

# CNC WEST

Volume 38 - Issue 5

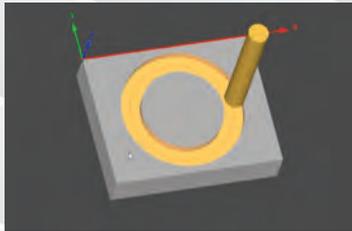
**THE MAGAZINE FOR WESTERN METAL WORKING MANUFACTURING**

## TURNING ISSUE

- **3RD GENERATION OWNERS UPHOLDING 67 YEARS OF HERITAGE @ FILGER MFG**
  - **TORRANCE, CA. JOB SHOP PUNCHES WELL ABOVE THEIR WEIGHT CLASS**
  - **SILICON VALLEY JOB SHOP ACHIEVES SUCCESS WITH PRIMA POWER MACHINES**
  - **PRECISION MACHINING AT SL ENGINEERING**
  - **IPANEL SYSTEMS INC. DESIGNING & MANUFACTURING FLIGHT AVIONICS**
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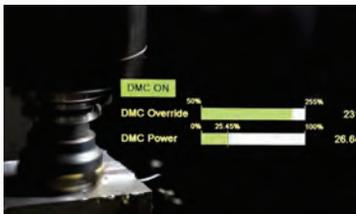
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	LIST PRICE	DISCOUNTED PRICE	LIST PRICE
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UL-508A CERTIFIED	STANDARD	N/A	N/A
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# CNC West

June/July 2020 • Volume XXXVIII No 5

## Feature Stories

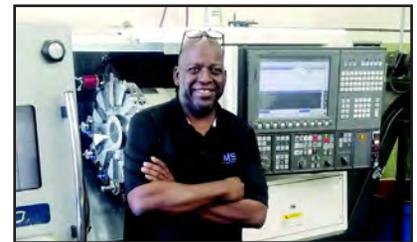
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**Coming in Aug/Sept 2020**  
 EDM, Waterjet & Grinding Issue: This issue provides readers with profit-making ideas in three major metalworking areas – EDM, Waterjet and Grinding. We'll visit western plants to report on innovative methods and equipment involving wire and sinker EDM, Waterjet and new ideas in grinding.

*Editorial: July 21, 2020*  
*Ad Space: July 25, 2020*  
*Ad Material: August 3, 2020*



**VOL. XXXVIII NO.5**

*June/July 2020*

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

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# Hoping 2020 Takes a Turn for the Better

Well we are halfway through the year and it can at best be called crazy. In addition to Covid 19 craziness we have civil unrest like never before. In all the darkness out in the world there is some light. Several shops took advantage of our offer to run a FREE story about their shop and you can see a few of them in this issue. We asked for 3-4 photos and 500 words. Sean Buur our editor actually ended up following up with these shops for a phone interview. I was impressed and surprised at the quality of photos that shops sent to me. CNC WEST really appreciates those that took the time but be aware the offer still stands!! Any questions just email me at [sarnold@cnc-west.com](mailto:sarnold@cnc-west.com).

I obviously did not do a great job of communicating that this offer was only for machine shops and not those that sell products to shops as I received a few of those too. I appreciate those that sent those write ups too. Heck I am just glad that people actually read what I write.

Since this is our Turning issue our cover article details a family owned shop in San Clemente, CA. that does big business on small parts. Most parts they make are under 1" and a lot are made on their Star Swiss machines. Aerospace is at the core of their work and this 67 year old business is determined to not let the recent slowdown keep them from operating another 67 years.

One of the stories sent in to us and then followed up by Sean Buur was by a small shop in Torrance that acts like a big one. Basically a one man shop Ed Dennis has been making the right moves to keep going strong. SL Engineering sent us a small write up and some excellent photos. This Huntington Beach shop has an excellent staff and continues to go strong during the pandemic.

Luan Nguyen of Ipanel Systems in Valencia volunteered to do some free machine work for those in need during the pandemic. Luan shines bright as someone willing to help out those in his industry. I am sure you will read that story and want to root for Luan and Ipanel Systems. They are doing all the things right during the pandemic.

We also have an article on a fab shop in Silicon Valley that is doing well with the help of their Prima Power press brakes. Silicon Valley is a demanding place but they are up to the task. There is lots more to read and if you lose your magazine you can read every issue online. Old issues too. And those shops out there that read this issue and say that was a nice article....all you have to do is contact us.

Sincerely,

*Shawn Arnold*

Shawn Arnold  
Publisher

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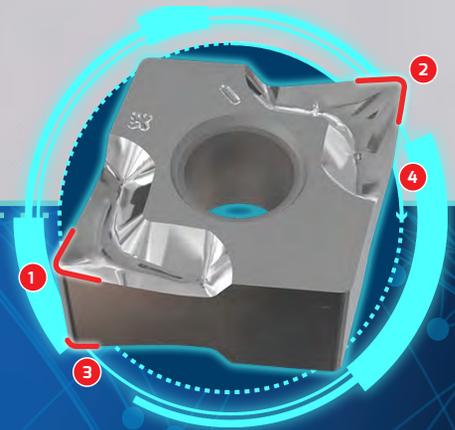
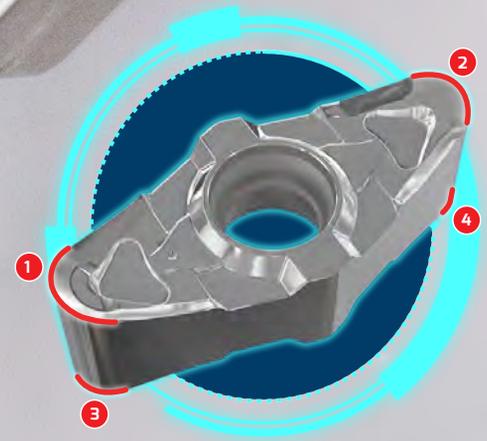
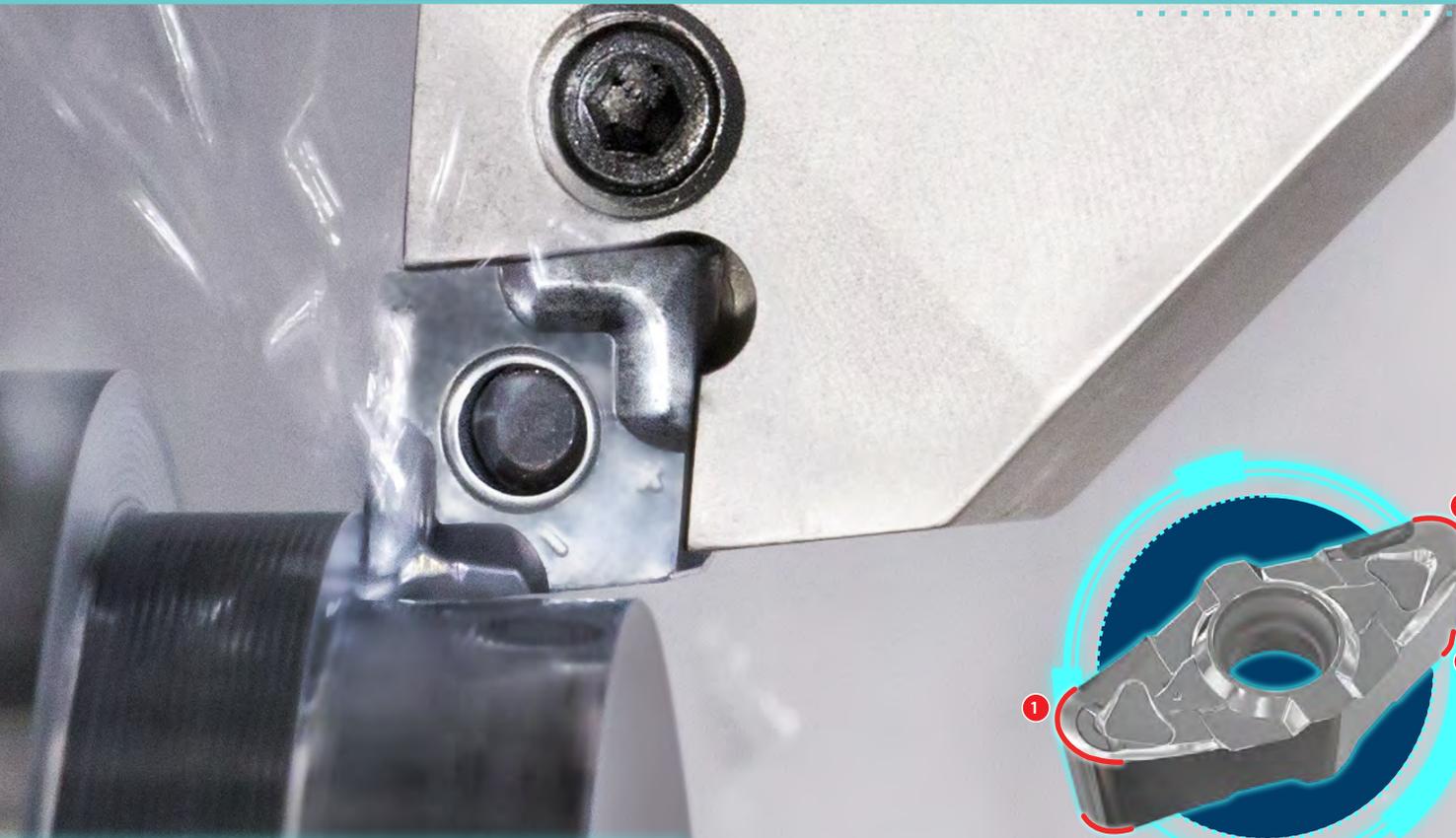
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## Emerson to Invest \$100 Million to Expand Manufacturing Operations in Colorado

Emerson recently announced it will invest more than \$100 million in Boulder, Colorado to significantly expand its manufacturing space and launch a new innovation center focused on research, new product development and industry training for its advanced flow measurement products.

Emerson is recognized globally for its advanced flow measurement technologies and diagnostics.

The nearly 180,000-square-foot expansion includes a new, 85,000-square-foot laboratory and manufacturing facility to design and develop products, technologies and software that measure and control the flow of material in a manufacturing process.

The expanded Boulder facility will offer a hands-on Interactive Plant Environment that simulates real-world industrial manufacturing conditions for worker training and upskilling to help reshape the future workforce. The experiential training facility will provide Emerson customers with hands-on access to the most advanced products and technologies, including flow, temperature, level, pressure and wireless instrumentation, valves and regulators, as well as Emerson's leading control systems and Plantweb™ digital ecosystem.

Emerson currently has 630 employees in Boulder, home of its measurement solutions business.

---

## Boeing To Sell More Southern California Land

Boeing has listed more industrial real estate for sale, continuing its plans to divest more property it acquired in its \$13 billion takeover of rival McDonnell Douglas back in 1996. Boeing has listed eight parcels totaling 78 acres just north of the Long Beach Airport in Southern California, according to city of Long Beach deputy economic development director Sergio Ramirez. "We said to them, 'We're in the middle of Covid. Are you sure this is a good time?'" Ramirez said.

---

## Anduril Opens Engineering Posts in Seattle Office

Defense technology company Anduril Industries is hiring engineers for its new site in Seattle.

The new hires will perform work remotely until all restrictions in line with the COVID-19 pandemic are lifted, the company said in May.

Anduril aims to augment the U.S. and its allies' defensive capacities through the new facility.

"We are building bigger and better systems for our military as quickly as we can," said Palmer Luckey, founder of Anduril.

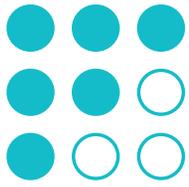
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## VOX Space AND Virgin Orbit Qualify AS Competitors for The Darpa Launch Challenge

The Defense Advanced Research Projects Agency (DARPA), announced that California companies VOX Space and its partner, Virgin Orbit, are among three teams that have qualified to compete in the DARPA Launch Challenge. DARPA announced that an initial field of more than 50 contenders had been cut down to only three, selected on the basis of their technical and regulatory progress towards delivering a highly flexible launch service applicable to a variety of US government needs.

The DARPA competition will award multiple prizes of up to \$12 million each to qualified teams who complete multiple launches to Low Earth Orbit on very short notice. Further details and requirements are still being finalized by DARPA.

Continued on page 82....



# Introducing a **NEW** dimension to machining complex parts.

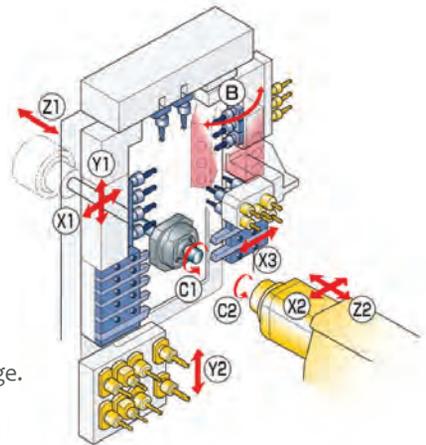
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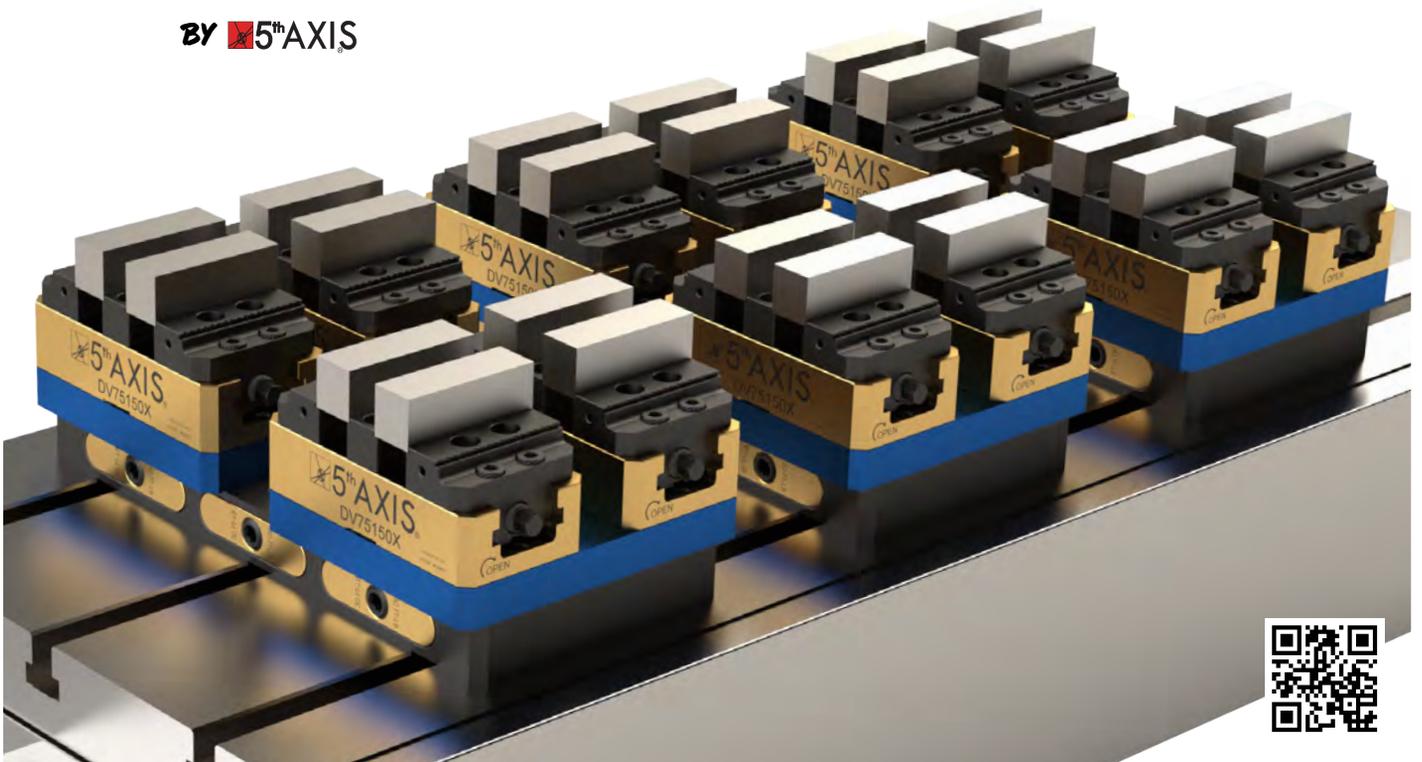
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						Part Number	Set Price	Pie Dia	Part Number	Set Price
6"	.312	.499	3/8	1.500	2	TG-6200F	\$ 41.64	6"	RTG-6200A	\$ 76.66
					4	TG-6400F	\$ 71.66	8"	8-RTG-6400A	\$ 158.83
8"	.312	.499	3/8	1.750	2	TG-8200F	\$ 22.15	8"	RTG-8200A	\$ 103.80
					3	TG-8300F	\$ 64.44	10"	10-RTG-8300A	\$ 240.33
10"	.501	.749	1/2	2.125	2	TG-10200F	\$ 23.83	12"	12-RTG-10200A	\$ 184.94
					4	TG-10400F	\$ 75.33	15"	15-RTG-10400A	\$ 607.05
12"	.501	.749	1/2	2.500	2.5	TG-12250F	\$ 72.22	15"	15-RTG-12250A	\$ 494.11
					4	TG-12400F	\$ 102.35	18"	18-RTG-12400A	\$ 851.69
15"	.501	.749	5/8	3.000	2.5	TG-15250F	\$ 87.22	21"	21-RTG-15250A	\$ 908.09
					4	TG-15400F	\$ 113.74	24"	24-RTG-15400A	\$ 1,550.55

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

Additional diameters & heights available! Please Call!

