly precise manufacture of brake discs, Emuge designed a system of mandrel and chuck

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head is exchanged over a quick-change mechanism without releasing the draw bar connection in the spindle.

Emuge's System SG or System SZ can be used in the design of the brake disc clamping system. System SG features an expanding-bush design which has a large surface area contact with the workpiece providing a clamping solution which is very rigid, accurate and repeatable. "For workpieces that have a short clamping base or for diameters with a very large tolerance, System SZ is a good choice," said a company spokesperson.

In both the SG and SZ systems, applying an axial force results in an even radial expansion of the clamping element, and at the same time, an axial movement occurs so the workpiece is

both clamped and pulled against the end stop for added rigidity.

Line Of Collet Chucks With Reduced Hang Weight

—Hardinge

Hardinge Inc., has announced the release of a low-profile 65 mm dead-length flexC quick change collet chuck. This collet chuck is available in four spindle sizes including A2-5", A2-6", A2-8" and 140 mm and can be customized to fit any spindle.

The low-profile 65 mm DL features a reduced nose diameter as compared to the current design. This redesign gives enhanced tool clearances. Additional enhancements include reduced

hang weight, installation simplifications and a work stop and accessories.

"This design is a direct result of feedback from our customers and distributors. They wanted a FlexC product that offered more tool clearance, and this collet chuck provides that capability," said Ryan Ervin, manager, North American workholding sales and product development.

Multi-Axis Workholding Product Get-A-Grip®

—AMT Innovations

AMT Innovations offers a new workholding product, Get-A-Grip®. The company reports the new cutting-edge triangular dovetail will never

New Products

distort or deform the workpiece. The dovetail provides 3 evenly spaced, radial force vectors for superior gripping. Through carefully thought out triangular contact geometry, this product eliminates the need for an indexing pen. The internal clamping geometry reduces material preparation area and can be strategically placed where the finished part may have a pocket.

Made in the USA, AMT uses the Stainless Steel™ Logo on the product as a trademark and badge of the build quality this product offers.



Multiple product options allow

users to apply this technology to palletized 4-axis horizontal CNC mills with tombstones, 5-axis CNC machines as well as CMM fixtures. Although many shops may not have 4 or 5 axis capabilities, AMT's Get-A-Grip® also offers many advantages for common 3-axis CNC machining work and even 2-axis CNC turning. The recommended maximum workpiece is 5" x 5" x 5" for Get-A-Grip® Size 1.000 when using a single fixture. It is possible to hold a larger workpiece when using multiple fixtures.

Tooling for Specific Turning Centers —Heimatec

Heimatec offers live tooling for all popular models in the Hyundai, Miyano and Nakamura turning center

lines. Literature detailing all the Heimatec products now available in stock for Hyundai, Miyano and Nakamura machining centers is offered at the company's website, heimatecinc.com.

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New Products



New 5-axis Machining Center For Reduced Set-ups, High Precision —Heller

The recently introduced CP 4000 series horizontal machining centers accomplish horizontal, vertical and tilted turning with A and B axis with high dynamics and chip removal rates. Ideal for a wide range of applications, the 5-axis mill/turning center CP 4000, equipped with PCU 63 swivel head unit and HSK-T 63 spindle taper, has a work area of 800/800/1,045mm (X, Y, Z).

With 44kW power, 242Nm torque and up to 10,000rpm spindle speed, the CP series achieves complex mill/turning operations, highly precise control of speed and acceleration and variable adjustment to achieve workpiece-specific precision and surface finish.

The CP 4000's machine concept is ideal for turning operations, using a fifth axis provided by the tool. Vertical and horizontal turning operations of outer and inner contours can be accomplished with the C axis and optional A and B axis.

Common to all Heller machine tools, the CP 4000 enables highly productive cutting using economically efficient cutting parameters. High cutting performance is achieved due to the extremely stiff swivel-head geometry, torsional stiffness and form fit provided by a spindle locking feature.

