

# CNC WEST

**THE MAGAZINE FOR WESTERN METAL WORKING MANUFACTURING**

## SOFTWARE & CONTROLS

- **MACKAY MANUFACTURING - VERICUT CRITICAL TO MULTI AXIS PRODUCTION**
  - **NEW FADALS BOOST PRODUCTION, ACCURACY AND REPEATABILITY**
  - **TAPEMATION MACHINING, SAVES TIME & GAINS ACCURACY WITH SURFCAM**
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# Rediscover **Fadal**

## New Fadal vs. Legacy Fadal



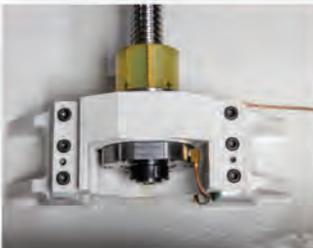
### THE CONTROL

	<b>NEW FADAL 64MP</b>	<b>Legacy Fadal CNC 88 HS</b>
True Program Memory	<b>256MB Standard</b>	422K Standard
Blocks per Second Execution	<b>2,000 B/S</b>	250 B/S
USB (2) and Ethernet Ports	<b>Standard</b>	Not Available



### TOOL CHANGER

	<b>NEW FADAL</b>	<b>Legacy Fadal</b>
	<b>24 Tool DATC</b>	21 Tool Carousel
	<b>30/40 Tools Optional</b>	
	<b>1.9 Second</b>	13 Second
	<b>Tool Change Time</b>	Tool Change Time



### BALL SCREWS

	<b>NEW FADAL</b>	<b>Legacy Fadal</b>
	<b>Dual Mounted</b>	Single Mounted
	<b>Pre-Tensioned</b>	Pre-Tensioned Not Available
	<b>Lubricated</b>	

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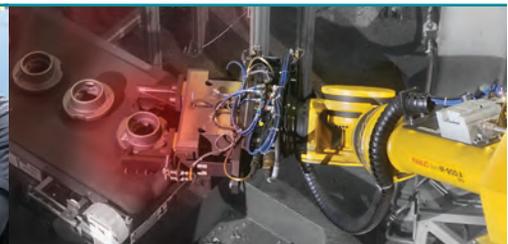
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# CNC West

April/May 2018 • Volume XXXVI No 4

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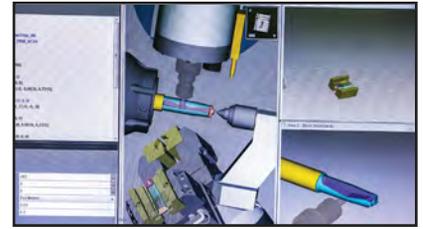
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MacKay Manufacturing have 50,000 sq. ft of high tech multi axis manufacturing capabilities just down the road from their humble beginnings, in Spokane.

- Pg.22



Metal to plastic conversions is a big part of Roncelli Plastic's process. Weight reduction is a key reason. Every gram saved is a savings in fuel.

-Page 32



Tapemation specializes in the crazy stuff that no one else wants to do," says lead programmer Rick Hobbs, who has been with Tapemation for 18 years.

- Pg.40

### **Coming in June/July 2018**

**Turning, Screw Machine and Medical Issue**—This special issue features turning centers and screw machining. It highlights western shops that combine both machining and turning to streamline output.

*Editorial: May 22, 2018*

*Ad Space: May 24, 2018*

*Ad Material: June 5, 2018*



**VOL. XXXVI NO. 4**

**April/May 2018**

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

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# Are We Failing Our Industry and More

I publish two magazines for the metalworking manufacturing industry and one for fishermen. When anyone asks what I do and I tell them the magazines I publish they all comprehend the fishing magazine but I get a blank stare when I mention the machining magazines. It usually takes a minute or so to explain to people that the car they drive, the plane they flew in and the parts to make it were not dug up in the ground but actually machined and that almost everything in their life is machined or manufactured in some method. It is sad that so few people actually know what a machine shop is and what machinist do and how vital they are to our economy.

Tim Paul explores this issue in his article this issue titled 'Are we Failing our Own Industry?' Tim offers some suggestions on what he feels needs to be done to keep our industry moving forward and I am sure most of those reading this will agree. This is a great profession that needs to have more people exposed to it.

Our cover article is about a Washington company that believe it or not is NOT an aerospace shop. McKay Manufacturing in Spokane says 60% of their work is medical. In business for close to 70 years they have lasted this long by always trying to stay a step ahead of the learning curve. One important step they take is that have taken since 2010 is that they machine everything first on their Vericut software before they actually machine anything. Read about the company on page 22.

CNC WEST is known as a metalworking magazine, so it only makes sense that we have an article on a shop that only works with non-metallic materials right? Roncelli Plastics uses traditional metalworking machines to cut materials most shops don't want to work with. They have been doing it for 50 years and are looking for ways to improve and be around another 50.

Sean Buur's third story is about a Martindale Manufacturing a San Diego shop that used older Fadal machines and was considering replacing them with another brand until Fadal 'came back'. The brand was retired for a few years until someone bought them and got the company going again. Now they have the new Fadal machines and could not be happier with their choice.

There is also a story on a northern California company that specializes in making large parts using Surfcam software. Also we have our normal bevy of product releases on new products and things going on in the industry. Thanks for reading and please be sure to support our advertisers as they are the ones that make sure you get the magazine for free.