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Model	Chuck Size	Groove Width	Screw Size	Hole Space	Hgt Inch	STEEL		ALUMINUM	
						Part Number	Set Price	Part Number	Set Price
Kit B206 HO27M6 HS-06	6"	0.472	10MM	0.787	2	KT-6200F	\$ 34.37	KT-6200AF	\$ 31.59
					3	KT-6300F	\$ 44.99	KT-6300AF	\$ 41.12
					4	KT-6400F	\$ 95.71	KT-6400AF	\$ 86.08
Kit B208 ZA6-8 HS-08	8"	0.551	12MM	0.984	2	KT-8200F	\$ 40.70	KT-8200AF	\$ 38.56
					3	KT-8300F	\$ 46.82	KT-8300AF	\$ 50.90
					4	KT-8400F	\$ 61.00	KT-8400AF	\$ 62.11
Kit B210 HS-10	10"	0.630	12MM	1.181	2	KT-10200F	\$ 45.84	KT-10200AF	\$ 46.66
					4	KT-10400F	\$ 76.14	KT-10400AF	\$ 67.46
Kit B12 HS-12	12"	0.709	14MM	1.181	2	KT-12200F	\$ 72.00	KT-12200AF	\$ 74.05
					3	KT-12300F	\$ 107.96	KT-12300AF	\$ 90.10
Kit B212 BBM 315	12"	0.827	16MM	1.181	2	KT-12208F	\$ 72.00	KT-12208AF	\$ 74.05
					3	KT-12308F	\$ 107.96	KT-12308AF	\$ 90.10

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

**SHARK JAWS**

**HARD JAWS**

For 1.5mm x 60° Serrations Chucks



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- Conical teeth for extra gripping power
- Ideal for castings and scaly material
- Black oxide for long life
- 2 steps (1 step also available)



For Kitagawa, Samchully, Strong, MMK, Howa & SMW Autoblok Power Chucks!

Chuck Model	Chuck Dia	Part Number	Price Per Set
B-206, HS06	6"	KT-60HJ2	\$355.56
B-208, HS08	8"	KT-80HJ2	\$420.66
B-210, HS10	10"	KT-100HJ2	\$500.80
B-12, HCH12	12"	KT-120HJ2	\$540.84
B-212, HS12	12"	KT-128HJ2	\$540.84

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Chuck Dia	Part Number	Price Each
4"	JBR-04	\$ 162.00
5"	JBR-05	\$ 162.00
6"	JBR-06	\$ 184.25
8"	JBR-08	\$ 226.48
10"	JBR-10	\$ 255.67
12"	JBR-12	\$ 284.23
15"	JBR-15	\$ 427.06

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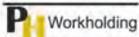
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Part # K-208A06-N-B

**10" Chucks**  
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HARD JAWS

For 1.5mm x 60° Serrations Chucks



- Designed for first operation roughing, expect runout between 0.005-0.010
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- For Kitagawa™, Samchully™ & other chucks

Chuck Model	Chuck Dia	GRIP-RITE OEM STYLE		XTRA BITE	
		Part Number	Price Per Set	Part Number	Price Per Set
B206, HS06	6"	KT-60HJ2-U	\$245.75	KT-60HJ2-X	\$256.55
B208, HS08	8"	KT-80HJ2-U	\$294.53	KT-80HJ2-X	\$312.71
B210, HS10	10"	KT-100HJ2-U	\$336.60	KT-100HJ2-X	\$370.44
B-12	12"	KT-120HJ2-U	\$391.99	KT-120HJ2-X	\$415.42
B-212, HS12	12"	KT-128HJ2-U	\$390.92	KT-128HJ2-X	\$416.29
B-15	15"	KT-150HJ2-U	\$504.90	KT-150HJ2-X	\$554.85

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Machine	Thread	Head Dia	Angle	Coolant	Part Number	Price EA
Fadal BT40	M16-2.0	.740	90°	No	B40-4501S	\$ 17.72
HAAS BT40	M16-2.0	.590	45°	Yes	B40-4500H	\$ 22.80
HAAS CAT40	5/8-11	.589	45°	No	C40-4501S	\$ 17.72
Fadal CAT40	5/8-11	.740	45°	No	C40-4500S	\$ 15.20
Okuma CAT40	5/8-11	.589	60°	No	C40-6000S	\$ 17.72
Mazak CAT40	5/8-11	.740	45°	Yes	C40-4500H	\$ 15.75
Mori Seiki CAT50	1-8	.905	90°	No	C50-9000S	\$ 21.85



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Dia	Proj	BALANCED TO 15,000 RPM		BALANCED TO 20,000 RPM	
		KINGSTON Part Number	Price Each	SPIN TRU Part Number	Price Each
1/8"	1.75"	C40-01EM175-K	\$ 49.95	C40-01EM175-KB	\$ 69.99
3/16"	1.38"	C40-18EM138-K	\$ 49.95	C40-18EM138-KB	\$ 69.99
1/4"	1.38"	C40-25EM138-K	\$ 49.95	C40-25EM138-KB	\$ 69.99
	1.75"	C40-25EM175-K	\$ 53.85	C40-25EM175-KB	\$ 69.99
5/16"	1.38"	C40-31EM138-K	\$ 53.85	C40-31EM138-KB	\$ 69.99
	1.38"	C40-37EM138-K	\$ 49.95	C40-37EM138-KB	\$ 69.99
3/8"	2.50"	C40-37EM250-K	\$ 53.85	C40-37EM250-KB	\$ 69.99
	1.75"	C40-50EM175-K	\$ 53.85	C40-50EM175-KB	\$ 69.99
1/2"	4.00"	C40-50EM400-K	\$ 53.85	C40-50EM400-KB	\$ 69.46
	1.75"	C40-62EM175-K	\$ 53.85	C40-62EM175-KB	\$ 69.99
5/8"	3.00"	C40-62EM300-K	\$ 53.85	C40-62EM400-KB	\$ 73.02
	1.75"	C40-75EM175-K	\$ 53.85	C40-75EM175-KB	\$ 69.99
3/4"	3.00"	C40-75EM300-K	\$ 53.85	C40-75EM300-KB	\$ 69.99
	1"	C40-10EM175-K	\$ 53.85	C40-10EM175-KB	\$ 69.99
1"	6.00"	C40-10EM600-K	\$ 60.45	C40-10EM600-KB	\$ 74.47
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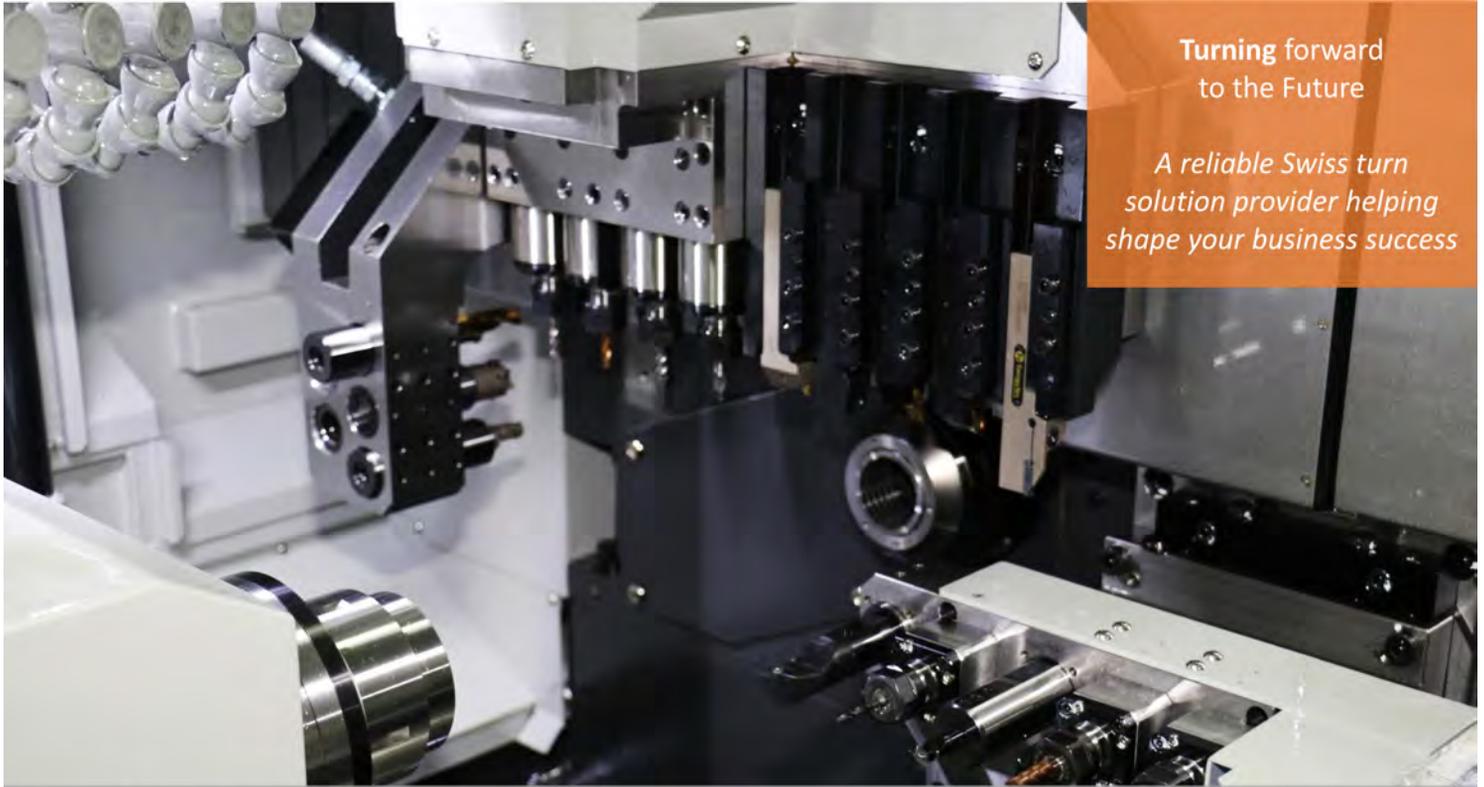
- Spindle Speed 1,500 RPM (CT-50 Taper – 30/35 HP)
- Through Spindle Coolant • 60 Tool ATC
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Z Travel	59.1"
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Table Load	44092 [lb]
Live Spindle	15 ~ 2000 *Only (S) type.
Cutting Hgt	102.3"



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Table Size	157.5"
Max Swing	196.85"
X Travel	-100.4" ~ 104.3"
Z Travel	59.1"
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Table Load	66139 [lb]
Live Spindle	30 ~ 3000 *Only (S) type.
Cutting Hgt	108.2"

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# How Star Wars Inspired the Future of Robotics in Manufacturing

By Steven Brand

CMTC-California Manufacturing Network

## ***In a galaxy far, far away... Well, how far exactly?***

The technological advancements in the Star Wars universe may seem to be the stuff of fantasy. While Death Stars, droid armies, and flying starfighters are still just Hollywood creations, real world robotics have made epic advancements since Episode IV first debuted in 1977 (under the original title of *Star Wars*, of course).

Although there is much to the films that is left to fantasy, some of the mechanical creations in *Star Wars* parallel robotic technology in real life. In fact, *Star Wars* may give insight into the future of robotics and it's positive (besides the droid invasions).

## **Why Robotic Automation is the Future in Manufacturing**

Robotics are an increasingly more common feature of modern manufacturing. In fact, 90% of all robots currently in existence are for industrial use. Each year, robotic automation becomes more cost-effective and efficient, so it's clear that the future of robotics will see a greater presence in manufacturing. However, should people be concerned for their jobs?

The fear that robots will eventually replace humans, (or even stage a revolution and take over the world) is not uncommon. In fact, more than 70% of Americans are afraid that robots are "taking over their lives" and replace them in basic tasks.

The future of robotics should be welcomed and not feared. While there are some tasks that robotic automation will replace, robots actually help create more jobs and assist people. In fact, a good example of what the relationship between people and robots in the future would most likely look like is *Star Wars*.

George Lucas' universe is saturated with robots, yet the robotic characters assist rather than replace humans. For example, C-3PO is designed as a diplomacy droid to assist humans in translation and intergalactic etiquette. R2D2 and BB-8 are "astromech droids", created to help with starship maintenance and guide their human pilots while en route. The majority of examples *Star Wars* gives us of the relationship between droids and humans is that of assistance rather than replacement; humans (and aliens) are still relied on for their work.

The areas in the franchise where robots replace humans are in situations of extreme danger, such as the droid armies or the DLC-13 mining droids mining lava on the

fiery planet Mustafar. Robots are here to enable humans to complete tasks that would usually post a significant risk to health.

This remains true for the future of robotics in manufacturing. Today, advanced manufacturing is becoming more common as cutting-edge technology is being embraced to improve processes. Rather than replace human works, robotic automation in manufacturing is assisting tasks and improving overall safety and efficiency. For instance, collaborative robots, or robots that are designed to interact with humans, take over the tedious tasks of assembly lines while also protecting workers.

As advanced manufacturing spreads, more manufacturing companies will integrate robotic technology into their workforce. According to a 2014 survey, U.S. manufacturers insisted the biggest impact of robotic technology would be the creation of new jobs for human employees. Workers are freed from tedious and monotonous assembly line tasks to learn new skills such as programming and robotic maintenance.

Instead of fear, the increased presence of manufacturing robots in the future should be embraced. Assistance, rather than replacement, is the goal of advanced technology and robotic automation in manufacturing. If the future of robotics will look anything like *Star Wars*, then the future is bright.

## **Industries That Robotics are Revolutionizing**

There are numerous industries that robotics are revolutionizing, including the automotive, medical, and aerospace fields. The manufacturing industry has been especially undergone innovative advancements due to robotics manufacturing.

Robotic automation can work 24/7 without rest or interruption. They do not require lights to be on to be work, reducing overall energy usage. Advanced manufacturing allows highly precise and repeatable movements without fear of injury. Robotic technology reduces the time spent correcting errors and protects employees from work injuries and the strain of repeatable movements, such as assembly line tasks.

Robotics in advanced manufacturing is here to stay, but what is also clear is that robotic automation is also positively shaping the manufacturing industry through job creation, employee protection, and greater efficiency for manufacturers. Though the future holds untold innovations in manufacturing technology, the future of robotics also holds hope for greater advancements for humans thanks to robotic assistance.

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# FILGER MANUFACTURING



Lane Filger - President | Casandra Filger-Robinson - COO | Al Filger - Vice President

## 3RD GENERATION BUSINESS OWNERS UPHOLDING 67 YEARS OF HERITAGE

Article by Sean Buur Photos Supplied by Filger Manufacturing

Albert Clarence Filger was a well-regarded machinist for Berteau in the early 50's, but he saw opportunity elsewhere. The lure of making his own way, and building his own legacy drew him to self-employment. In 1953 he set up shop in Pasadena as A.C. Filger Mfg., delivering quality machined parts to the aerospace industry. His son, Albert Charles Filger, started working for his Dad at the age of 10 and 23 years later ended up buying the company and transforming it into a CNC machine shop. Today, this San Clemente, CA. based operation is helmed by Al Filger and his children Lane Filger and Casandra Filger-Robinson. Together they are upholding the traditions of quality that the business was built on so many decades ago.