When the workpiece must be rotated against the tool, the rotary table with direct torque drive delivers the required power and speeds up

to 1,000rpm. To identify imbalances on the workpiece or the rotary table, Heller developed a machine function which uses internal drive signals to identify even the slightest imbalances on the workpiece, enabling precise centric clamping. A specially defined user interface supports the operator

in correcting imbalances. For turning tools, Heller additionally offers a standard tool measurement system using tactile sensors. The CP 4000 is typically equipped with Siemens Sinumerik 840 Dsl control.



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New Products

New Automatic Bar Feeder Provides Visual Status of Bars At A Glance —CNC Indexing

The new Tracer Vs-105XL available from CNC Indexing & Feeding Technologies is a bar feeder designed for heavy bars. It can handle up to 4-1/8" diameter bars up to 72" long.

The bar feeder's magazine rack has a maximum capacity of 5 bars at 4-1/8" (105mm) diameter. The patented external LED light bar provides a visual status of pusher position, amount of bar remaining, notification of last bar, and flashing notification of machine or bar feeder alarms. This feature is standard on all CNC Indexing short loaders and magazine bar feeders.

The operator-friendly HMI display system is touch screen and contains automatic system settings and a moveable hand-held remote controller for convenience during operation. The quick-change pusher is easily changed manually without any tools. A top-cut optical sensor precisely measures each bar's length and automatically adjusts.

The standard rail retract system allows the bar feeder to move back and away from the CNC lathe at a 45° angle for convenient spindle liner changes and access to the machine's headstock area for ease of maintenance. The Vs-105XL's PLC control is fully functional with comprehensive data bank software and according to the company, perfectly interfaces with any CNC lathe.



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HJ-400 Horizontal CNC Lathe —Okuma

Okuma's HJ-400 horizontal CNC lathe offers many of the advantages of the company's Genos lathe series with a Fanuc control, providing an entry-level lathe with flexibility, according to the company. This machine tool can be equipped with an extended bed to accommodate a variety of workpieces for maximum flexibility and throughput.

Built on a one-piece, cast iron base with a horizontal way system and hand-scraped headstock and tailstock mounting surfaces with two-point bearing support, this machine provides stability, rigidity and accuracy for a variety of applications. A gearless spindle reduces vibration and heat, minimizing thermal deformation for maximum productivity, the company says.

A user-friendly design allows easy workpiece loading and unloading and easy access to tooling, according to Okuma. Chuck and tailstock controls are located at the front of the machine. A right discharge, hinge chip conveyor is standard.



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New Products



New Thread Milling NC Code Generator Software —OSG

OSG announced the release of ThreadPro, the company's latest thread milling NC code generator software.

OSG reports that generating codes

for complex machining couldn't be easier with ThreadPro, which the company reports has eliminated the hassle of having to "enter data as text, copy and replace." The configuration of multiple paths, which was not adjustable before, has been greatly simplified to enable the easy creation of zero cut programs.

In addition to multiple feed (machining at each cutting edge length), single feed (1 pitch per cut) is also available, which is ideal for machining high hardness materials. Also with the capability to review machining trajectory, trouble-free tool movement can be confirmed to minimize tool damage.



Software Improvements to Lathe Control —Heidenhain

Heidenhain has released software and hardware for its contouring control for CNCs and cycle lathes, the MANUALplus 620. The MANUALplus 620 control is compact and versatile, and is characterized by its simple operation and programming.

For the end-user, the MANUALplus 620 offers complete support of the opposing spindle during automatic program generation. Also, the cut-off cycle G859 permits entering a default diameter at which a pick-up device is activated, and the rotational speed can also be limited. In the ICP editor, a calculator for fits and internal threads is now offered with the respective input fields for the parameterization of holes and threads.