And for the record I don't think we are failing our industry, I just think it is a hard mountain to climb and we trudging up the mountain slowly but surely

*Shawn Arnold*

Publisher

**Methods**



**PRESENTS**

# TECHDAYS 2018

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**San Francisco**  
May 22 - 23

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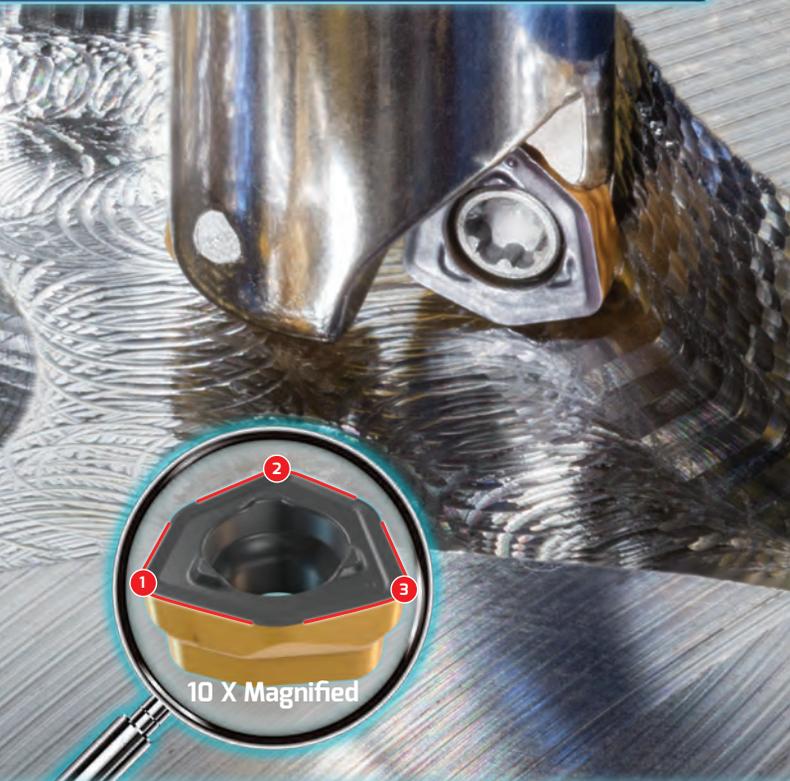
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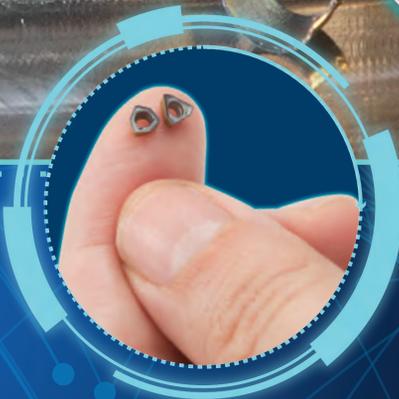
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# EXEC HOTLINE

## **Kratos Receives \$81M Drone Systems Contract**

California based Kratos Defense and Security Solutions, Inc. announced Feb. 20 that its Unmanned Systems Division (USD) received a single award indefinite delivery/indefinite quantity (IDIQ) contract from an undisclosed U.S. Government Agency, with a maximum potential value of \$81 million. The agency is related to unmanned drone systems and associated command, control, and communications.

The contract award has a period of performance of approximately five years, according to the company. The work covered by this contract will be performed at secure Kratos facilities and at government locations.

"Kratos Unmanned Systems Division has received a number of important contract awards over the past several weeks, including a \$93 million award from the U.S. Army, a \$23 million new production contract award and now this \$81 million award," Eric DeMarco, president and CEO of Kratos, said in a statement.

Kratos develops technology for the Department of Defense and commercial customers. The University City-based company specializes in unmanned systems, satellite communications, cyber security/warfare, microwave electronics, missile defense, training and combat systems.

## **Raytheon Tuscon Gets Big Contract**

Raytheon/Lockheed Martin Javelin JV, Tucson, Arizona, was awarded a \$94,886,553 modification to foreign military sales (France, Taiwan, Jordan, Qatar, Turkey, and Lithuania) contract W31P4Q-13-C-0129 for Javelin weapon system deliverables including rounds, command launch units, and battery coolant unit spares. Work will be performed in Tucson, Arizona, with an estimated completion date of Aug. 31, 2020.

## **Wesco Beats Estimates for Earnings, Revenue**

Wesco Aircraft Holdings Inc. beat Wall Street estimates on adjusted earnings and revenue in the fiscal first quarter.

The Valencia, California aircraft parts supplier reported an adjusted net income of

\$14.5 million (15 cents a share) on revenue of \$363 million for the quarter ending Dec. 31. That compares to adjusted net income of \$18.5 million (19 cents) in the same period a year earlier.

## **SolarWorld Gets \$5M Loan to Keep Hiring as Potential Sale Looms**

SolarWorld Americas Inc. said that its creditors have loaned it another \$5 million to keep the company moving toward full operations as a possible merger or acquisition draws closer.

This is the second time lenders have stepped up to keep the Hillsboro Oregon plant, active since its German corporate parent, SolarWorld AG, went bankrupt last May.

The U.S. operation is the last significant asset remaining in the SolarWorld AG portfolio. Its fate was put on hold as bidders awaited a decision in a trade case SolarWorld Americas brought last year with another American manufacturer, Suniva Inc.