Filger Manufacturing is known primarily as a precision machining manufacturer specializing in high precision/close tolerance components. Their Star Swiss turning machines share the spotlight with Hardinge, Hyundai-Wia, Haas and Milltronics. All in all the 20,000 sq.ft.

manufacturing facility houses twenty one CNC turning and milling centers. "We pride ourselves on being able to master intricate and difficult parts that our competitors are unable to machine," tells Lane Filger, president and part-owner of Filger Manufacturing. "Most of what we do is under 1" in size, we run up to 6" in diameter on some parts. Aerospace has always been a large part of our business model. Our grandfather was good friends with the owner of Berteau which was bought out by Parker Hannifin. "We've partnered with Parker Hannifin for nearly 70 years," adds owner and COO Casandra Filger-Robinson. "Those kinds of relationships are hard to come by these days. We have other customers and even our own employees who have been here for decades. Our Foreman is celebrating 40 years with the company in 2020, that's amazing."

Al has overseen the company for 45 years and named Lane President about 12 years ago. Lane started in the trade at an early age and has been with the company for







**Filger Manufacturing has 20,000 sq.ft. and 21 CNC machining centers from Star, Hyundai-Wia, Hardinge, Haas and Milltronics.**

more than 30 years. Casandra started with the business 7 years ago as COO. “I graduated from SFSU in Business,” details Casandra. “I stayed up there and was a Sales Manager for a Fortune 500 company before returning home to San Clemente.” Lane now oversees the shop while Casandra handles all customer communication, HR, and oversees quality. With her father and brother’s help she taught herself about manufacturing. Keeping up with the company’s AS9100 and ISO9001 certifications has been a

big part of her education. She touts that even after seven years she still learns something new every day. “It made sense to bring Casandra in to handle operations,” explains Lane. “Her experience outside of the family business is a great asset. She brings a different and fresh perspective to things. She’s really a smart cookie and transitioned into the position really well.”

Aerospace, defense, medical and even parts that go into space are all part of a day’s work at Filger Manufacturing.

“We are very good at doing very small, high precision, high quantity, high quality parts,” tells Lane. “Many industries benefit from our experience, but we are best known by the airplane manufacturers for our hydraulic valve components.” The owners consider Filger Manufacturing to be a Swiss turning house with traditional turning, milling, and one-off capabilities. The Swiss machines are a recent addition at Filger Manufacturing, installing their first Star SW20 in 2017. Casandra, Lane and their production head met with Chris De Revere, of West Coast CNC Inc. at the Westec tradeshow and were impressed with how far the Swiss style machines had come in the last few years. “Capabilities had progressed leaps and bounds,” tells Casandra. “We felt



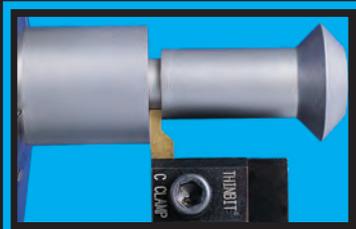
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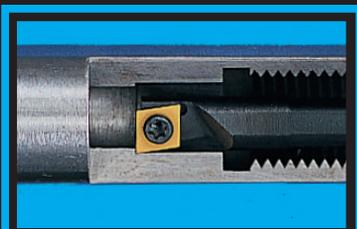
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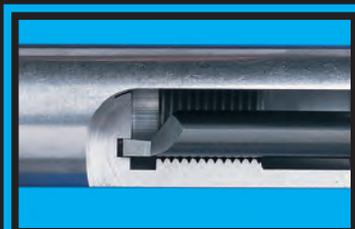
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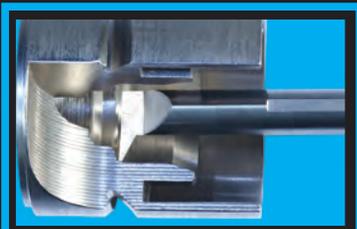
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Filger Manufacturing has purchased 4 Star Swiss turning machining centers since 2017. They have two SW20, a SR388 and this SR20J.

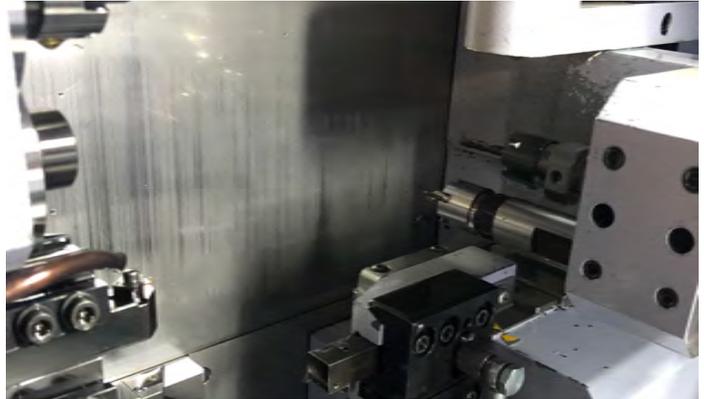
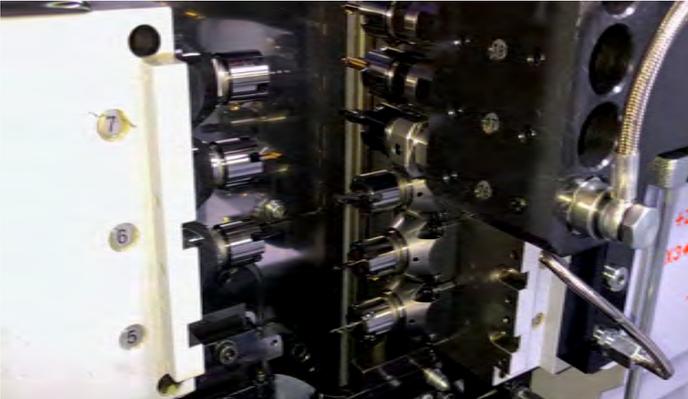
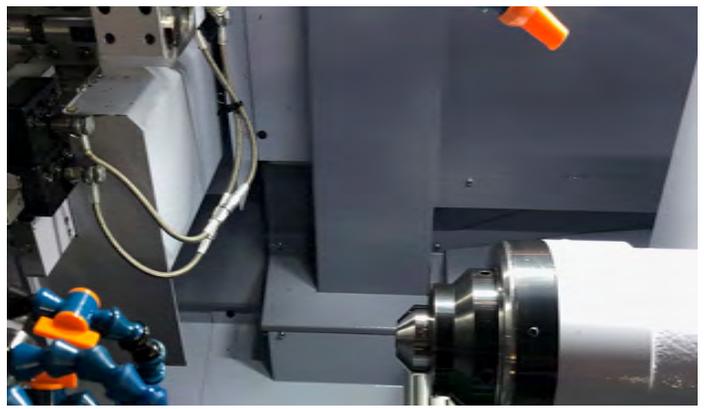
it was the time to make the jump to Swiss turning. They offered a lot of advantages over how we were currently manufacturing.” “Our parts didn’t change,” continues Lane. “But how we make them did. It was not uncommon for a part to be run on three, four, even five different machines before getting our first Star SW/20. Now that same part comes off a single Star complete. We machine the parts faster without sacrificing quality. Adding Swiss to

our roster allowed us to grow the business by maximizing our floor space. On time deliveries have improved since adding the Star machines. We are at over 99% for on time delivery with less than a 1% return rate. The big aerospace companies really care about seeing super low return rates and parts delivered as promised.”

“Dad is semi-retired but comes in day to day and is a part of the major decision making,” says Casandra. “He brought CNC machining to the shop back in 1978. It was the first CNC machine in San Clemente, an Okuma LC10 lathe.” “We ran that machine from day one until the day it left the shop,” adds Lane. “We value machines that are an investment not just in today, but in the future of the company. Having a great machine is nothing if you don’t have the people to run them. We are fortunate enough to have both.” Filger Manufacturing is in the business of making small complicated components holding tolerances of up to +/- .0002 in production. Their 67 years of experience producing parts to this level give them an advantage over others. Lane touts the quality of employees as the single biggest reason that Filger has been successful for all these years. “Filger Mfg. is successful due to the quality of the employees we have developed over the years. Our team is talented, educated, smart, creative and



Filger Manufacturing produce a wide range of parts for aerospace, defense, medical and spaceflight. Most include high precision, tight tolerance and complex features.



**The SW20 is a complex machine that can run three different programs at the same time. The crafty programmer maximizes simultaneous running on as many of those three programs as possible. Having all three running simultaneously is ideal and is when the machine is most efficient.**

hardworking. There is no challenge that they are not up for. When we added the first Star to our shop, we had to upgrade to all new programming software as well due to the complex capabilities of the machine. We bought Esprit and it has been doing the trick for us.”

Until you put a machine tool into production you never know if it will live up to the hype and admittedly the Filger team were a little skeptical at first. “Before we purchased our first Star SW20 we sent some examples of parts over to them,” explains Lane. “We asked for a time study to show us what it will take to manufacture the required specs. They supplied us with cost analysis, and we were like wow, that can really save us some time if the information is accurate. Lo and behold we bought the machine and began the process of on-boarding it. It takes a very skilled machinist/ programmer to run the parts we run on these machines and our Lead STAR Machinist is constantly finding ways he can improve the output and quality. The machines have been very reliable. We handle all the maintenance, but if there is a problem service is down here right away to handle any issue. Put it this way, we bought our first Star in 2017, then got the next one in 2018, then 2019 we added two more. To say we like them is an understatement.”

Statistics show that a large number of 3rd generation businesses fail for various reasons, but 2019 was Filger Manufacturing’s best year ever. Although 2020 hasn’t been great for anyone they will survive it and come out

the other side better than before. “Before the outbreak we really stepped up our efforts diversify/expand within our current customers portfolios,” details Casandra. “Now having the issues with the 737 Max and the grounding of so many planes we are glad we did. More diversification was the plan before Covid and it will be a primary focus after Covid.” “Normally we would be booked out 6 months to a year with contracts,” adds Lane. “With the world grinding to a halt, orders are being shifted around. We are not at capacity and have spindle time available if any of your readers out there are in need of our level of quality and service. We’ve seen a slowing of course, but we began 2020 in a great position and will weather this storm the same way we have for 67 years. When the world is back running more normally again, we will be right there with everyone traveling, surfing and ramping up production.” “There is a photo of our Grandpa in the office and it is inspiring to all of us,” concludes Casandra. “We are proud of the company that our Grandfather started, and our father built with him. We are excited to continue on with their legacy for years to come.”



Today's manufacturing recovery period

is unique. Unlike other comebacks where

innovation primarily galvanized the growth

and revitalization, this crisis requires that we also

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# MACHINING SOLUTIONS INC.

Article by Sean Buur  
Photos Contributed by Machining Solutions Inc.

## TORRANCE, CA. JOB SHOP PUNCHES WELL ABOVE THEIR WEIGHT CLASS.



Edward Dennis, president of Machining Solutions Inc.

Los Angeles' South Bay is known throughout the world for many things: good food, great beaches and the aerospace industry. Support comes from local shops that range in size and abilities. It's here, in Torrance, CA. that Edward Dennis, president of Manufacturing Solutions Inc. set up his business two plus decades ago.

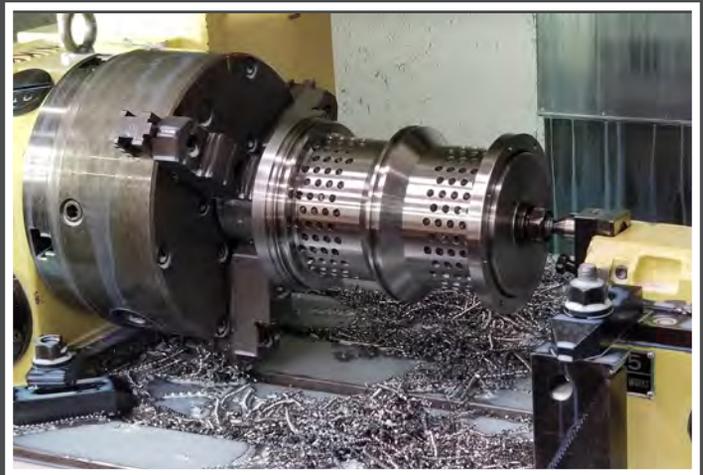
Fifty-four year old Ed Dennis has spent his entire adult life in manufacturing. Starting a family at a young age meant he needed to work. His dreams of playing baseball or being a professional drummer went on hold, instead he attended a manufacturing trade school. High school shop

classes were his only experience in the industrial arts before joining the work force. "I never imagined this as a career," tells Ed. "Let alone one that spans so many years. I love it, but it wasn't something I thought was possible. I was just a kid who needed to provide, and it's incredible that all these years later I own my own shop specializing in exotic metals for the aerospace manufacturers."

Machining Solutions Inc. (MSI) has 2800 sq. Ft., five CNC machining centers, a quality lab, and are AS9100 and ITAR certified. They serve a wide customer base, but their experience and quality standards best suit commercial, medical, military, aerospace and industrial applications. "We do a little bit of everything, but our specialty is aerospace and defense," explains Ed. We hold tight tolerances, on complex parts, in exotic metals, for customers like a Nuclear Laboratory in New Mexico. A typical run is under 100 pieces, but with very intricate features and multiple part numbers. One job might have eight parts that include a primary housing and support pieces that mate with it. Of all things I have a customer that builds baking equipment. Not make me a billet frying pan kind of customer, but hardware like you would have for packaging equipment. Everything is stainless and some plastic, and one of the parts we produce is a sprayer



MSI has an Okuma Genos L400 and two Okuma LB15 turning centers.



The Mazak 530C Smart Control boast indexing as well as full fourth axis positioning.

to glaze cakes as it runs down a conveyor. Stuff like that is really interesting for me because it isn't the standard style of parts we normally manufacture. New challenges like that keeps me wanting more. With government contracts the game is played by their rules. That's fine, but 2020 my goal is to add a more commercial accounts like this to my customer base. I know our quality and customer first approach is an asset to anyone looking for job shop that is small enough to deliver personalized service, but big enough to handle complex parts with aerospace tight tolerances. The private sector can benefit a lot from our experience in aerospace."

When Ed says small job shop, he means it. MSI is nearly a one-man operation. Ed's staff fluctuates depending on the work in progress and right now every order is being sold, processed, machined, verified, and shipped by his one employee or himself. "I scaled back operations a little at the beginning of the year even before the pandemic hit us," explains Ed. "So right now, it is just me and one other guy doing everything. Business is picking up again and hopefully that is a sign of things to come. Machining Solutions is a small shop on our biggest day, but we punch

way outside our weight class with our ITAR and AS9100 certifications. Most job shops this size don't invest the time and money required to be ITAR and AS9100. We are 100% committed to our customers, and the quality they require. Admittedly, it is a challenge sometimes to keep up with all of the necessary protocols when there are only a few of us, but we don't sacrifice quality for convenience. Making parts with good equipment is easy, it is the traceability and paperwork that makes it feel like work sometimes."

Good equipment is a key part of operations at MSI. Ed's two mills are Mazak, his three lathes are Okuma and his CMM is a Mitutoyo. Ed's lifelong love for Okuma started in the early 90's after going through training for one of his past employers. The build quality and easy to use OSP controls stood out to him even as an inexperienced machinist. "Okuma was the first CNC lathe I ever ran, and it just stuck with me all these years," remembers Ed. "Even back then the controls were easy to learn and use. The control systems now are even smarter. Okuma is a brand I've known and trusted for a long time. It would take a lot for me to buy something else."



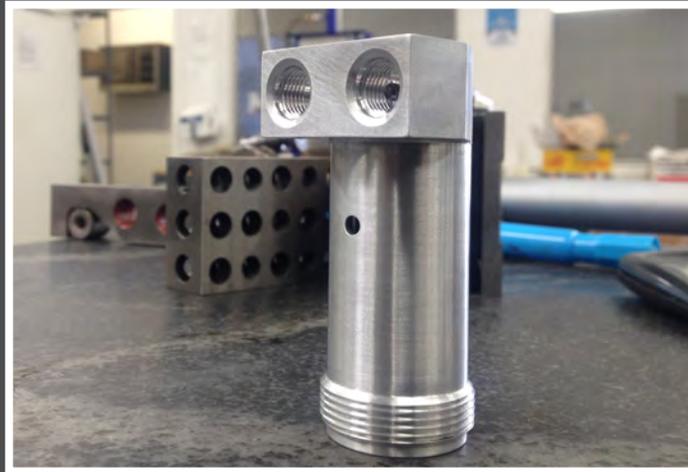
MSI is AS9100 certified and their quality lab is home to the Mitutoyo CMM.



MSI's milling department consists of two Mazaks, both with a 4th axis.



MSI machines families of parts that might include a primary piece and support pieces that mate with the primary.



Detonator housing for a defense contractor.