"With this MANUALplus 620 lathe control, the machine builder will welcome Heidenhain's new generation of main computers with more powerful processors and performance reserve for future expansions," said a company spokesperson. Due to the reduction in structural width to 22 nm, the new Intel Celeron processor with Ivy Bridge architecture provides increased com-

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puting power while consuming less electrical power.

A PROFIBUS interface card can be plugged externally via PCI express slot. It features a USB 3.0 interface and an 8 GB CFR with CFAST (S-ATA interface) for faster data access. The new CFR MANUALplus 620 is based on the CFAST standard (CFAST = Compact-Flash ATA Serial Transfer). Compared to the previous CFR memory cards, the faster S-ATA protocol is used for the new mass storage device. The new cards have significantly shorter access times .

OEM cycles and OEM subprogram dialogs can be shown with language-sensitive texts.



New Non-Pull Out Collets for Hi Feed Application —Pioneer

Pioneer reports they have developed a cost effective option for hi feed or hi helix application where cutter are pulling from the holders. The system

is based on the SX25 collet utilizing a standard 3mm hardened dowel pin to retain the cutter shank. The initial designs are centered on Weldon based flats but can easily be used with cutter designs using radial grooves.

There is a preset screw in the collet to hold the assembly together while installing into the collet chuck. Customer flat or groove locations are available to meet the customer's demands. Pioneer reports that all modification work is done in Elk Grove Village, Illinois prior to shipment. Turnaround time averages 3 days.

A company spokesman said, "This simple easy to use design requires no special equipment and provides TIR under 5 micron's at 4D".

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Their horizontal machining centers go from the smallest HX250iF machine (12 x 12 x 13 X,Y,Z) up to the HX1250i machine (80.31 x 51.97 x 53.94 X,Y,Z). Kitamura is also able to offer their horizontal machining centers as a true manufacturing cell system, utilizing the Fastems multi-pallet systems.

These systems can be stand-alone or integrated to work with other machines. For 5-axis machines, Kitamura offers their Mytrunnion™ series, as well as the Supercell™ series in 20, 40, 60, 80, 100, or 120 pallets



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High-Speed Five-Axis Machining in a Small Footprint —Tongtai

The new CT-350 five-axis vertical machining center from Tongtai features state-of-the-art performance in a small footprint.

The structure of the CT-350 is a “C” frame-type machine and was designed around high level mold-type machining centers to ensure rigidity during cutting. The column of the CT-350 has a wide span making it torsion-resistant while cutting a 5-axis part. Rigidity is enhanced by using 45mm roller type guide ways and pre-tensioned, large-diameter ballscrews.

The CT-350’s table size is 13.78” diameter and can handle a maximum

load of 440 lbs. The integrated rotary table uses the roller gear cam in both the tilt and rotation axes. The roller gear cam design provides zero backlash, high rigidity, and fast rotation speeds. The stroke on this machine is 15.75” in X, 20.08”, in Y and 20.08” in Z. The A-axis stroke is +30” through -120”, and the C-axis stroke is 360” with rotation speeds of 40 rpm and 33 rpm, respectively. The CT-350 has rapid feed rates of 1,418”/minute in X and Y, and 1,182”/minute in Z. A 20HP direct-drive 15,000-rpm Big Plus 40 taper spindle with air/oil mist lubrication is standard, however an optional 20,000-rpm integral spindle is also available. The standard 24-position arm type tool changer is equipped with a roller gear cam mechanism to reduce tool change time to only 2 seconds.



The CT350 is equipped with a Fanuc OiM-F CNC control to perform 4+1-axis cutting. However, if 5-axis simultaneous cutting is necessary, a Fanuc 31iM-B5, Siemens 840D or Heidenhain iTNC-640 can be installed.

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New Products

Kaiser New Air Power Spindle at 120,000 RPM —Big Kaiser

Big Kaiser is introducing the RBX12 air power spindle, a high-speed air-driven spindle that achieves an impressive variable rotational speed of 100,000-120,000 RPM.