The tariffs enacted by the Trump administration, announced in January, weren't a complete victory for the companies, but they were apparently enough to keep hopes of a sale or significant investment alive.

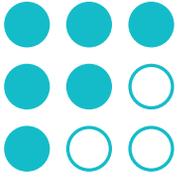
## **Boeing, Air Lease Corporation Sign Order for Eight 737 MAX Airplanes**

Boeing and Air Lease Corporation announced they have finalized an order for eight more 737 MAX 8 airplanes. Air Lease Corporation (ALC), one of the world's leading airplane lessors, has been a big buyer of the improved 737 airplane. This new order raises ALC's total 737 MAX orders to 138.

Boeing has delivered more than 100 737 MAX airplanes to over 20 customers worldwide, including four to ALC, with the fifth delivered in May 2018.

The 737 MAX is the fastest-selling airplane in Boeing history, accumulating more than 4,400 orders from 96 customers worldwide..

**Continued on page 88.....**

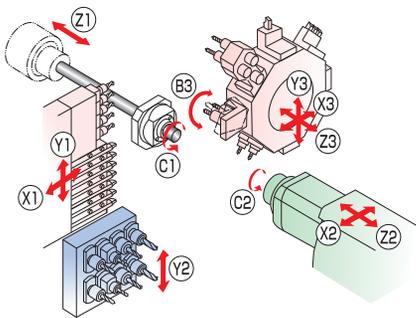


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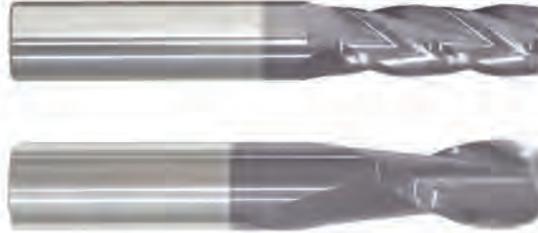


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2 Flute ideal for slotting, pocketing and plunging in cast iron, non-ferrous metals, plastics and abrasive materials  
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Dia.	LOC	Shank Dia	OAL	2 FLUTE Part Number	4 FLUTE Part Number	Price Each	2 FLUTE Part Number	4 FLUTE Part Number	Price Each	
1/32	1/8	1/8	1-1/2	MO-EM001001-2	MO-EM001001-4	\$7.41	MO-EM001005-2	MO-EM001005-4	\$9.44	
3/64	1/8	1/8	1-1/2	MO-EM001010-2	MO-EM001010-4	\$7.41	MO-EM001013-2	MO-EM001015-4	\$9.44	
1/16	1/4	1/8	1-1/2	MO-EM001020-2	MO-EM001020-4	\$6.31	MO-EM001023-2	MO-EM001027-4	\$8.34	
3/32	3/8	1/8	1-1/2	MO-EM001040-2	MO-EM001040-4	\$6.31	MO-EM001043-2	MO-EM001044-4	\$8.34	
7/64	3/8	1/8	1-1/2	MO-EM001050-2	MO-EM001050-4	\$6.31	MO-EM001055-2	MO-EM001053-4	\$8.34	
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1/2	1	1/2	3	MO-EM001200-2	MO-EM001210-4	\$51.50	MO-EM001205-2	MO-EM001207-4	\$40.75	
5/8	1-1/4	5/8	3-1/2	MO-EM001220-2	MO-EM001220-4	\$62.52	MO-EM001224-2	MO-EM001226-4	\$74.00	
3/4	1-1/2	3/4	4	MO-EM001240-2	MO-EM001239-4	\$95.81	MO-EM001242-2	MO-EM001244-4	\$109.50	
7/8	1-1/2	7/8	4	MO-EM001250-2	MO-EM001250-4	\$137.68	MO-EM001253-2	MO-EM001254-4	\$151.36	
1"	1-1/2	1	4	MO-EM001260-2	MO-EM001260-4	\$155.28	MO-EM001263-2	MO-EM001264-4	\$175.01	