Ed's newest machine is Okuma Genos L400 with an automated bar feeder. It was installed three years ago to add more speed and versatility to the turning department. "I almost broke away from the Okuma, but so glad I didn't," continues Ed. "Another brand was offering me such a great deal that I couldn't turn it down, but fortunately I was able to get into the Okuma Genos L400 for a price point that was close enough for me to keep with Okuma. Having the same brand machine tools makes for a much simpler life. The same goes for Mazak. I have an older Mazak VTC 20 with Mplus Control, so when I added another 4th

axis machine five years ago I naturally went with another Mazak. I don't purchase new equipment often because my older Okumas and Mazaks still preform. My Okuma LB15's still holds the tolerances I need to deliver the best parts possible. The Genos is billed as Okuma's entry level lathe and not all the parts are made in Japan, but it still has a 10" chuck, a 20 HP motor and runs up to 3600 RPM. I've had it three years now and it gets the job done for us. I really like having a new control. It's fast, it's clean, but as an older guy I have a nostalgic love for my original machines."



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Since March Ed has focused his efforts on laying as low as possible. They have enough projects in house to keep them busy for a while. “We are working on a series of parts for an autonomous vehicle project” details Ed. “The job is eight parts numbers that range in quantity of 25-75 each. It will keep us busy for a while so I can see how things are going to play out in the coming months. We like the shorter runs. Get the job in, run it, and out the door to the customer so we can invoice them. Our sweet spot is 100-200 parts, but we will run a 1000 if fits with our equipment. I began this year thinking about investing



Okuma Genos holds bearing tolerances of +/- .0002.

in a 5 axis Mazak milling center, but there was just a weird vibe in the air and I thankfully didn't pull the trigger on it. Once we all have a firm grasp of how the industry is affected, I will circle back to getting a 5 axis. I've gone this long without one, I can wait a little longer. I'm optimistic that when this lets up it is going to go off, there will be a lot of opportunities out there for all of us. Right now, I'm just glad to make parts every day and really excited that you would feature MSI in CNC West Magazine.”

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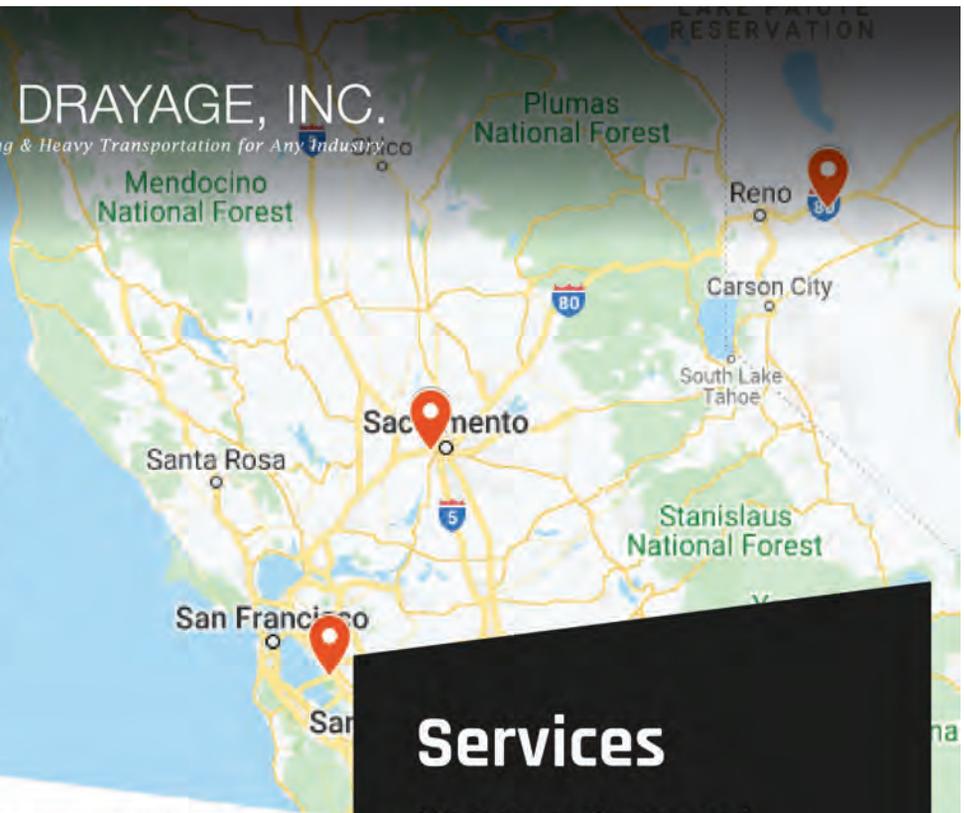
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# Coolant-Fed Tools Increase Productivity

*Authored by Steve Vanderink, National Product Specialist/Grip Products, Iscar Metals, Inc.*



With increased pressure to produce products faster, more accurately and with improved quality, the need for machining parts faster is driving the cutting tool industry to develop toolholders and workholding systems that enable manufacturers to introduce coolants to the cutting area in a more precise way.

However, it is not only about having tools with coolant-through capabilities. A key component to this technology is also how and where the coolant is being introduced as it relates to the carbide insert. The fact that materials are ever changing, and that the demand for machining parts from aerospace type materials is increasing, make the need for this technology even more crucial.

While Iscar has incorporated coolant-through technology throughout its entire portfolio of tools, Iscar has made sure this technology was a key component in two products included in the new LOGIQ product offering.

Multi-F-Grip High Feed Grip Tools enable the parting off of a wide range of materials and diameters utilizing replaceable multi-pocketed blades. Iscar offers three different size systems that can reach a range up to 4.724”.

Insert widths range from 2 mm to 5 mm. “The key component to this new system is not only the innovative replaceable Quad/Square blades, but also the unique TGT-BQ block that utilizes the machine tool turret as the base, making it an integral part of the tool system,” said a company spokesperson. “The block is reinforced and robust,

which provides enhanced stability.” All the tools are coolant-through and capable of handling up to 2,000 PSI. The coolant porting holes are located to introduce coolant directly to the cutting edge. This is critical when parting off larger diameters in difficult to machine materials. Depending on the width of the insert, utilizing the new HF chip former makes it possible to part off up to 0.018”

IPR. This system takes both the DoGrip and TangGrip parting lines from Iscar. The company reported results include better quality parts done faster with easy insert renewal for increased machine up time.

Completing this technology idea, Iscar has developed a complete machine specific toolholding system for parting off in multi-spindle automatics and CNC machines. The ModularGRIP Adaptation System consists of a machine specific base plate that mounts to the machine turret. An intermediate block is then mounted to the base. These adapters will vary in length depending on reach needs and come in right- or left-hand versions, and also contain the universal pocket to mount a wide range of Iscar’s parting and grooving technology options. This system is tailor made for any CNC machine with a pickoff or secondary spindle, making it possible to get coolant directly onto the insert without the need for hoses and clamps.

Iscar reports the increased rigidity and coolant flow make it possible to increase tool life, enhance part quality and increase productivity with increased speeds and feeds.



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- 3 Axis Auto



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# IPANEL SYSTEMS (IPS), INC.

Article by Sean Buur  
Photos Contributed by IPS



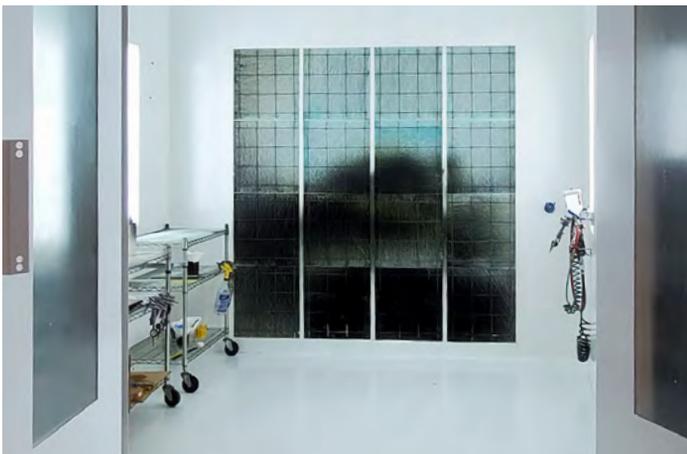
## DESIGNING / MANUFACTURING SIMULATOR AND FLIGHT WORTHY AVIONICS

Luan Nguyen is president, owner, floor sweeper, and design engineer of IPanel Systems (IPS) and considers himself to be very lucky. His business has come a long way since the early days working his day job and starting IPS from his Granada Hills garage in 2009.

Luan's career began in the late 90's working as a drafter designer before being promoted to design engineer. In 2007 he took a position at a company in Valencia, CA. that designs and manufactures avionics instrumentation. "I was engineering pretty much the same thing then as I

am now," explains Luan. "Here at IPS we design and build avionic display components (panels/bezels/keyboards) for commercial and military aircraft and simulators. I helped my old company develop their own production line and realized if I can do it for them, then I can do it for myself. Slowly I began adding equipment to my garage workspace. I purchased laser marking, dark room equipment and a spectral radiometer to measure the light. It took about a year before I quit my job and worked 100% for myself. Fortunately, my old employer supported my decision and fed me jobs. They are still one of my main customers."

Once the business outgrew Luan's garage, IPS added inhouse CNC manufacturing. "The best way at the time to implement CNC machining capabilities was to partner with someone else and share a building," details Luan. "My partner had a couple older machines that did the trick. We had two units and I was on one side with the design, engineering, laser and painting and he was on the other with all the manufacturing. It lasted about a year before we went our separate ways. He still handled the machine work for me, but it wasn't working out. So, in 2012 I bought my first Haas CNC machining center. A couple friends helped me get started with programming and work holding." Eight years later IPS has a shop floor filled with CNC mills and a single CNC lathe.



IPS is full of inhouse services such as laser marking and inhouse painting.



**With PMA approval IPS can deliver full “kits” of parts to their customer’s work sites. A kit can have over 100 different part numbers.**

Recently IPS moved into a new 11,000 Sq.Ft. manufacturing and design center in Valencia, CA. With 10 CNC machining centers (Haas/Mori Seiki) and in-house value-added services such as sandblasting, ultrasonic cleaning, painting and laser marking, IPS has everything needed to deliver flight worthy designs and assemblies. “We have 3, 4, and 5- axis milling and one lathe,” tells Luan. “I’ve always believed technology is a great asset, and every few years I replace a machine with a newer version. Most machine tools are less than 5 years old. It’s one way I can invest back into the company and keep on top of the latest tech.”

IPS delivers anything from individual parts, and finished assemblies to complete kits which could include up to 150 different items from various sources. A typical job might be a complete bezel assembly for a simulator display panel. “Most jobs start from scratch as my own design,” details Luan. “We begin with engineering and progress through manufacturing and support procedures until we deliver a turnkey product to the customer.” Run quantities vary from 10-50 and might include outside processes, but final test and assembly take place at IPS. As an AS9100 certified company IPS works up and

down the supply chain with various customers and other manufacturers to design and build for both simulator and flight worthy applications. “One of our customers is based out of Seattle and retrofits winglets,” tells Luan. “We supply complete kits to them. We have FAA approval allowing us to ship kits directly to their jobsite without the need for extra inspections. Our contract requires us to stock complete kits that are ready to go when they place



**IPS’ AS9100 certified inspection area.**



Instrument panel - simulated - non-illuminated



Instrument panel - simulated - illuminated NVIS-A

an order. Each kit consists of around 150 different part numbers. We don't manufacture every part in the kit, but we assemble all the items and package them all together."

Due to the nature of their products, IPS is considered an essential business and continues operations during

this turbulent time, but not without changes. "Most of our work is related to the DOD," explains Luan. "Because of that we have remained open, but business is slowing down. We have a staff of 16 and are splitting the workload by running half the crew on one day and the other half



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IPS designs and manufactures a wide array of simulator and flight worthy avionics They have turning and 3/4/5 axis milling to handle all their needs.



the next day. We are restricting shop access to anyone who doesn't need to be here and are focusing efforts on keeping people at a safe distance. Fortunately, the new building allows us to have some separation."

Diversification was a top priority before the pandemic, but with no outside sales force it has been a slow process for Luan and his team. "I've had my sights set on medical for a while," details Luan. "There is a lot of crossover in the design and manufacturing aspects and I know we

can leverage our experience to be a great partner for medical customers. Also, we at IPS would like to offer our manufacturing capabilities during this COVID-19 crisis. Anyone making ventilators and so forth who need assistance manufacturing parts I am willing to help as long as the work is within our capabilities. We will do our best at no charge. Hopefully things will get better for all of us very soon. Please let me know if we can help."



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# Bystronic Reaches Major Milestone With First U.S. Assembled BySmart Fiber Laser Machine



*Introducing the first fully-assembled BySmart Fiber 3015 laser cutting machine at the Hoffman Estates USA facility.*

Bystronic achieved a major milestone in the USA as the first-ever laser cutting machine assembled at the new facility in Hoffman Estates IL has rolled off the line. This important milestone strengthens Bystronic's commitment to its customers and to the North American market by providing locally assembled machinery to reduce overall lead time, installation time, and import costs.

By assembling laser cutting machines in the USA, Bystronic is further developing its market leading presence and operations network. Specifically, the next generation BySmart Fiber 3015 laser cutting machine, now with unprecedented 8kW and 10kW Fiber laser power, is the first machine to be locally produced in the three major market regions of the world: North America, Europe, and Asia, thus strengthening Bystronic's global product availability and supply chain diversification.

The next generation BySmart Fiber will be shipped virtually fully assembled to most locations within North America. This process will reduce the installation time at the customer's location by as much as 65%. Also, the machines will be 100% inspected and tested in the U.S. plant before shipment, which ensures that production will be up and running shortly after the installation is complete. Customer delivery lead times will also be reduced significantly.

The current plan is that from this fall 2020, the next generation BySmart Fiber 4020 will also be assembled at the U.S. facility.

From the very beginning, it was the goal of Bystronic to use the best practices from the manufacturing plants in Switzerland, Germany, and China in this new facility. The assembly area is laid out as a 'lean flow' line. Using this concept, the base machine frame starts at one end of the line, is assembled in stages, and the finished machine exits at the end of the line, much in the way cars are assembled. Components and sub-assemblies are brought to the production line in a "just in time" fashion to complete the machine.

Bystronic will locally source machine components and sub-assemblies as economically practical. They have already identified suppliers for the mainframe, housing, dust tray, laser source and other components, and orders have already been placed with these vendors. Many of these vendors are current Bystronic customers and will be using Bystronic machinery to produce the parts.

The newly built Hoffman Estates facility will include a leading-edge Customer Experience Center and the headquarters for the Americas market region. It will serve as the hub for Bystronic U.S. business operations including sales, service, training, spare parts, and the refurbishing of used machinery.

Currently, Bystronic employs approximately 160 employees in the U.S., with a notable increase planned within this year and beyond as more products are added for U.S. assembly. The total area of the new building is 164,894 sq. ft. The total area for machine assembly and parts warehousing



*Bystronic, Inc. production line at the Hoffman Estates USA facility*

is 103,393 sq. ft, the Experience Center is 30,721 sq. ft, and the total office area is 30,780 sq. ft.

The vision of the smart factory is now a reality for customers of Bystronic. With its new Experience Center near Chicago, Bystronic is now demonstrating the future of sheet metal processing to customers in the U.S. Bystronic will be displaying its entire range of sheet metal processing solutions: the latest technologies for laser cutting, integrated automation and storage solutions, flexible bending systems, tube and profile processing solutions, a software landscape that covers the entire sheet metal processing chain, smart services, and offering customized live demonstrations for customers.

A grand opening for the new Experience Center and headquarters for the Americas in Hoffman Estates, IL USA is scheduled for September 16 & 17, 2020.

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# Engineering High Performance 3D Printed Parts for Classic Autos



*Jay Leno harnesses Stratasys 3D printing to build a digital inventory that helps road test, refurbish and retrofit classic vehicles and super cars.*

Stratasys is collaborating with Jay Leno's Big Dog Garage and Big Dog Productions to provide access to Stratasys FDM 3D printers that keep the host's collection of extreme and classic vehicles in top running condition with custom parts. This collaboration with these Burbank, California companies builds on Stratasys' Performance Partner Program to empower those operating in the extreme worlds of competitive auto racing, classic vehicles and next-generation aviation with the latest additive manufacturing (AM) technologies.

Jay Leno leads Big Dog Productions with more than two decades of production experience, including "Jay Leno's Garage" on CNBC. Leno's Garage and Big Dog Productions tap into the power of 3D printing to provide digital inventory that helps road test, refurbish or retrofit everything from classic vehicles to super cars. Among his collection are 169 cars and 117 motorcycles, including a 1966 Oldsmobile Tornado, 1906 Stanley Steamer Vanderbilt Cup Racer and a tank car powered by a tank engine.