The company reports that the newest air-driven spindle, produced by Big Daishowa Seiki, enables existing machines to be cost-effectively upgraded to perform high-speed micro-machining in a normal machining center since this tool is driven by air supplied through a stop block or through the machine spindle.

“Operating at such high speeds helps to improve machining accuracy, enhance surface finish, significantly lengthen tool life, as well as reduce

wear on the cutting tool since it will be running at the speeds intended,” said a company spokesman.

High-speed operation also means that processing time can be reduced. Due to its ceramic ball bearings and ultra-precise collet system, the runout accuracy of the RBX12 is excellent, which enables ultra-thin wall cutting. The AA-grade Mega Micro Collet guarantees 1-micron runout at the collet nose, and the .004” collapsibility assures a near-perfect concentric clamping of a micro-tool shank.

The RBX12 also minimizes thermal displacement in the Z-axis for top precision – constant at <.001mm while a standard machining center spindles have up to .012mm.

The RBX12 is available with BCV40, BBT30/40 & HSK-A63/F63/E32 interfaces, and models not requir-

ing a stop block have an extremely small body diameter of Ø1.260”. An automatic tool change is possible.

Enhanced DuraMax HTG CMM —Zeiss

The Zeiss DuraMax HTG coordinate measuring machine, an enhancement to the standard model, is now even more insensitive to mechanical vibrations and temperature fluctuations. These properties make it ideal for use in a production environment – now at temperatures from 15-40 degrees C.

“Even in moderate climates, it is not uncommon for the temperatures in production areas to exceed 30 degrees C,” says Johannes Mohrle, product manager at Zeiss. Increasingly compact,



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modern production lines equipped with heat-generating machine tools contribute to room heating. However, limitations in air conditioning can also falsify the measured values on a coordinate measuring machine, e.g. as a result of gust-like air flows. Because heat and temperature fluctuations can impair the accuracy of measuring machines, quality assurance is faced with additional challenges.

Improving air conditioning is one solution, but operating and maintaining such systems is expensive. "This is what led us to enhance our Zeiss DuraMax compact CMM," states Mohrle. The machine works as reliably as before at a temperature range that has more than doubled: Zeiss DuraMax High Temperature & Gradients

(HTG) delivers accuracy down to 3.2 microns at ambient temperatures of 15-40 degrees C. ZEISS was able to not only increase the temperature range at which this machine can achieve this high accuracy, it also lifted the maximum permissible fluctuations over an hour and over a day.

This high precision was made possible even at these temperatures and fluctuations by the use of new, high-quality components. Developers insulated the Z axis of the machine with a hood. To further reduce the influence of temperatures, they equipped the basic body of the measuring machine with a reflecting stainless steel cover and special insulation. "The greater temperature resistance means a clear reduction of operating costs compared

to air conditioning or a measuring lab near production – all this with more reliable measured values," summarizes Mohrle. As a result, Zeiss DuraMax HTG is particularly well-suited for precise measurement in non-air conditioned production areas.

2016 FeatureCAM With New High-Efficiency Roughing —Delcam

Delcam has launched the 2016 release of its FeatureCAM feature-based CAM software. This includes a range of enhancements, including more options for the Vortex high-efficiency area-clearance strategy, support for

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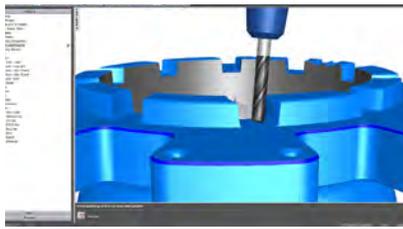
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bar-fed mills and more efficient turning and user-interface improvements.

The 2016 release includes a number of enhancements to the Vortex area-clearance strategy. Vortex offers fast safe metal removal from solid carbide tooling, in particular designs that give deeper cuts by using the full flute length as the cutting surface. It produces toolpaths with a controlled engagement angle and maintains optimum cutting conditions for the complete roughing cycle.