BALL END					UNCOATED			TIAIN COATED		
Dia.	LOC	Shank Dia	OAL	2 FLUTE Part Number	4 FLUTE Part Number	Price Each	2 FLUTE Part Number	4 FLUTE Part Number	Price Each	
1/32	1/8	1/8	1-1/2	MO-BEM001005-2	MO-BEM000999-4	\$ 9.51	MO-BEM001016-2	MO-BEM001009-4	\$ 11.54	
3/64	1/8	1/8	1-1/2	MO-BEM001007-2	MO-BEM001000-4	\$ 9.16	MO-BEM001013-2	MO-BEM001014-4	\$ 11.19	
1/16	1/4	1/8	1-1/2	MO-BEM001008AA2	MO-BEM001001-4	\$ 7.75	MO-BEM001003-2	MO-BEM001016-4	\$ 9.79	
3/32	3/8	1/8	1-1/2	MO-BEM001010-2	MO-BEM001010-4	\$ 7.75	MO-BEM001019-2	MO-BEM001013-4	\$ 9.79	
1/8	1/2	1/8	1-1/2	MO-BEM001020-2	MO-BEM001020-4	\$ 7.46	MO-BEM001023-2	MO-BEM001028-4	\$ 9.50	
5/32	9/16	3/16	2	MO-BEM001030-2	MO-BEM001030-4	\$ 10.94	MO-BEM001033-2	MO-BEM001032-4	\$ 12.98	
3/16	5/8	3/16	2	MO-BEM001040-2	MO-BEM001040-4	\$ 10.13	MO-BEM001043-2	MO-BEM001034-4	\$ 12.16	
7/32	5/8	1/4	2-1/2	MO-BEM001050-2	MO-BEM001050-4	\$ 15.27	MO-BEM001053-2	MO-BEM001036-4	\$ 18.35	
1/4	3/4	1/4	2-1/2	MO-BEM001060-2	MO-BEM001060-4	\$ 14.34	MO-BEM001062-2	MO-BEM001066-4	\$ 17.43	
9/32	3/4	5/16	2-1/2	MO-BEM001070-2	MO-BEM001070-4	\$ 21.26	MO-BEM001073-2	MO-BEM001068-4	\$ 26.96	
5/16	13/16	5/16	2-1/2	MO-BEM001080-2	MO-BEM001080-4	\$ 19.53	MO-BEM001079-2	MO-BEM001073-4	\$ 25.23	
3/8	1	3/8	2-1/2	MO-BEM001090-2	MO-BEM001090-4	\$ 26.27	MO-BEM001091-2	MO-BEM001116-4	\$ 31.97	
13/32	1	7/16	2-3/4	MO-BEM001096-2	MO-BEM001095-4	\$ 34.55	MO-BEM001118-2	MO-BEM001117-4	\$ 41.68	
7/16	1	7/16	2-3/4	MO-BEM001100-2	MO-BEM001100-4	\$ 32.79	MO-BEM001119-2	MO-BEM001118-4	\$ 39.91	
1/2	1	1/2	3	MO-BEM001110-2	MO-BEM001110-4	\$ 40.45	MO-BEM001117-2	MO-BEM001114-4	\$ 47.57	
5/8	1-1/4	5/8	3-1/2	MO-BEM001130-2	MO-BEM001130-4	\$ 70.13	MO-BEM001134-2	MO-BEM001135-4	\$ 81.61	
3/4	1-1/2	3/4	4	MO-BEM001150-2	MO-BEM001150-4	\$106.01	MO-BEM001154-2	MO-BEM001154-4	\$119.69	
7/8	1-1/2	7/8	4	MO-BEM001155-2	MO-BEM001157-4	\$158.24	MO-BEM001158-2	MO-BEM001165-4	\$174.97	
1"	1-1/2	1	4	MO-BEM001160-2	MO-BEM001160-4	\$169.11	MO-BEM001164-2	MO-BEM001163-4	\$188.83	

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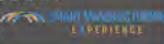
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Model	Chuck Size	Groove Width	Screw Size	Hole Space	Hgt Inch	STEEL SOFT JAWS		ALUM. ROUND JAWS	
						Part Number	Set Price	Part Number	Set Price
Kit B206 HS06	6"	0.472	10MM	0.787	2"	KT-6200F	\$ 32.73	RKT-6200A	\$ 76.18
					4"	KT-6400F	\$ 91.15	RKT-6400A	\$ 115.42
Kit B208 HS08	8"	0.551	12MM	0.984	2"	KT-8200F	\$ 42.85	RKT-8200A	\$ 89.55
					4"	KT-8400F	\$ 72.88	RKT-8400A	\$ 159.00
Kit B210 HS10, N210	10"	0.630	12MM	1.181	2"	KT-10200F	\$ 47.85	RKT-10200A	\$ 132.47
					4"	KT-10400F	\$ 78.57	RKT-10400A	\$ 213.26
Kit B12 HS12	12"	0.709	14MM	1.181	2"	KT-12200F	\$ 68.57	RKT-12200A	\$ 179.33
					3"	KT-12300F	\$102.82	RKT-12300A	\$ 270.67
Kit B212 N212	12"	0.827	16MM	1.181	2"	KT-12208F	\$ 68.57	RKT-12208A	\$ 179.33
					3"	KT-12308F	\$102.82	RKT-12308A	\$ 270.45

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Chuck Make/Model	Size	Part Number	Price EA
B206, N206	6"	ED-MJSK6LA	\$783.75
B208, N208, HS08	8"	ED-MJSK8LA	\$783.75
B210, N210	10"	ED-MJSK10LA	\$783.75
HS10	10"	ED-MJSK10HA	\$783.75

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GRIP-RITE

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	\$301.91	KT-80HJ2-X	\$312.71
B210, HS10	10"	KT-100HJ2-U	\$354.24	KT-100HJ2-X	\$370.44
B-12	12"	KT-120HJ2-U	\$399.22	KT-120HJ2-X	\$415.42
B-212, HS12	12"	KT-128HJ2-U	\$400.09	KT-128HJ2-X	\$416.29
B-15	15"	KT-150HJ2-U	\$538.65	KT-150HJ2-X	\$554.85

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3 MT	5,000	390	3,730	ROY-10853	\$277.34
4 MT	4,500	750	4,990	ROY-10854	\$336.14
5 MT	4,500	750	4,990	ROY-10855	\$377.30