Leno and Big Dog Garage now have access to core Stratasys AM solutions, including the Fortus 450mc 3D Printer with FDM Nylon 12 Carbon Fiber. "The ma-

chine makes it simple to produce complex manufacturing prototypes and finished parts efficiently and effectively using high-performance carbon fiber material," said a Stratasys spokesperson. Big Dog has already been collaborating with Stratasys Direct Manufacturing for 3D printed parts-on-demand for nearly 10 years.

"As a lover of classic cars, I am always looking to push the boundaries of what is possible in creation and re-creation of these vehicles-and 3D printing is integral to this process," said Leno. "After working with Stratasys and Stratasys Direct for years to drive the ultimate in 3D printing innovation, I am really excited about this new Fortus machine and where it takes us next."

In conjunction with the extended Stratasys team, Leno has created cutting-edge 3D printed prototypes and custom parts for the automotive collection. This includes re-creating parts that no longer exist or would be far too time-consuming and expensive to create using traditional processes.

"Jay has long been one of the pioneers and adopters of 3D printing.

He realized the technology's potential for on-demand, custom parts early on-claiming it as a critical component to fueling a passion for classic vehicles," said Pat Carey, senior vice president of Strategic Growth Americas at Stratasys. "We cannot wait to see what uses of 3D printing they come up with next, because if they can dream it, we can 3D print it."

Leno's Garage/Big Dog Productions is an extension of Stratasys' Performance Partner Program, bringing together leaders in auto racing, competitive sailing and next-generation supersonic travel to push the limits of AM in these extreme environments. The collaborative group includes such leaders as Team Penske, Joe Gibbs Racing, American Magic and Boom Supersonic.

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# SILICON VALLEY JOB SHOP ACHIEVES SUCCESS WITH PRIMA POWER MACHINES

Article & Photos Supplied by Prima Power



Since A & J Precision Sheetmetal Inc., San Jose, CA, first opened its doors in 1995, the company has earned a stellar reputation as a leading job shop producing high-quality precision parts in the demanding Silicon Valley. Over the 25 years, A & J has evolved from a one-man shop to a facility of 26,000-square-feet and 60 employees. According to Amrik Atwal, CEO, today A & J has 80 active customers in such industries as semiconductors, networking systems, 3D printing, and medical equipment. Atwal and his wife Jagtar run the company with their son Suki, vp operations. “We have many very smart high-tech customers in the Silicon Valley that keep coming up with new ideas and products,” explains Amrik Atwal. “Our challenge has been to keep up with technology to provide the best quality parts to this market.”

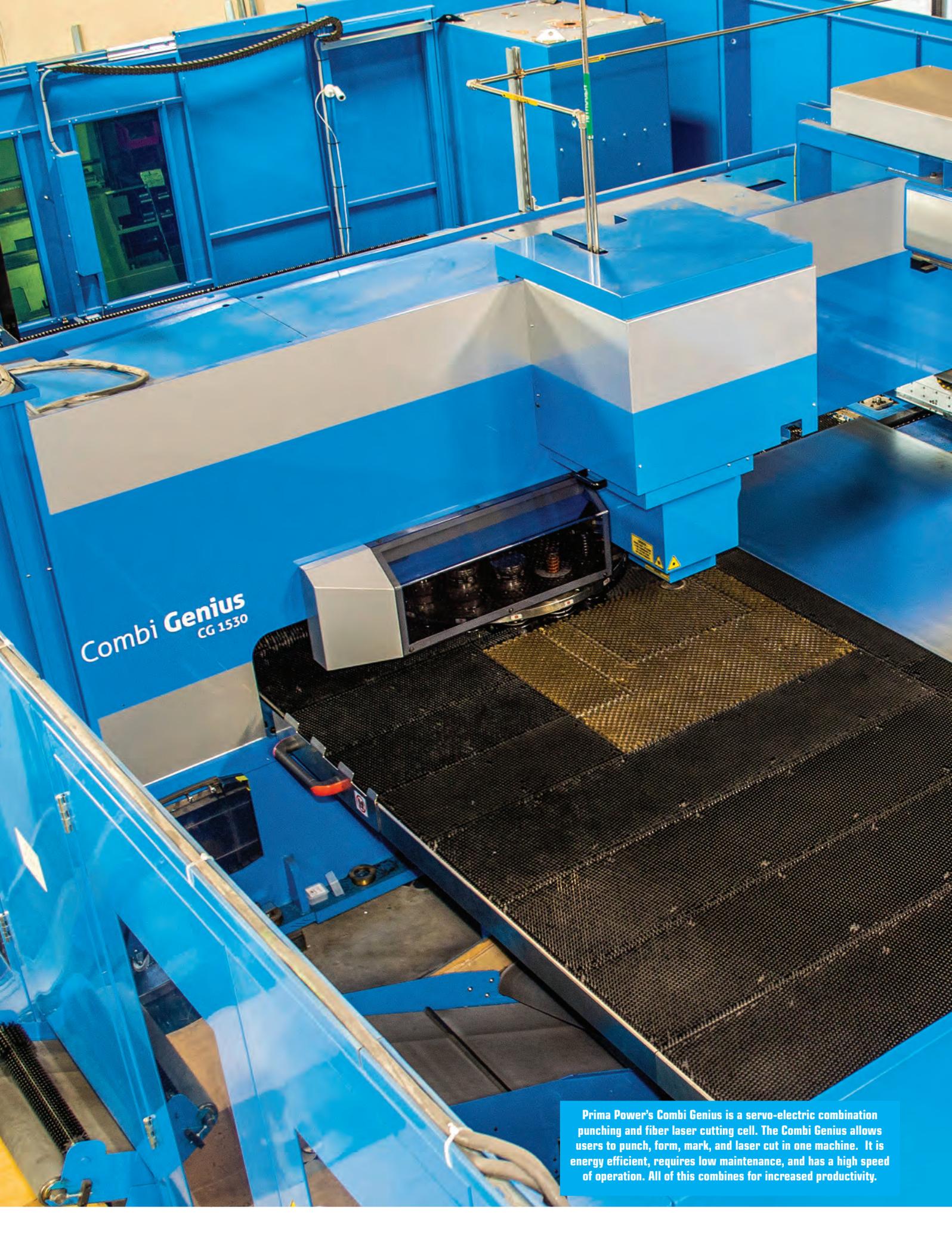
To meet this challenge, A & J has purchased a wide array of fabricating equipment over the years. The company’s relationship with Finn-Power, now Prima Power, goes back to 1995 when the company purchased its first Finn-Power turret punch press, the hydraulic TP2525. This relationship has grown over the years and includes several E5 servo-electric turret punch presses and an E6 Compact Express purchased in 2012. From 2016 to 2018, A & J also purchased three Prima Power eP servo-electric press brakes.

## Prima Power eP Press Brakes

The Prima Power eP Press Brake is based on a rigid O-frame. This ensures tool alignment even under stress deformation since there is no horizontal displacement. The position of the upper beam, in relation to the lower beam, is measured by dual Y1 and Y2 linear encoders that are attached independently of the machine frame and are bed referenced. This design isolates ram positioning accuracy from any deflection in the side frames under load and maintains accurate positioning even during off-center bending operations. Ram repeatability on the eP-Series is  $\pm 0.005$  mm.

## Ease of Programming & Maximum Productivity

An operator-friendly 17” touch screen user interface leads to a significant improvement of data input rates and a considerable reduction in programming time. 2D graphical programming with automatic bending sequencing will assist in making even first-time operators productive. The eP Press Brake features the advantages of high acceleration, deceleration, and fast response times of the servo-electric drive system. Compared to conventional brakes, considerable productivity increase can be reached; reduction of cycle times by up to 30% and more is the reality. “These press brakes have reduced our setup times and have dramatically increased accuracy,” says Amrik Atwal.

A high-angle photograph of a Prima Power Combi Genius CG 1530 industrial machine. The machine is primarily blue with white accents. It features a large, flat worktable with a black metal mesh safety cover. A complex mechanical head is mounted on the table, and a vertical support structure is visible on the right side. The machine is situated in a factory or workshop environment.

Combi Genius  
CG 1530

Prima Power's Combi Genius is a servo-electric combination punching and fiber laser cutting cell. The Combi Genius allows users to punch, form, mark, and laser cut in one machine. It is energy efficient, requires low maintenance, and has a high speed of operation. All of this combines for increased productivity.



Left - As the laser source, a fiber resonator of either 3 kW or 4 kW can be chosen. The optimized cutting head, collimator, transfer fiber, and cutting parameters ensure a very high cutting quality and speed. Right - The Prima Power CNC control is a PC based TwinCat motion control with Rexroth IndraDrive motors & drives. It also features a touch screen operated graphical user interface

### Combi Genius®

Most recently, A & J purchased the Prima Power Combi Genius in 2019. A modern combi machine uses numerically controlled, servo-electric axes, which provides outstanding energy efficiency, low maintenance requirement and a high speed of operation. The cornerstones of its productivity include large tool capacity, the wide range of tools available and easy and fast set-up change. As the best laser power source for the combi machine, the genuine fiber laser has very high efficiency. Its highest utilization degree is conveniently suitable for material thicknesses less than 8 mm. Forming and other auxiliary work stages and ease of use are additional factors reducing the manufacturing cost per component, thus making the Combi Genius machine a productive and competitive manufacturing solution.

### State-of-the Art Fiber Laser Cutting

Combi Genius combines the benefits of this punching performance with the latest in fiber laser cutting, raising the productivity of the highly versatile integrated manufacturing concept to a new level. As the laser source, a fiber resonator of either 3 kW or 4 kW can be chosen. The optimized cutting head, collimator, transfer fiber and cutting parameters ensure a very high cutting quality and speed. An easy cover protection system around the machine is especially designed for the requirements of the combi machine. This provides protection from any scattered radiation of the fiber laser, but allows loading, unloading and maintenance procedures for the operator as easily as possible.

### No Setups

The tooling concept by Prima Power is a time saver – no extra stops for tool changes, no setups – all tools are

active for immediate use. It has customizable turrets, is compatible with different tool manufacturers, has Multi-Tools®, index tools and intelligent ram.

“We discussed purchasing a combi machine for a number of years,” explains Suki Atwal. “We had a couple of jobs that we were running on the turret punch press, and the secondary operations were very time consuming that slowed down the entire process. These large parts were heavy material and our operators were breaking out parts. By the time the machine would run one sheet it would take the people the same amount of time to shake out the parts, deburr them, and prepare them for the next operation. So that was what started the conversation. I began the research and we started looking into other process options.”

A & J chose the Prima Power Combi Genius that was installed in 2019. “Currently, we have two different customers that have high-volume jobs,” continues Suki Atwal. “We use the Combi Genius on unique jobs that also have odd contours and a lot tapping requirements. There are parts that we do on it today that we could not have do before purchasing the Combi Genius.

“We run the Combi Genius 24/7,” adds Amrik Atwal. “During the night and weekends, it runs lights out. We have one job that has three different size taps that we can do very efficiently on the Combi Genius. Previously, we had to do two of the taps by hand...this was very time consuming. It would take 24-30 hours to complete the job. With the Combi Genius it now takes only eight hours. We have the capability of six different sized taps on the Combi Genius. Our quality has also improved. Before we were just punching. Today, with the laser cutting on the Combi Genius there are no micro joints to clean up.”

Another feature that A & J likes about the Combi Genius is the automatic loading and part stacking. The



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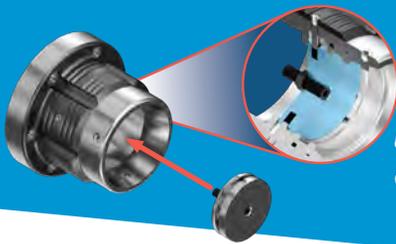
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**Stationary removable backstop included as standard.**

## DEAD-LENGTH MODULAR CHUCKS

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- Taper-to-Taper design provides easy installation with maximum accuracy.
- Stationary removable backstop included as standard.



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The Prima Power eP Press Brake is based on a rigid O-frame. This ensures tool alignment even under stress deformation since there is no horizontal displacement. The eP Press Brake features the advantages of high acceleration and deceleration and fast response times of the servo-electric drive system

LST is a compact high-performance automatic loading and stacking robot. The LST loads the sheets into the machine, picks the parts and sorts them to stacks to be used in the following process steps. The entire working cycle of the machine is automatic. “The stacking has been a great help,” says Suki Atwal. The LST allows our operators to use larger-sized sheets more safely and efficiently.”

### Bottom Line

“We estimate that our ROI on the Combi Genius is 18-24 months,” concludes Suki Atwal. “There are a number of new jobs where the Combi Genius has cut our lead time in half. We are sending these parts to Mexico for assembly. We see another Combi Genius in our future. Over the years, we have been able to grow because we’ve had the right people and the right equipment. We have grown along with the different generations of Prima Power equipment. Every time Prima Power introduced new technology, we realized that it would be beneficial to many of our customers. For the past five years we have purchased a new Prima Power machine each year. Why? Because they do what they are supposed to do -- produce cost efficient, high-quality parts.”



Amrik Atwal (right) A & J's CEO and his son Suki, vp operations, service many high-tech customers in the Silicon Valley. To keep up with the increasingly stringent needs of its customers, A & J has relied on various generations of Prima Power equipment since 1995.

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# SL ENGINEERING



Kathleen Johnson with a part off the Fadal Machining Center

## PRECISION MACHINING

Article & Photos Contributed by *SL Engineering Company*

**S**L Engineering Company, and owner Steve Lee, bring together well over 30 years of experience in precision metal and plastic manufacturing. After owning his shop in Costa Mesa with “a lot of Browne & Sharpe machines”, he transitioned his business twenty years ago to Huntington Beach with a variety of CNC lathes and mills, (and a few manual machines he uses on the occasional requests for special prototype projects from his customers).

The latest addition to SL’s machine line up is a Tsugami B0325U-III, which combined with its Patriot 338 bar feeder, is a total of 30 feet of high producing machinery. The speed and accuracy of parts production

allows SL to quote and deliver high quality parts on time. “With the amount of parts we do for just one customer, this new machine does it all complete, instead of two different machines with hand loading”, says Steve. “One part for our customer is out of 321 Stainless – it’s difficult to machine, it has a lot of nickel in it, and it’s rough on tooling. With our new Tsugami, a part comes out every minute and a half, ready to go”.

In addition, eighteen years ago, a young Sherri Aragon applied for a part time job while her young children were in school. Today, Sherri oversees the entire day to day running of the shop and office, keeping the business running smoothly, so quotes go out, orders come in



**Tsugami B0325U-III combined with a Patriot 338 bar feeder**

and quality parts go out to their customers' exacting standards.

SL's machine line up, in addition to their new Tsugami, includes two Okuma CNC lathes, a Cubic lathe for speed with small parts, and a FADAL CNC mill. While SL makes precision aircraft quality parts, the shop also makes several different parts for the sport fishing industry, which is a serious hobby for Steve.

But at heart, SL is a job shop, turning out commercial and aircraft parts, tube assemblies, connectors, flanges, couplings, and hose fittings.

Steve Lee's business philosophy can be summed up with a quote by Winston Churchill, which is printed on his business cards: "It is no use saying, We are doing our best. You must succeed at doing what is necessary".





# CAD/CAM/CNC Perspective

By: Tim Paul  
Tim.Paul@Autodesk.com  
Instagram: OneEarTim

There is no doubt that the COVID-19 pandemic has changed countless lives and countless businesses. This month I want to highlight a young shop that has been on an impressive growth path and take a look at what they have done to survive the COVID-19 pandemic.



Through my position at Autodesk, I have the great opportunity of getting to know a lot of shop owners and staff from around the United States. After the world started shutting down in reaction to the COVID-19 pandemic, I couldn't help but think about the challenges and stress that landed on the shoulders of all the business owners I've met in my 20 years in this industry. I started reaching out to shop friends to see how they've been holding up in this crazy time. I found myself feeling particularly uncomfortable while hearing how young shops have been doing, because they've been hit especially hard.

One young shop I talked to stood out: Taurus Fabrication in Grass Valley, California.

Early in my time at Autodesk I met Beau Huiskens, owner of Taurus Fabrication. Beau was in the middle of opening his new shop; he had just received two new Haas machines: a basic VF2 and a TL1. In addition to his Haas machines, he had a nice Torchmate CNC plasma table to compliment a well-rounded fabrication shop. Beau saw an industry need for a shop that offered end to end service by bringing machine shop precision to the fabrication shop while also offering engineering services. Beau had a vision and he was on the gas to make it a reality. As Beau's CAM software apps guy, I got to know him fairly well in the early days of his business. The past five years have been an exciting time to watch how fast the Taurus team grew and how quickly the shop expanded.