Now users can adjust and fine tune

the non-cutting moves of 2.5D and 3D Vortex toolpaths, with options to retract the tool and/or to increase the feedrate. These options can be set individually, or can be combined.

Other roughing improvements include the ability to take into account any remaining stock on the model during holder collision checking.

Milling of inside or outside groove features has been upgraded with a number of improvements. These include support for different types of roughing links, wind-fan approach and retract moves for finishing, better gouge checking for plunges and retracts, and tool radius and partline cutter compensation support.

Support has been added to Feature-CAM for multi-tasking bar-fed milling machines. Access to the back of the component is possible with an option

to set the swivel angle of the machine.

Five-axis swarf machining has been made more flexible with a new option to control the upper and lower Z limits of a simultaneous five-axis swarf toolpath.

For users of FeatureTURN, the selection of turning tools has been simplified with the ability to use a single tool in multiple orientations. This new automatic tool orientation categorizes tooling into either outside-diameter or inside-diameter turning tools.

FeatureCAM now allows the quick import and alignment of a variety of pre-defined vices and chucks into a machining project. This speeds up programming and collision checking is provided automatically during simulation.

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Used in combination with PowerSHAPE, FeatureCAM now allows machining files to be selected and nested automatically in a single block.

Interface improvements include the ability to create additional setups quickly during FeatureRECOGNITION, via a new button in the Feature Wizard. Items within the part view are now highlighted when the cursor hovers over them. At the same time, the items are also highlighted in the graphics screen.

Finally, Autodesk RealDWG has now been integrated into FeatureCAM, increasing the speed of import of DWG files and support for DWG solid model import.

U1310 Wire EDM Delivers High-Precision in Large Workpieces —Makino

Makino introduces the U1310 wire EDM machine. It is designed to substantially improve ease of operation, machining speed and accuracy in large workpiece applications.

“Too often, manufacturers assume that the larger the workpiece, the less precise the performance,” said Brian Pfluger, EDM product line manager at Makino. “The U1310 debunks this myth by providing superior levels of precision even when compared to smaller travel EDM machines. With features like Makino’s high-energy applied technology (H.E.A.T.) and an innovative fixed table design, operators

can expect faster machining speeds on even the most difficult cutting applications and larger workpieces.”

The U1310 offers X-, Y- and Z-axis travels of 1310 mm by 1010 mm by 520 mm, and is optional with a larger full stroke 620mm Z-Axis. The standard machine configuration can accommodate a maximum workpiece size of 2000 mm by 1600 mm by 500 mm and maximum workpiece weight of 6,000 kg. Other features include a programmable 3-sided drop tank system for increased accessibility during workpiece loading and part setups, a fixed table and Makino’s intuitive Hyper-i control.

Makino reports that the U1310 is one of the world’s first large machines to feature a programmable 3-sided drop

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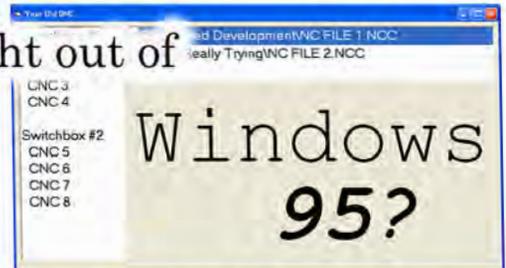
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tank system, enabling excellent accessibility and easy setups for large workpieces and improving ergonomics.

Makino's advanced Hyper-i machine control utilizes a user-friendly interface similar to that found on tablets and Smartphones. A high-definition touch-screen display features

Pinch, Swipe and Spread functions and integrates on-board digital manuals, intelligent help functions, and an e-Learning training system. The Hyper-i control can also be customized to individual operators and/or for certain shifts.