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12"	4.055"	BI-7866-1200	\$ 2,282.00	\$ 2,053.80
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Chuck Dia	Part #	Price
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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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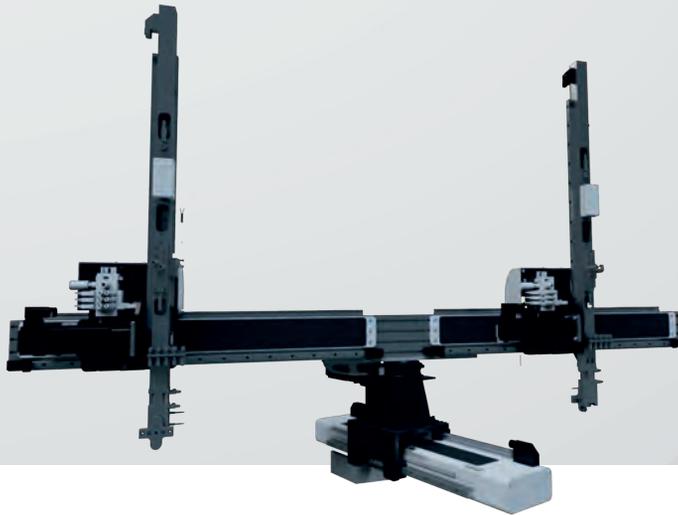
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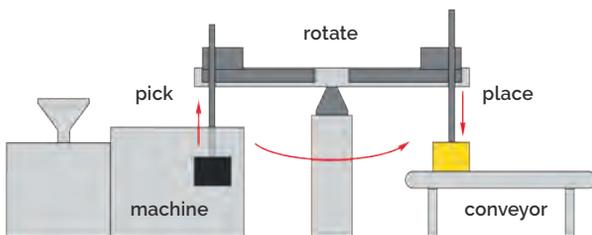
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<b>Tsugami BO32C-II</b> Running for 27 min Job: 10808-04	F100% S100%	In Cycle <b>68%</b> <small>Since 6:00am</small>	<b>Matsura MAM72-35V</b> Running for 15 min Job: 10809-01	F50% S100%	In Cycle <b>70%</b> <small>Since 6:00am</small>
<b>Kitamura 3XG</b> Idle for 12 min Job: 11752-01	F 0% S 0%	In Cycle <b>4%</b> <small>Since 6:00am</small>	<b>Mazak NEXUS 10800</b> Running for 25 min Job: 11753-01	F100% S100%	In Cycle <b>69%</b> <small>Since 6:00am</small>
<b>Mitsubishi MV1200R</b> Alarm for 4 min Job: 11739-01	F 0% S 0%	In Cycle <b>0%</b> <small>Since 6:00am</small>	<b>Haas VM-2</b> Paused for <1 min Job: 11767-01	F100% S100%	In Cycle <b>70%</b> <small>Since 6:00am</small>
<b>Nakamura WT-100</b> Running for 5 min Job: 11742-01	F50% S100%	In Cycle <b>70%</b> <small>Since 6:00am</small>	<b>DMG Mori NEF 600</b> Idle for <1 min Job: 11748-02	F 0% S 0%	In Cycle <b>5%</b> <small>Since 6:00am</small>
<b>Haas VM-3</b> Alarm for 1 min Job: 10815-02	F 0% S 0%	In Cycle <b>0%</b> <small>Since 6:00am</small>	<b>Doosan DNM 400</b> Running for 20 min Job: 10816-01	F100% S100%	In Cycle <b>69%</b> <small>Since 6:00am</small>



# New Performance-Driven Digital Readout System



HEIDENHAIN's ACU-RITE brand has launched a new line digital readout

(DRO) products with new software features and robust hardware. This line of three DROs is designed for milling, turning, grinding and boring applications.

ACU-RITE's models DRO100/203/300 support innovative software features such as an "Installation Guide" that appears at first-time power up. Another new feature is "Dynamic Zoom," where once activated, the display values for the axis currently being moved are maximally enlarged. The user can immediately see which axis is currently in motion and can also easily read the numerical value from a greater distance.

On the hardware side, a 7" TFT color display that optimizes the readability (brightness, color, resolution and the viewing angle) of the information displayed is now being used. Each readout is housed with a robust powder-coated, die-cast aluminum housing.

The DRO100 uses a membrane keyboard. The mid-range DRO203 and high-end DRO300 provide a rubber keypad. Encoders with a TTL interface (differential and single-ended) can be connected via a 9-pin D-sub connector. The power supply is built-in. Each of the new units feature a VESA MIS 100 interface on the back that allows for mounting with standardized brackets. Data interface can be done through USB Type-C.

## Other new software features common to all include:

**User management:** In the DRO203/300, a simple user management system has been introduced in order to make it easier for multiple users to operate the unit. Up to nine users can store their personal settings with a user number and then call them at will. It is not necessary to enter a password. The machine setter can reset all the users.

**File management:** Users can save and/or load firmware, configuration files, error compensation tables, tool tables, graphic files and instruction manuals.

**Day and night switchover:** The main screen can be switched to a brighter or a darker background, depending on the lighting conditions at the machine.

**Highlighted display:** As a simple means of graphically highlighting the axis currently in motion, the display value of the axes not being moved can be dimmed.

## DRO100

This unit has been designed with the aim of meeting future demand for functional yet very simple digital readouts that can be easily understood by the operator. The range of functions has been kept to a minimum. A temporary zero point can be set. Change the units (mm/inch), switch from radius to diameter and choose between incremental and absolute positioning.