Over the last five years, Beau hired a strong team of sixteen, including Andy Weber as his CNC/CAM supervisor. I brought Andy into the industry nearly ten years ago when I managed a machine shop for a large aerospace company. Andy's skills have been pushed with the diverse work, quick turnaround schedules, and consistent equipment upgrades at Taurus.

It's hard not to be impressed after walking through Beau's shop today. Since opening his shop, Beau has made significant capital investments to grow his business. Additions in the machine shop include a Haas UMC-750SS, a Haas VM6, a Haas ST30SSY and a Haas DS30SSY. As impressive as the machine shop expansion has been, the fabrication shop's equipment expansion is arguably more impressive with the additions of a variety of AMADA equipment including a flatbed laser, an 8-axis press brake, and a very impressive Amada Ensis 3015 fiber laser that has a modular system allowing for a quick switch over from flat work to rotary tube work.

What does it take to start and grow a manufacturing shop in California that is healthy enough to not crumble to the ground when the world shuts down from a pandemic? If I had all the answers, I'd probably be growing my own shop. I may not have all the answers, but I have made a lot of observations over the years. I've picked up some trends that are pretty consistent with successful shops and wanted to share some that stood out after recently catching up with my friends at Taurus Fabrication.

While talking to Beau, he said a few things that grabbed me. Specifically, his solid belief in the importance of knowing your differentiating value, adaptability, decision making, and investing in yourself.

**Differentiating value:** Beau's whole vision started with a differentiating value proposition – something to set his shop apart from others. He wanted to build an end to end shop that added value from engineering services through to bringing machine shop precision to the fabrication shop. This vision proved itself in short order with success for customers like Tesla who were looking for quick turn deliveries on precision fab-





ricated assemblies that required multiple machining and fabrication processes. Their end to end service model continues to be the backbone of Taurus Fab's operations and expansion as they diversify the industries they serve.

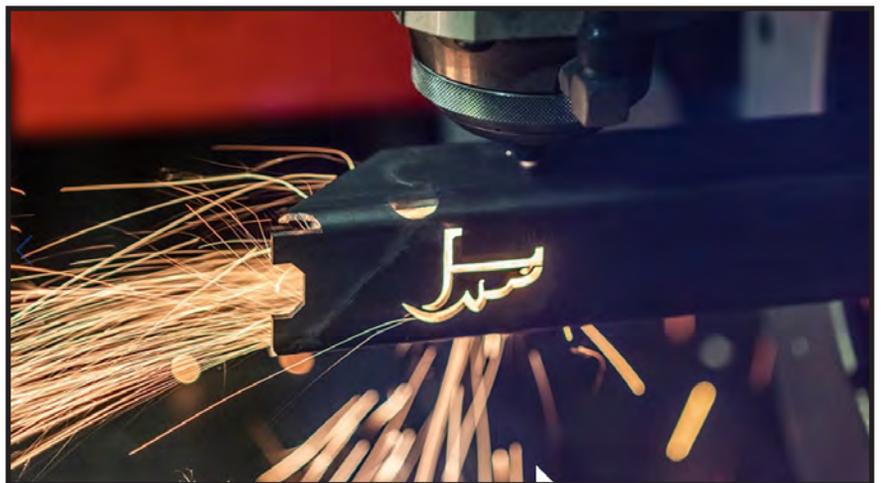
**Adaptability:** Generations of manufacturing companies have found great success by developing a process, refining that process, and then repeating that process over and over. Pushing their skills and capabilities to 5-axis machining is one of many examples of the Taurus team's adaptability to grow their business. With so many global factors affecting supply, demand, regulations and the work force, I think adaptability is more important now than ever before. Our kids are learning the hard reality of adaptability now as the COVID-19 pandemic shut schools down, leaving schools scrambling to switch to a distance learning model. Many American manufacturers flexed their adaptability by quickly repurposing their manufacturing facilities to produce health care equipment and supplies. The team at Taurus Fab have demonstrated a consistent ability to adapt to new challenges as they've grown their business. Shops who remain overly focused on specific industries, or specialized workflows are the shop that are most likely to come and go with industry trends. In contrast, the shops that commit to an adaptable culture are more likely to survive industry and global challenges.

**Decision making:** Going all the way back to my first meeting Beau when he was first evaluating CAM software, it was obvious that he had clear requirements and was able to make a decision efficiently and confidently. I asked Beau how he goes about making decisions on some of the big investments he has made. He essentially said once he decides he wants to add a capability, he evaluates what is available and make a decision. He also said he doesn't let himself get caught up in over-evaluation. His response reminds me of the phrase "paralysis by analysis". If your goals are clear and evaluations are honest, decisions are often not overly difficult to make. Unfortunately, all too often people don't set clear goals or make honest evaluations. An example of

a dishonest evaluation in a machine shop could be someone's emotional desire to own a high-end 5-axis machine without any hard evidence it would do profitable work. Similarly, it's not uncommon to see a shop miscalculate a new machine or process out of the fear of the unknown. Beau seems to have a solid grasp on seeing opportunity, setting goals or requirements, and making honest evaluations that lead to clear decisions.

**Invest in yourself:** You don't start a business without deciding to make an investment in yourself. Five years ago, Beau made the decision to leave a well-respected and established four-wheel drive component and service business partnership with his brother to invest in himself and start a manufacturing-specific business. In the five years he's run his new business, Beau has aggressively invested not only in equipment but also in talented employees and their training to get the most out of all parts of this shop. I asked Beau how he decides when to start evaluating new capability or capacity and he smiled and replied, "It's like the field of dreams. Build it and they will come." He explained that it is often not easy to pencil out a clear ROI (return on investment) on specific equipment, but it can be clear that the overall shop profitability goes up when the overall shop capability goes up.

**COVID-19 Impact:** The true impact of the COVID pandemic will take years to fully assess. Beau and his leadership team's response to the pandemic fall out is an impressive example of how they run the business. With their biggest customers putting a freeze on orders and accounts payables it would have been a predictable reaction to close the shop down and wait for things to get better while hoping the COVID shutdowns would be short. Hope is not a common practice of successful business leaders and it clearly wasn't the plan for Beau and his team. Beau's initial actions were to adjust shifts – including paying some of his team to stay home – reducing the employee to square foot shop ratio to 1000 square feet per employee. They were also fortunate to be able to keep the shop moving by leveraging newer customer relationships in the food processing and transportation industries that were less impacted by the pandemic. These are just a couple examples of Beau's leadership team's ability to be adaptable, invest in their people, and make decisions that I believe will set them up for many years of growth and success.



# Industry News



## Hanwha Machinery West Tech Center Opens

Hanwha Machinery America Inc. opened a new technology collaboration and training facility in Cypress, CA, just south of Los Angeles.

The new Tech Center enables Hanwha Machinery to bring local customers for the latest Swiss machines and will also serve as a venue to support training & demonstration events, on and offline.

The new facility will function as a show room with business partners to serve local customers closely.

The premises are originally Hanwha Techwin, a sister Hanwha company specialized in semi-conductor chip mounters will share for machine tool show room of collaborative and demonstration space.

“We are excited to introduce this new show room tech space which will place us to serve better and closely West coast customers” said Nick Korfias, west sales manager, Hanwha Machinery. “It will allow us to work closer with complementary companies to develop and expand new equipment. As a company, we are very active in the developing immersive medical industries, specializing in implants and orthopedics.

## Smart Machine Tool Names Selway Machine Tool Company as Sales Partner for Southern California

Smart Machine Tool has announced its new strategic partnership with Selway Machine Tool Company. “Headquartered in Union City, CA, Selway Machine Tool Company is the West Coast’s leading machine tool and advanced automation solutions provider,” said a spokesperson. Selway’s Southern California office is located in Ontario, CA.

Selway Machine Tool Company will introduce and support the full range of Smart Machine Tool products to many sectors, including, defense, aerospace, military and energy markets.

“Selway Machine Tool Company is the perfect choice to promote Smart Machine Tool products in the Southern California region,” said a Smart spokesperson. “We welcome Mark Selway and his team at Selway Machine Tool Company as our new business partner.”



management group under the tutelage of Paul LeTang, while launching new press brake products to the North America market.

Later in 2015 through mid-2018, Marcel was a Bending Applications/Bending Automation specialist at both Bystronic in Gotha, Germany and later at Bystronic Inc. in Elgin IL. In May of 2018 Marcel was appointed to the position of product support manager overseeing the entire applications group at Bystronic Inc. With his latest appointment, Marcel supersedes Paul LeTang who recently retired.

## Bystronic New Product Manager Press Brakes/Bending Automation

Bystronic announces the appointment of Marcel Fiedler to the position of product manager press brakes and bending automation.

Marcel began his career with Bystronic in 2015 as a member of the product management group for Bystronic Maschinenbau GmbH, Gotha Germany. In 2015, while in the USA, Marcel worked with the USA product

## Starrett Announces Key Sales Manager Appointments

The L.S. Starrett Company, has recently announced new sales management appointments in North America. Michael Connor has been named strategic accounts, sales manager in North America; and John Hibbard has been named regional sales manager West - U.S.A., industrial products.

Mr. Connor brings professional sales and marketing experience to his role at Starrett including man-

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# Industry News

aging industrial, construction and retail distribution channels in North America. Most recently, he directed sales/marketing efforts at a diamond tool company and at a New England supply company. Prior to this, he had an active, ten-year progressive tenure at Apex Tool Group, formerly Danaher Tool Group. Connor and his wife reside in Winchendon, Massachusetts.

For almost 30 years, Mr. Hibbard has held management and business development roles in industrial distribution and manufacturing in the United States. His consistent career progressions in the industrial space include sales to end users, branch office management, overseeing corporate operations, and directing sales and business development efforts. Most recently, he was with PFERD North America, and prior to this he was with Stellar Industrial Supply for over 24 years. Hibbard and his wife reside in Kennewick, Washington.

## New Executive Leadership Added at Athena

As part of its growth and industry commitment, Athena and the iTSpeeX team have added full-time executive leadership in the form of Jay Requarth as vice president of Technical Development and Jerry Rex as chief revenue officer.

Requarth brings with him a solid background of over 20 years in IT, software development, data modeling, project management, continuous improvement and technical leadership. Rex has served in a variety of roles in the manufacturing industry over the last four decades, including apprentice, engineer, sales, sales management and president/CEO.

Athena is a universal voice-operated assistant technology specifically designed for manufacturing work. With

Athena, an operator can control a machine using simple voice commands. Athena can complete tasks, from warming up the machine to running a job, as well as deliver status reports,

calculate key measurements and coach operators on many of the processes they need to execute throughout the day.

The advertisement for VERICUT CNC Machine Simulation Software features a large central image of a CNC machine tool cutting a blue and purple part. The text 'VERICUT' is prominently displayed at the top left, with 'CNC Machine Simulation Software' below it. A yellow callout box on the right contains the text 'CNC Machine Simulation, Verification, & Optimization Software'. At the bottom, three smaller images show different simulation scenarios, including one with a red starburst that says 'CRASH DETECTED!'. The main slogan 'SAVE TIME • SAVE MONEY SAVE YOUR MACHINES' is written in large white letters. The bottom right corner includes the CGTECH.com logo and contact information.

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## Vision Engineering Opens West Coast Tech and Training Center

Vision Engineering, a designer and manufacturer of high quality patented digital and optical visualization systems, has opened a new technology collaboration and training facility in Irvine, CA. The new Vision Engineering Tech Center will serve as a venue to support training and demonstration events, both online and offline.

The new facility will function as a collaboration hub with business partners from a range of high-tech organizations to develop leading edge products and sub-assemblies to serve new digital and optical system needs for a range of emerging technology

markets.

The premises will provide 2,700 sq. ft. of collaborative and demonstration space fully equipped with Vision Engineering's latest immersive, optical and digital products and components, including the newly launched Deep Reality Viewer (DRV) microscope, an ultra-high definition glasses-free 3D stereo viewing system. The Tech Center has full 5G to allow Vision Engineering to show the existing real time inter-site communication capabilities.

Mark Curtis, managing director, Vision Engineering, said, "We are excited to introduce this new collaborative tech space, which will place us at the center of one of the most exciting technology hubs in the world. It will allow us

to work closer with complementary companies to develop and expand new digital and optical technologies. As a company, we are very active in the developing immersive VR/AR/MR space, specializing in projecting real-time information to Industry 4.0, IoT and 5G, and we are very keen to partner with like-minded tech companies on the vibrant West Coast."

## Arch Global Precision Acquires Mmi Sonora

Arch Global Precision, a portfolio holding of The Jordan Company, has acquired Mmi Sonora, a specialized contract manufacturer of precision machined components. Capstone Head-

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# Industry News

waters, a middle market investment banking firm, advised MMi Sonora on its acquisition.

Founded in 1979 and located in Sonora, CA, MMi manufactures high-precision components and assemblies and has expertise in providing precision manufacturing and engineering solutions for the rapidly expanding robotic-assisted surgical systems and instruments market.

MMi is a single-source provider for design and engineering support, CNC turning, gearing, milling and Swiss machining services with quick-turn and prototype offerings in addition to high-volume long-term production.

The company is particularly adept at geometrically complex parts, applications that require exacting tolerances ( $\pm .0001$ ) and components that require multiple machining processes. These advanced competencies are highly complementary to the existing precision machining capabilities at Arch locations across the country, and the move bolsters ARCH as a growing supplier to several end markets.

## Mastercam is New Strategic Partner of NCATC

Mastercam, CAD/CAM software developed by CNC Software, Inc., announced that they are the newest strategic partner of the National Coalition of Advanced Technology Centers (NCATC). Founded in 1988, the NCATC supports a network of higher education and industry-led resources that advocates, advises, and promotes the use of advanced technology applications to enhance economic and workforce development programs and services.

“NCATC is a cutting-edge organization in workforce development. It makes perfect sense to welcome Mastercam as a new Strategic Partner,” says Toni Neary, director of education, Morris Group – Haas Division,

NCATC Board Member. “Working through our network and annual conferences, we look to bridge the skills gap and appreciate the insight Master-

cam can bring to conversation.”

“We are excited to be a Strategic Partner of NCATC and honored to be the first CAD/CAM company in a

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group that includes the best-in-class industry partners like Haas, Verisurf, Sandvik, AMT, and so many others,” says Peter Mancini, education product manager. “Many of our education customers are members, and we want to increase the national awareness of these Advanced Technology Centers and their positive impact on the country’s competitiveness and economic growth.”

## Techniks Tool Group and Mazak USA Announce New Partnership.

Techniks Tool Group announces that they have established a partnership with MAZAK USA to offer tooling certificates which are now available as an accessory option with new machine tools. MAZAK dealers may now add Techniks Tool Group tooling certificates to machine quotes by using MAZAK’s i-Quote system. Tooling certificates may be redeemed by MAZAK customers directly from Techniks Tool Group for any solutions available from Techniks or Parlec including all tool holding, work-holding, boring and even Turbo-Turn specials.

MAZAK customers will appreciate the convenience of being able to redeem tooling certificates as needed even though they may not know exactly all the tooling they will require when ordering their new MAZAK machine. Greg Webb, TTG’s EVP of Business Development said “We have had a great relationship with MAZAK, and we are excited to build on that relationship with this new commercial agreement. With the largest SKU offering in the business we are looking forward to providing solutions to customers when they are ready to tool up their new MAZAK machines.”

Mr. Greg Papke VP of sales and marketing said, “MAZAK and Tech-

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# Industry News

niks Tool Group are both passionate about customer service and we are looking forward to our new partnership.”

thinking in the manufacturing industry. Their industry experience and vision will be invaluable as AMT continues to develop services and products to meet

our members’ needs and to advance the adoption of transformative technologies in the manufacturing ecosystem.”

## Newly Elected to the AMT Board are Glynn Fletcher and Blake Consdorf

The Association For Manufacturing Technology Board of Directors, which represents more than 600 builders and distributors of machine tools, manufacturing machinery, and related products, on April 2 announced that it elected its 2020-2021 board of directors at its annual business meeting.

Newly elected to the board were Glynn Fletcher and Blake Consdorf for three-year terms effective April 2.

Glynn Fletcher joins the AMT Board with more than three decades of experience in the manufacturing industry. He currently serves as President of EOS North America Inc. Before joining EOS in 2015, Fletcher served as president – Americas for George-Fischer. Earlier in his career, he served as national sales manager of Cincinnati Milacron Ltd.