The U1310 fixed work table design provides excellent machine rigidity, even when the table is loaded with a heavy workpiece. The combination of machine rigidity with machining technology and control software delivers exceptional roundness, and operators can expect shape accuracies within $\pm 3 \mu\text{m}$ and a best surface finish of $0.3 \mu\text{m Ra} / 2.2 \mu\text{m Rz}$. The machine is capable of operating wire sizes of 0.200, 0.250, and 0.300mm diameter.

Accuracy is also ensured by the U1310's dielectric fluid cooling unit, which has been integrated into the

base machine casting and keeps the temperature inside the machine at the same level as the dielectric fluid temperature.

The U1310 is available with H.E.A.T. configuration, featuring Makino's High Energy Applied Technology. This configuration incorporates a combination of flushing enhancements and special generator upgrades that greatly increase cutting speeds on the most difficult machining applications.

Rigid CNC Slant Bed Lathe Redesigned —Chevalier

The FBL-200 CNC machine, boasting a 45-degree, slant-bed, rigid box ways structure, is supported by

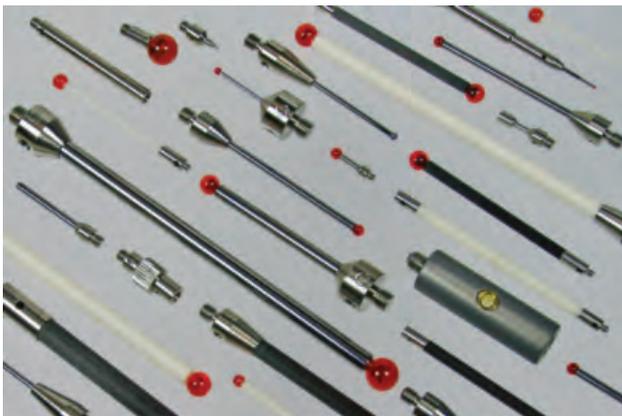


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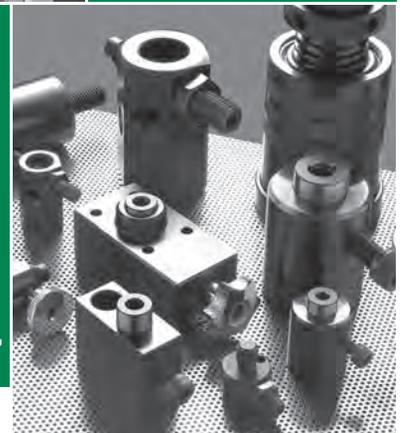


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ribbed Meehanite cast-iron, which provides strong support and excellent damping absorption that helps to resist deflection and vibration during heavy

machining. The FBL-200 is engineered with ease of access and trouble-free maintenance in mind. Its compact design minimizes floor space for the large work envelope. It's the best machine in the market for mixed volume, short-run or dedicated high-volume applications. With a magazine-fed bar feeder or a gantry-style loader, the FBL is a fully automated, single-set-up, part-processing machining system that's affordable and cost-effective.

The FBL-200 slant-bed lathe features an 8" hydraulic chuck, optional tool presetter, 18.5" maximum swing diameter with 10.2" maximum turning diameter and a maximum turning length up to 16". The bar capacity is 2.5".

The lathe features an up-to 20HP AC digital spindle motor. The spindle bar capacity is 2.55" in diameter with speeds up to 3,500rpm. The spindle has cylindrical roller bearings that provide strong cutting capability.

A 10-station indexing turret offers fast tool indexing. A manual tailstock and programmable quill are standard, along with a chip conveyor that provides efficient chip management.

The model comes with a powerful Fanuc 0i-TD control and digital servo drive and motor. This new control provides the most popular functions, including a rigid tap, multiple threads and a conversational Manual Guide 0i program.

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Alternative to Conventional Grinding Methods

—Ewag

The new compact Ewag Laser Line Precision serves as an alternative to conventional grinding and eroding methods that are unable to handle the level of precision required for processing complex cutting contours and narrow tool tolerances in CBN, PCD and CVD-D materials.