## DRO203

This series will only include one 3-axis variant. The mid-range product offers all the basic functions of the entry level DRO100 plus common features for milling and turning applications, such as bolt-hole calculations for milling and vectoring/ taper ratio for turning.

## DRO300

In addition to all of the functionality of the DRO203, the high-end model is designed for even greater functionality. It is available in 3- and 4-axis variants and is programmable. The DRO300 is the only unit offering the connector for external switching functions. The IOB610 has been developed and can execute position-dependent switching (CFI) or maintain a continuous surface cutting speed (CSS) on a turning machine.

One innovation is the option of expanding the DRO300 to serve as a 6-axis digital readout. This will require the IB2X, which provides connectivity for two additional encoders.

If the milling application requires an edge finder, then the KT 130 (and only this edge finder) can be connected and run in tandem to the IOB610 or the IB2X.



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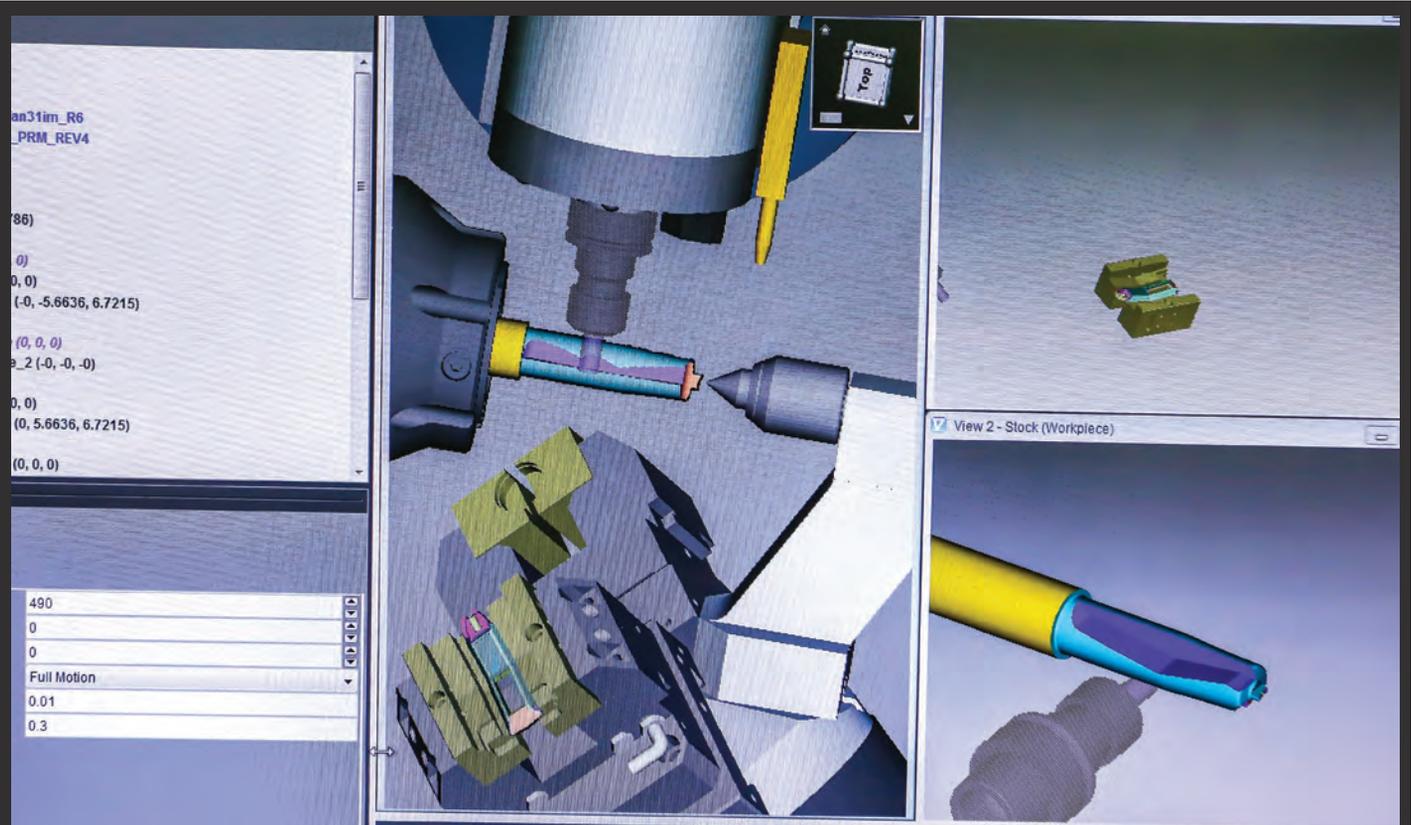
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# MACKAY MANUFACTURING VERICUT CRITICAL TO MULTI AXIS PRODUCTION

**M**acKay Manufacturing started back in the late 40's under different owners and a different name. They were a small mom and pop shop servicing the local industries in North Eastern Washington State. Mike MacKay worked for five years as the salesman before buying it in 1986. Today, MacKay Manufacturing have 50,000 sq. ft of high tech multi axis manufacturing capabilities just down the road from their humble beginnings.