Blake Consdorf brings more than two decades of experience in the manufacturing industry and currently serves as the President of Bourn & Koch Inc. Before joining Bourn & Koch, Blake served as president and CEO of Felsomat USA, Inc. Earlier in his career, he served as division vice president and in several other executive positions at Acieta LLC, and held executive positions at Ellison Technologies Automation and Wes-Tech Automation. Consdorf also serves on AMT’s Automation in Manufacturing (AIM) Committee.

“We are very pleased to welcome these accomplished leaders to the AMT board of directors,” said Doug Woods, president of AMT. “Combined, they bring more than half a century of strategic leadership and innovative

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# Industry News

## Kitagawa NorthTech Acquires Tecnara Tooling Systems' Core Product Offerings

Kitagawa NorthTech, Inc. announced that it has acquired Tecnara Tooling System's principal product lines through strategic acquisition. The two specific product lines in the purchase include Kitagawa NC rotary tables and exclusive distribution rights to MST yellow angle head products.

Kitagawa NorthTech will be immediately stocking inventory of Kitagawa rotary tables and MST products to support its customers throughout North America.

"Kitagawa NorthTech and Tecnara Tooling Systems have shared a suc-

cessful sales and business partnership for over 25 years, which helped facilitate the acquisition," said a spokesperson.

Based in Santa Fe Springs, CA, and established in 1979, Tecnara Tooling System has been the exclusive distributor of Kitagawa branded NC Rotary Tables in the USA since 1995. Tecnara Tooling, in partnership with MST Corporation, developed the Yellow Angle Head product line and has been exclusively representing this line for the past 30 years.

In addition to the angle heads, Tecnara represented MST's family of shrink-fit tool holders and 5-axis workholding, both of which are included in the acquisition.

Tomo Yamamoto, president of Kitagawa NorthTech, said, "Obtaining the Kitagawa NC Rotary Table product line was a strategic and logical decision to consolidate all Kitagawa brands under one organizational umbrella at Kitagawa NorthTech, Inc. Now we truly offer North American customers comprehensive turn-key workholding solutions for both turning and milling applications."

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# Industry News

## HEIDENHAIN Partners with Applied Motion to Expedite New Ventilator Project

In a collaborative effort to support the healthcare industry during this COVID-19 crisis, HEIDENHAIN is working with Applied Motion Products, Inc. to expedite critical components to a large manufacturer of ventilators. Now in various stages of delivery, the Applied Motion Products' StepSERVO Integrated Motors equipped with HEIDENHAIN's RENCO encoders are making their way into the production of 5,000 new life-saving medical devices.

"There is now an aggressive sched-

ule in place to move these products faster than usual," said Julie Jennings, director of manufacturing at applied Motion Products. "And I have to thank HEIDENHAIN for their help and effort in enabling us to meet our deadlines and making a difference in our world as we work together to fight this crisis."

StepSERVO Integrated Motors combine a proven integrated motor design with a high-resolution incremental encoder and closed-loop firmware. This combination provides users with the ability to create peak torques up to 50% higher than open loop motors, as well as operate cooler and quieter – especially important to ventilator manufacturers. The incremental RENCO

RCML 15 rotary encoders used in the design are compact and reliable and continue to provide easy-to-integrate motion control performance.

"It's incumbent upon us all to do whatever we can to fight this pandemic," said Tom Wyatt, HEIDENHAIN's director of communications/marketing. "And we are happy we can play even a small part."

## DGI Supply Set to Acquire Production Tool & Supply of Rockford IL

DGI Supply announced in late May that it has executed agreements to ac-

## TURNING IN THE NORTHWEST???



# Industry News

quire certain assets of Production Tool & Supply of Rockford, Illinois. DGI Supply has hired the Production Tool & Supply employees and will continue to operate under the PT&S brand for its customers in the Rockford area.

DGI Supply plans to combine its inventory in Loves Park with PT&S' Rockford location 9 miles away. Bill Henricks, DGI Supply chief marketing officer said "The combined inventory will improve service levels and broaden the product offering that PT&S provides its customers. The COVID-19 pandemic has given us an opportunity to amalgamate these two great companies and retool our product and services to get our customers back to work without disruption."

DGI Supply is a full line industrial distribution company which represents over 1,500 brand names in the industry and was recently named in Industrial Distribution magazine's Big 50 report. In business since 1927, DGI Supply has 25 branches in North America.

## Starrag US Increases Parts Availability and Delivery Times by Relocating Warehouse near Kentucky Headquarters

For today's manufacturers, spare parts availability is a key factor in the purchase decision of machine tools; particularly high end machine tools. Starrag believes its customers should confidently expect access to critical parts whenever the need arises.

As Starrag's US market has expanded to include more machines and systems, the decision was made in mid-2019 to move the parts warehouse from Dallas, TX, to a site within ten miles from Starrag's Hebron, KY, headquarters, offering greater logistic control of their spare parts inventory.

Their new location, positioned fifteen minutes from Cincinnati/Northern



Kentucky International Airport (CVG), also will help ensure prompt parts delivery to North American customers.

In addition, this relocation brings the Starrag parts warehouse closer to their special tooling and equipment warehouse, located at the Hebron Headquarters. Many machine installations and repairs not only need parts but also require special tooling. Having these warehouses within close proximity allows all parts and necessary tooling to be combined into one shipment, giving customers in North America access to comprehensive solutions without delay.

Starrag implemented processes for warehouse ramp-up to be ready on time for new machine configurations sold in North America. A monitoring system is in place to visibly record each step of a part order, from the customer's first request until delivery to the customer's door. This data is analyzed quarterly and used for continuous improvement. This information helps accurately adjust stock levels to meet customer demand, especially in urgent cases where speed and availability to deliver spare parts quickly is critical

## DMG MORI Machines Now Available for Rent

DMG MORI has launched DMG MORI Capital, INC., a machine tooling rental company that offers access to DMG MORI machines via customized, short to medium term rental agreements. Machine rental allows

customers to be flexible with cash flow while addressing current manufacturing needs.

New rental agreements range from 12 to 72 months and include a precision protection plan and biannual maintenance performed by a DMG MORI service team member.

DMG MORI's CMX 50 U, CMX 1100 V, DMU 50 3rd Gen., NHX 4000, NHX 5000, NHX 5500, NHX 6300 and NLX 2500 SY are available to rent.

## API Launches Virtual Showroom

In addition to developing global studios for live web demonstrations, metrology equipment supplier API has launched an online virtual showroom to support its customer's growing need for online support and resources. The virtual showroom is meant to be a one-stop information portal for API's products and services, providing users with virtual demos, technical videos, motion brochures and more. The resource also enables users to download more information, request quotes and contact API directly by phone or email.

"The business world requires a new paradigm," says Joe Bioty, president. "In-person, onsite support will always be essential, and will always be a cornerstone for API, but decisions happen at lightning speed. There isn't always time to wait for someone to come to you. The virtual showroom takes API directly to the customer, putting all of the information about our products and how we can support all manufacturing processes at their fingertips."

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# Industry News

## High-Speed Machining of Small and Mid-Sized Aluminum Components- Mazak

Mazak offers the HCR-5000 horizontal machining center (HMC). The 5-axis machine provides efficient, high-speed machining of small and mid-sized aluminum components.

“Designed to provide the aerospace and semiconductor/high-tech industries and others with numerous technological innovations, the HCR-5000 offers, in addition to 5-axis machining, a range of high-speed spindle options, from a standard 12,000 RPM spindle up to a 30,000 RPM version, each of which feature an integral spindle/motor and core cooling that minimize thermal growth for higher accuracy,” said a company spokesperson. The machine’s auto tool changer (ATC) features a standard 40-tool magazine with options for 80, 120 or 160 tools.

Mazak also offers the HCR-5000 with a two-pallet changer or the company’s Multi-Pallet Pool (MPP) automation solutions. The machine also easily integrates into a Mazak PALLETECH Automation System. With two-pallet changing, shops can load/unload parts on one pallet while the HCR-5000 continues to work uninterrupted on the other pallet.

As an expandable system, the MPP offers optimal flexibility by allowing shops to initially incorporate the stocker with a few pallets and grow the system as production needs change.

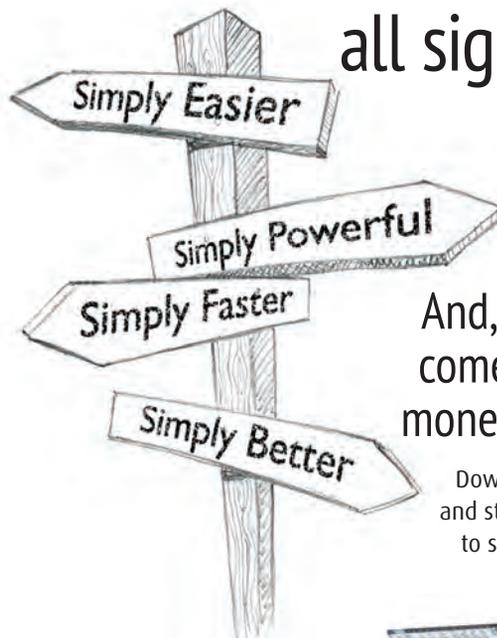
Offering full automation and production flexibility, Mazak’s PALLETECH is engineered to bring high levels of efficiency to high-mix, low-volume production as well as high-volume operations. Fully compatible with the company’s range of HMCs—including the HCR-5000—and multi-tasking machines, the PALLETECH is available in single, double and triple level pallet stocker configurations. PALLETECH easily expands along with a shop’s growing business, with a

range of options that can accommodate up to 16 machines with 240 pallets and eight loading stations.

The HCR-5000 is equipped with Mazak’s MAZATROL SmoothX CNC

that provides operators complete control of the machine. SmoothX enables 3D part program visualizations via its touchscreen to further improve ease of use in terms of programming and program checking.

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# New Products

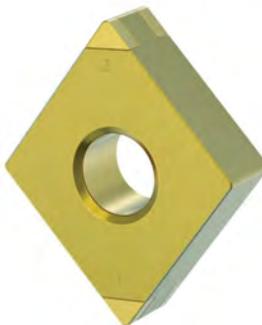
## Inserts for Hard Turning —Kennametal

Kennametal's KBH10B (45% PcBN content) and KBH20B (60% PcBN) mini-tip are available in two grades, four shapes, a variety of corner radii and twice as many cutting edges per insert.

Kennametal offers hard turning KBH10B and KBH20B PcBN grade double-sided inserts for materials up to 65 HRC. The grades are specially designed to deliver higher productivity and longer tool life when turning tool steels and other hardened materials.

"Polycrystalline cubic boron nitride (PcBN) mini-tipped inserts

have long been recognized as a great option for reducing part cost when turning hardened steel components," said a company spokesperson. "Kennametal's PcBN inserts improve upon that value proposition by delivering increased productivity with a lower cost per part."



## New Capto Toolholder and Insert —Walter

Walter has added Walter Capto toolholders and insert widths to its Walter Cut MX grooving system. According to the company, Capto toolholders feature enhanced rigidity and modularity, while the tapered polygonal shape handles both torsional and bending forces with ease. This interface can be used for lathes and for turning/milling centers.

With the new Walter Capto monoblock tools (C3-C6), the MX system can now also be used on machines with Capto interfaces. In addition, new part-

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# New Products

ing blades are introduced to work with automatic lathes and multi-spindle machines. Walter has completed the range with new grooving inserts and toolholders for larger insert widths. Where previously only 0.80 mm to a maximum of 3.25 mm were possible, the insert width now ranges up to 5.65 mm—including the common dimensions of 4 mm and 5 mm. Maximum cutting depth is 6 mm.

The Walter Cut MX grooving system uses dowel pin location to prevent what the company reports could be improper assembly of inserts into the holders.

## Access Series 5-Axis Machining Centers —GROB Systems

GROB Systems announces its new Access Series 5-axis machining centers, which promise the best machining quality for individual and series production while offering cost-conscious entry into GROB technology.

The Access Series machines, featuring basic models G350a and G550a, are backed by GROB's more than 90 years of experience with machine tools and are built in the USA.

Both models also include a rigid horizontal spindle axis optimally positioned close to the operating point



with guaranteed maximum accuracy and precision. This combination, with the unique upside-down machining, allows an excellent chip fall and reduces the heat load in the component. The models offer the longest z-axis stroke and largest swivel range on the market

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# New Products

for rotary axis. The linear guidance system of the reference axis can be optionally equipped with a temperature-controlled cooling function, and a wide-opening work area door ensures safe access and ergonomic working, with maximum machine safety. Plus, large safety glass provides a perfect view of the machining process. The Access Series is compatible with Siemens and HEIDENHAIN control systems.

## Hard Jaws with Diamond-Shaped Serrations —Dillon Manufacturing

Hard jaws from Dillon Manufacturing, Inc. feature diamond-shaped serrations for increased pull-down effect. The aggressive serrations on the gripping surfaces are also suited for cast parts, scaly parts or parts with imperfections.

The jaws are manufactured of 8620 steel and case hardened with precision ground locating surfaces. They are black oxide coated for corrosion resistance. The hard jaws are available in one-step or two-step sets and are reversible for O.D. or I.D. chucking. Only one set is necessary to cover a wide clamping range.

Dillon hard jaws are available in standard sizes from stock and in different mounting configurations, including serrated, T&G, Acme and square serrated key types, to fit all brands of chucks.

## Guided TA® Drill for Deep Hole Moldmaking Applications

### —Allied Machine

Allied Machine & Engineering, a global manufacturer of holmaking and finishing cutting tools, offers the Guided TA drill for moldmaking applications.

Moldmakers often use Guided T-A

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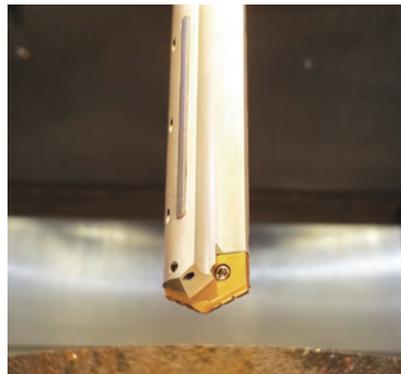
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# New Products

drills to produce water lines which include intersecting holes in varying diameters depending on the size of the mold. Holes are drilled to allow chilled coolant to flow through the mold blocks and back out to be re-chilled.

There are two major hurdles for moldmakers of large components: tool failure in deep cross-holes and successful chip evacuation. Mold waterlines include intersecting channels that often connect off-center or at non-perpendicular angles. The interrupted cuts can cause premature tool failure if the drill cannot produce balanced cutting forces in this type of cross-hole machining. In addition, deep holes can present issues with proper chip formation and removal. It's imperative to



form small chips that can be evacuated successfully from such long channels.

Allied Machinery reports the Guided T-A drill addresses both of these challenges. The drill minimizes the clearance between the holder and blade

and maintains increased stability in deeper holes. It incorporates guided wear pads for straightness and stability and two adjustable Torx PLUS screw pins for TIR reduction through a simple diameter adjustment. These details enable the Guided T-A to drill up to an 84" depth of cut while producing balanced cutting forces and small chips for optimal evacuation.

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# New Products



## Price Reduction on Select ROCTEC Abrasive Waterjet Nozzles —Barton

Barton International, a global leader in waterjet abrasives, has announced a price reduction on select

Kennametal ROCTEC\* abrasive waterjet (AWJ) nozzles.

“For more than three decades, ROCTEC has been the most trusted and widely used brand of waterjet nozzles,” says Barton International Waterjet Parts product manager, Stephen Podnorszki. “Barton has lowered prices on many ROCTEC 100 and ROCTEC 500 nozzles for Flow, Jet Edge and KMT equipment saving customers money on this critical wear component.”

Podnorszki noted these ROCTEC AWJ products are made from a unique tungsten carbide material and offers consistent and long service life. It has superior wear resistance and the high

hardness Vickers 25.5-27.7 kg/mm<sup>2</sup>. The company reports it offers longer service life than ordinary tungsten carbide and is made in the USA.

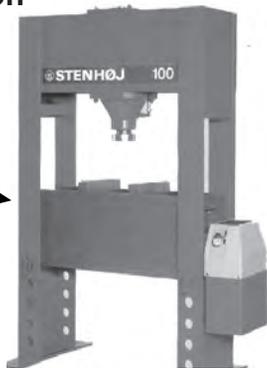
## RFP Fringe Probe Increases Flexibility of REVO 5-Axis System —Renishaw

Renishaw Inc. outlines the advantages of its RFP fringe probe, designed for use with the REVO 5-axis measurement system on coordinate measuring machines (CMMs).