With five mechanical axes, two optical axes and short-pulse fiber-laser technology, the Laser Line Precision can handle all aspects of diamond tool production in a single clamping. Automatic calibration of the axes and a 3D measuring probe with soldering error detection ensure the accurate



production of rotationally symmetrical tools up to 7.87" in diameter and 9.84" long as well as indexable cutting insert diameters from 0.12" inscribed to 1.97" circumscribed.

An industrial 20W short-pulse fiber laser with a 532 nm green-wavelength and 1.5 ns pulse duration makes it ideal for processing superhard materials.

Due to the short application time of the laser pulse, the machine's laser energy feeds into the tool before plasma effects are produced in the machining area.

Ewag's patented tangential laser beam machining, or Laser Touch Machining® technology, enables the Laser Line Precision to process high-quality cutting edges and cutting geometries in an efficient manner. During the process, the outer surface of the laser beams shape the surface of the tool, while the repetitive hatching pattern of the laser scanning unit and simultaneous travel movement of the mechanical axes produce the cutting joint.

The machine comes equipped with a Fanuc control, an intuitive human



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machine interface that contains all relevant data views and Ewag's LaserSoft with plug-in LaserPro 3D. The proprietary software packages handles laser and machine control and enables quick, easy programming of complex applications.in

It is also possible to integrate peripheral automation equipment with the machine such as a Fancu six-axis folding arm robot with various gripper systems.

With a compact footprint of 53.8 square feet, the robust Laser Line Precision expands Ewag's laser solutions product line by providing a smaller, more affordable option to shops that seek all-in-one laser processing of diamond cutting tools.



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Lean Inspection Fixture System —Phillips Precision

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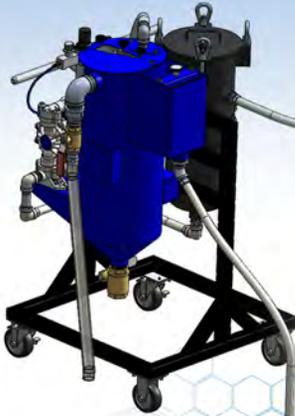
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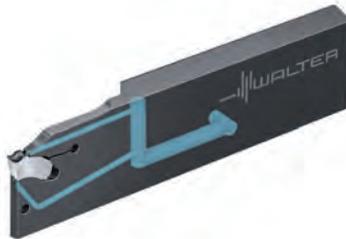
consistent marks, even on uneven surfaces. IDI Track detects missed parts or marks and predicts production outages, eliminating the need for expensive vision equipment and significantly reducing production downtime.

Improved Grooving and Parting Operations

—Walter

Walter introduces the Cut G2042 series of grooving tools, featuring reinforced blades and a dual internal coolant delivery system. In grooving and parting off operations, cutting edges are exposed to high mechanical and thermal stresses. Effective cooling and lubrication is imperative.

The G2042 system precisely de-



livers coolant to the flank and to the chipbreaker of the insert. The result: A constant optimum operating temperature with the coolant stream targeting the center of the chip formation. This leads to better chip control, which in turn produces improved surface finishes and flatness and better tool life.

The Walter Cut G2042 parting blades with precision cooling are available in blade sizes of 1.02 in. and 1.26

in. Inserts for the G2042 are available in widths of 2-4 mm. Prime target applications include turret turning centers with bar feeders parting off to center and performing depths of cut greater than 0.315 in. particularly on difficult to machine materials, especially high temperature alloy materials.

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—Exsys

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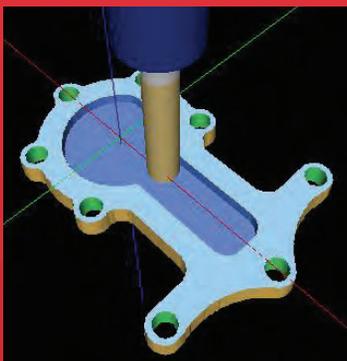
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