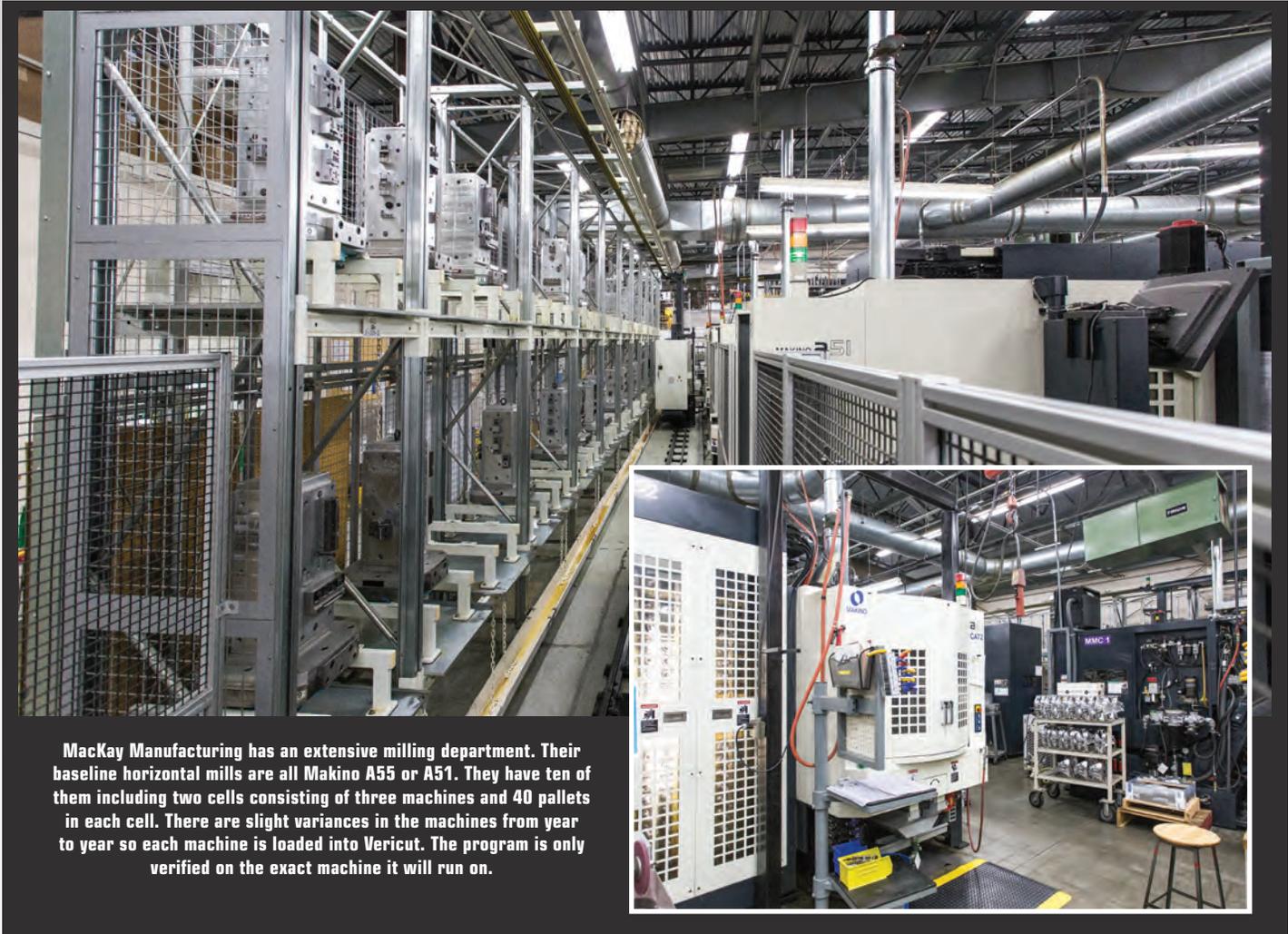
Katie MacKay has been part of the team at MacKay Manufacturing since she was 7 years old and her dad purchased the company. Duties then were limited to filling the employee vending machines and stocking the soda machine. Katie officially joined the company full time in 1996 and worked her way through the ranks. As vice president she and general manager Bruce Something run the company. She, like her father before her is not a machinist. Instead she hires people with the skills needed to operate the 65+ CNC machine tools at her disposal. "I got hired after high school to work in the office," tells Katie. "After that I was the delivery driver for a few years. I really enjoyed the delivery aspect because I was out representing the company. It gave me a chance to see the parts and meet the customers." She transitioned over to

a supervisory role in shipping before turning her attentions to their extensive finishing department. "Our finishing department includes all the hand work, lasers and assembly," details Katie. "I headed up that department for 9 years before becoming vice president. Dad is fairly retired and I've been VP for four years now. My dad wasn't a machinist; he was just a good salesman who supported his customers. We still don't have a sales person, but myself, Bruce Szember and my cousin Chadd MacKay who is our NPI manager (new product introduction) handle sales, customer support and maintain the culture of the company. The people are now, and always have been the best part of this job."