The RFP probe increases the multi-sensor capability of the REVO system

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# New Products



by adding non-contact structured light inspection to the existing product range, which now offers five different probe families, each specifically designed to maximize the advantages

of 5-axis motion and infinite positioning. All REVO system probes can be changed automatically and include tactile scanning, touch-trigger, surface finish, non-contact structured light and vision probes. They are all used within a common coordinate reference frame, providing the choice of an optimum tool to measure multiple features all on a single CMM platform.

The RFP projects a fringe pattern onto the part surface and the probe's camera captures the variation in fringe pattern to build a point cloud of 3D surface data. The data cloud is then evaluated by the 3D metrology software to deliver the inspection results.

The company reports the RFP fringe probe does not require reference

markers to stitch together data from different areas, as this is done automatically by the REVO system. Coating the part in a matt substance is also unnecessary thanks to the automatic exposure compensation of different surface colors, textures and reflectivity, ensuring optimal data results.

Two new software tools provide easy-to-use inspection planning and digitizing. The RFP inspection planner is a tool for path planning and generating DMIS part programs from CAD, while the RFP digitizer app guides users around parts without models, collecting data as part of a reverse engineering process.

The RFP probe is automatically and repeatably interchangeable with

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# New Products

all other probe options available for the REVO system, so the data from each sensor shares a common datum reference.

## Expanded Line of High-Speed Production Machines —JTEKT Toyoda Americas

JTEKT Toyoda Americas Corporation and Ace Micromatic Group have formed a strategic alliance to offer a complete range of high-speed production machines. JTEKT Toyoda Americas has signed a long-term agreement

to be the exclusive importer of the entire Ace Micromatic machining line.

Immediately, Toyoda will be introducing several new specific machine classes to its production product range. Among these machines is the Gemini XL twin spindle vertical machining center (VMC). The twin spindles, combined with fast linear guideways and traverse rates of 1,968 IPM (50 m/min), make the Gemini XL series best suited for industries with high-volume production.

The MCV450XL VMC, another machine from the production line series, is equipped with an integrated rotary pallet changer with factory integrated overhead hydraulics, a 12,000 RPM direct drive spindle and Fanuc



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# New Products

able is the DTC-400 XL high-speed drill tap machining center. "This compact, powerful machine is loaded with high-speed spindle options, up to 24 tools and rapid feedrates up to 2,362 IPM (60 m/min)," said a company spokesperson.

"We are thrilled to provide our customers with these new solutions for high production manufacturing," said Graham Roeder, Toyoda national product manager.

Toyoda will stock machines as well as parts inventory. Sales and support are provided by JTEKT Toyoda Americas Corporation.

## Universal Spindle Milling and Gundrilling Machines —Unisig

Unisig introduces two new models to its successful USC-M series – the USC-2M and USC-3M. The new 2M/3M machines handle the rigors of both milling and gundrilling metals of all types, but do so with a single, powerful universal spindle. Both models feature rigid, robust frames along with their universal spindles for the toughest applications.

The new USC designs emphasize rigidity and stability. With CAT 50 spindles up to 40 horsepower, these machines deliver high-torque milling

capabilities for aggressive metal removal and shorter cycle times.

Thanks to the single, universal spindle designs of the USC-2M and 3M, Unisig reports that mold makers will significantly reduce changeover times when switching between gundrilling and milling operations. Additionally, a 60-position automatic tool changer helps further minimize nonproductive time. Both models have the capability to run oil and water-soluble coolant as well. The USC-2M and 3M feature fully enclosed machining envelopes that are installed above the shop floor, allowing customers to avoid below-ground installations.

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# New Products

## New Generation D Series Vertical Machining Centers —Romi

Designed and built based on extensive customer research, the new generation Romi D Series vertical machining centers offer users higher productivity, robustness, and precision. Like all Romi machine tools, they are built with Romi made monoblock cast iron beds that absorb vibration and allow consistent production of highly precise parts.

In the USA, Romi offers three models, the D 800, the D 1000, and



the D 1250. All three are equipped with big-bore 40-taper direct drive spindles with speeds of 10,000 or 15,000 rpm. Romi reports that direct drive is low maintenance and improves accuracy

and repeatability, while the big-bore 40-taper increases stiffness and allows increased depth of cut during machining.

The machines are equipped with thermal compensation, with sensors, to improve precision. Each model is equipped with a Fanuc 0i-MF i-HMI CNC with 15" touchscreen, and a high speed and high quality package.

Linear roller guides on all three models facilitate feed rates up to 1,575 inches / minute which allows for precise and fast acceleration and positioning. They also increase robustness during machining and load capacity (part weight) on the table.

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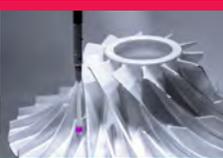
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# New Products

The three models, D 800, D 1000 and D 1250 have a robust net machine weight of 20,500 lbs, 21,800 lbs and 23,000 lbs respectively, and a maximum machining volume of 31 x 24 x 25 inches, 40 x 24 x 25 inches and 50 x 24 x 25 inches respectively. Each model is equipped with a 30 tool automatic vertical tool changer.



flexibility of complex component manufacturing. The ATC-style Nakamura JX-250 features NT smart cube tool spindle. The 12,000 RPM tool spindle permits maximum part length on the left and right spindles, including when the horizontal tool spindle and lower turrets are in the cut.

Independent right spindle guide-

## New High Precision Nakamura Multitasking Machining Center

### —Methods Machine Tools

Methods Machine Tools, Inc., has

introduced the Nakamura-Tome JX-250 high performance multitasking turning center which offers a large machining area envelope for high precision milling and turning of complex parts, along with a unique twin lower turret configuration allowing ultimate

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# New Products

ways on lower turrets minimize the distance between the spindles at 11.8". A single or twin lower turret design is offered with overlapping travels and Y-Axis box guideways are standard. It provides up to 168 tool stations.

The Nakamura JX-250 offers a horizontal bed design with a wide, low center of gravity and vertical column structure, weighing 55,000 lbs. NT Thermo Navigator AI technology controls thermal growth during machining.

It has a maximum turning diameter of 12.6" and a maximum turning length of 65". The left and right spindles have 3" and 2.5" bar capacity, respectively. Tool spindle X,Y,Z travel is 25.4" x ±

4.9" x ± 32.5". The B-axis tool spindle positioning range is 240°

The JX-250 features a SmartX PC-based 19" high-resolution color touch screen, which works in conjunction with the Fanuc 31i-B5 control. It has a 5-axis precision milling software package.

The JX-250 comes equipped with several smart features including the NT Work Navigator that can recognize the coordinates of machine parts with non-round shapes. The Advanced NT Nurse System all-in-one software package is also included.

## Quicktech Turn-Mills Feature Integrated 6-Axis Robot

### —Absolute Machine Tool

Quicktech's i-42 ROBO and i-60 ROBO 4-axis mill/turn centers feature integrated 6-axis Mitsubishi robots for fast, automated loading and unloading of medium-diameter bar stock. The machines are designed to perform complex milling with standard live tools, and an optional 360° B-axis extends milling capabilities. The Mitsubishi S-series 6-axis, high-speed robot automatically loads, unloads or turns over parts weighing up to 13 lbs. An optional multi-tray, 4-pal-



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# New Products

let stacker handling system enables extended untended operation. The robot is contained within the machine and positioned to allow unimpeded operator access for machine setup and operation.

The i-42 ROBO and i-60 ROBO machines operate in four axes (five with the optional B-axis), with a 15-hp, high-torque main spindle that features C-axis capability, a 2-hp live-tool milling spindle, and capacity for 17 tools (23 with B-axis). A standard DIN-173-42B collet chuck provides capacity for 42 mm bar, while an option with a 60 mm collet or 6", 3-jaw chuck offers 60 mm bar capacity. A 3-axis (4-axis with optional B-axis) gang-type vertical tool post serves the main spindle with six OD turning tools, five ID turning tools, and three radial and three axial live toolheads. The optional B axis increases live tool capacity to six radial and six axial positions. The tool post also provides Y-axis motion for off-center milling operations. Rigid tapping is standard, as is the Kennametal KM-25 quick-change system that minimizes tool change time.

A matched CNC system combines a Mitsubishi M80A control, featuring a 260-mm (10.4") LCD with Mitsubishi servomotors and amplifiers. Standard machine features include a bar feeder interface, parts conveyor and catcher, chip conveyor, collet chucks and a 400-psi coolant pump.

## New Acu-Rite 300 DRO —Heidenhain

The Acu-Rite 300-series digital readout (DRO), available from Heidenhain, now enables users to control sinker EDM machines in addition to manual milling, turning and grinding machines. The DRO300 can control an EDM by way of Acu-Rite's EDM software when coupled with an IOB 610 interface box. The software is now



included in all multipurpose DRO300s, and existing users can download the software for free from Acu-Rite's website.

Features of the EDM control include automatic depth programming, which enables the user to configure the ram to automatically retract or dwell at the target depth; a dwell cycle, by which the relay holds the Z depth until spark-out occurs and which also provides control for orbiter cycles; reverse fault detection preventing creep out of the bath during a burn cycle; and an EDM display mode showing simultaneously the current ram depth, the maximum depth reached and the target depth on the three-axis displays.

## Updated CAM Software for 2020

### —DP Technology

DP Technology has announced a comprehensive product update, called ESPRIT 2020, for its computer-aided manufacturing (CAM) software. Among the most significant developments are updates to the software's computer-aided design (CAD) interfaces and new or improved solutions for specific machine tools.

ESPRIT 2020 features plentiful updates for Swiss-type machining.

This technique is defined by its small, often intricate parts. Medical devices, such as bone screws, are typically manufactured on Swiss-type machines. ESPRIT's 2020 update introduces or enhances support for 200 different Swiss-type machine models.

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# ...Hotline Continued From Page 8

## Colorado Company Concludes Weather Monitoring Satellite Critical Design Review

Colorado based Ball Aerospace has cleared a critical design review for a satellite mission built to deliver environmental actionable intelligence for military operations.

The Weather System Follow-on satellite will work to help the Department of Defense address space-based environmental monitoring gaps such as tropical cyclone intensity and ocean surface vector winds, the company said in May.

The satellite will also assist DoD in validating snow depth, soil moisture and sea ice characterization.

The U.S. Space Force chose Ball as the prime contractor to manufacture and deliver WSF and its associated spacecraft, instrument, algorithms and system software.

## Lockheed to Manage Satellite Interfaces Under DARPA Contract

Lockheed Martin has secured a \$5.8M contract to help the Defense Advanced Research Projects Agency perform integration activities of the Blackjack satellite network.

The company said it will implement interfaces that connect the system's bus, payload and autonomous data processor as well as interfaces of Blackjack's vehicle. The majority of work will take place in Sunnyvale, Calif.

The sought satellite network will work to autonomously support the connectivity needs of military missions.

Sarah Reeves, vice president of missile defense programs at Lockheed Martin, said the company will bring its payload integration experience to the effort.

## Boeing Resumes 737 MAX Production

Boeing has resumed production of the 737 MAX at the company's Renton, Washington factory. The 737 program began building airplanes at a low rate as it implements more than a dozen initiatives focused on enhancing workplace safety and product quality.

"We've been on a continuous journey to evolve our production system and make it even stronger," said Walt Odisho, vice president and general manager of the 737 program. "These initiatives are the next step in creating the optimal build environment for the 737 MAX."

During the temporary suspension of production that began in January, mechanics and engineers collaborated to refine and standardize work packages in each position of the factory. New kitting processes will also ensure that employees have everything they need at their fingertips to build the airplane.

The 737 program will gradually ramp up production this year.

## AeroVironment Secures \$76 Million Switchblade Contract

AeroVironment Inc. has received a \$76 million contract for one year's worth of purchases by the U.S. Army of its miniature aerial missile system.

The Simi Valley, CA. unmanned aircraft manufacturer expects to begin deliveries of the Switchblade tactical missile system in September.

The contract is funded through a Joint Urgent Operational Need Statement from the U. S. Army Tactical Aviation and Ground Munitions project office.

The Switchblade is a portable, rapidly deployable, precision strike loitering missile for beyond line-of-sight targets up to 6 miles from its launch location that minimizes collateral damage. It can be tube launched from air, land and sea platforms.

## Alameda Pipe Is Acquired by JD Fields

Gardena, CA-based Alameda Pipe & Steel Co. has a new owner.

Texas-based steel distributor JD Fields & Co. Inc. acquired the steel products manufacturer in a deal announced May 12. Terms were not disclosed.

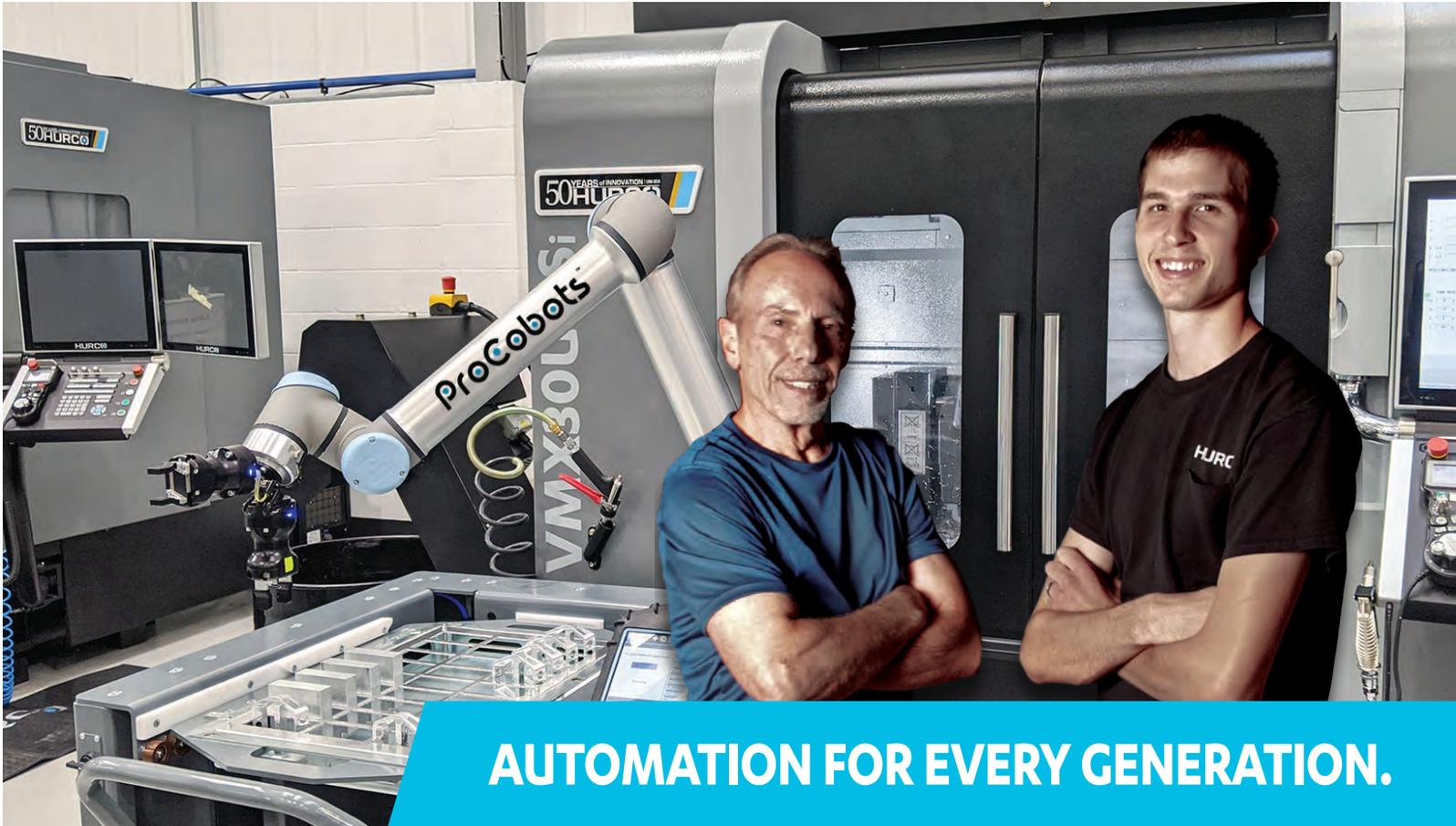
JD Fields said the purchase will enable the company to "continue its evolution into a one-stop, vertically integrated supplier and manufacturer of its own steel products."

JD Fields President and chief operating officer Jay Fields said in a statement, "We are moving quickly to adapt to changing global dynamics so that steel products can be distributed and manufactured by one company."

"Our acquisition of Alameda Pipe is the first major step in a strategic growth plan to move into the steel manufacturing industry as we continue to expand on the West Coast. I am excited about the opportunity to absorb Alameda's plants and bring on their top-level executives, who have the right connections and deep industry knowledge in the field to rival any competitor."

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