MacKay Manufacturing is an AS9100, ISO13485, and ISO9001 registered company primarily serving the medical industry. More than 60% of their work falls under medical with it split between implantables and devices. "Medical is a large part of our business," details Katie. "We also support aerospace, defense, and semi conductor. Most of our customers are large publicly traded companies. We don't manufacture any of our own products and really are still a job shop." With the amount of technology at MacKay Manufacturing it is difficult to think of them as a job shop, but the reality is the lathe department alone

**Gregg Meyer is the milling department supervisor. MacKay Manufacturing purchased their first seat of Vericut in 2010 in conjunction with a new advanced multi axis milling center. Today they have four seats and every job on every machine gets run through Vericut's simulation before the program is loaded on to a machine.**





**MacKay Manufacturing has an extensive milling department. Their baseline horizontal mills are all Makino A55 or A51. They have ten of them including two cells consisting of three machines and 40 pallets in each cell. There are slight variances in the machines from year to year so each machine is loaded into Vericut. The program is only verified on the exact machine it will run on.**

performs more than 300 setups a month. “We don’t make 10,000 of anything,” continues Katie. Most of our runs are around 50 parts.” MacKay Manufacturing is Spokane’s one stop job shop with milling, turning, mill-turn, EDM, Swiss turning, heat-treating, citric passivation, laser engraving, 4 axis laser welding, assembly, and even a class 10,000 clean room. “All our horizontal milling centers are Makino,” explains Katie. “Our verticals are Mori Seiki as well as most of the multi axis lathes. The Swiss department has ten Tugami machines and one Tornos, while EDM is loaded with Mitsubishi sinkers and Makino wire machines.”

Milling department supervisor Gregg Meyer has been with MacKay Manufacturing almost since the beginning. “I started work here at MacKay right after the MacKay family bought it,” details Gregg. “I was going to school for fire science and needed a job. My dad knew Mike and got me on sweeping floors and doing basic maintenance. I worked my way into production, ran all the machines and moved into a leadership role as milling supervisor in 2005.” Gregg manages 34 people 24/7 and was instrumental in adding Vericut simulation software into the workflow. “The milling department doesn’t cut metal without

first running the program through Vericut,” explains Gregg. “Vericut simulation is standard practice on all our mills throughout the department.”

Vericut was implemented back in 2010 when MacKay Manufacturing purchased an advanced manufacturing multi axis machine tool. They knew even the smallest collision was going to cost them time and money. “An alignment alone was 5k and I had to fly a person out from the east coast to do it,” tells Gregg. “It wasn’t worth the risk, so Vericut was integrated on that new machine. The results were fantastic and we added more and more machines to the program. Now it is 100% part of the culture, and a process that we never go without.” The slightest change in programming on the floor requires the operator to send it back through Vericut for verification before loading it back into the machine. “Even the best programmers make mistakes and Vericut virtually guarantees that the mistake never makes it to production,” continues Gregg. “Vericut gives the guys on the floor the confidence to press the start button without the worry of scrapping parts and crashing machines. The rule is simple. If there is a program change you post it, you run it through Vericut, then you reload it. It is an extra step, but it works, we see it work all the time.”

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**Above Left - VP Katie MacKay**  
**Above Right - Milling department supervisor Gregg Meyer**  
**Left - MacKay Manufacturing is 100% a family owned and run business. Management knows all 151 employees by name and each one has their own professional head shots. Cooper the shop dog sits in front of the employee lounge area where every employee is part of the MacKay Manufacturing family tree.**

In retrospect, both Katie and Gregg agreed that they wish they had added Vericut sooner than they did. “Initially it took some getting used to,” tells Katie. “We have machinists who have been doing it one way forever. Engraining in them the importance of verification was a process in itself. Building it into our culture was beneficial, but didn’t come overnight.” Speaking to some of the operators on the dayshift they were delighted to have another line of defense against programming problems, but admitted it took a little while before it became second nature. No one even thinks about it now, it is just something they do on every job, on every program, every day. “We own 4 seats of Vericut in the milling department,” touts Gregg. “This ensures no waiting to use it and it takes away the thought of just skipping it and reloading onto a ma-

chine.” The milling department consists of 17 machining centers and each one is built and entered into Vericut as its own machine tool. “Vericut isn’t generic simulation, but exact models of our machining centers right down to the nuts and bolts,” explains Gregg. “As an example we have 11 Makino A51 or A55 machines. They are our basic milling platform, but within those machines are five different spindle types. Depending on the age of the machine the spindle cartridge is different, or they might have a different taper. All that is input into Vericut. If it clears the spindle on one machine that doesn’t guarantee it works on a different machine that is the same model. When we run the simulation we run it for Makino #1 and that program is only proofed out for Makino #1.” MacKay Manufacturing are taking it one step further and are in



**MacKay’s turing departments are extensive. The shop is loaded with DMG Mori Seiki multi-axis lathes as well as Tsugami and a Tornos Swiss turning centers.**

the process of building their entire tool database though WinTool. “WinTool allows us to be even more precise in our programming and Vericut simulations,” details Gregg. “It drops the tools right into MasterCam and Vericut. We will be able to do a more precise optimization of tool paths with each exact tool as part of our simulation.”

2018 is on track to be another solid year for MacKay Manufacturing. With that continued growth means more employees are needed to facilitate the expansion. “Over the 32 years in business and we’ve grown an average 5% every year,” tells Katie. “Some years less and some more, but 5% average over three decades is something we are proud of.” Like most shops finding the right people is a challenge to say the least. MacKay Manufacturing looks for people who share the same traits and habits that are visible throughout the company. “Attention to detail, problem solving skills, motivation, and mechanical aptitude, are all things we look for,” tells Gregg. “To succeed here you have to think outside the box sometimes to find the solution.”

MacKay Manufacturing works hard to maintain their reputation in the industry and in the community. The family atmosphere and how they treat their employees is well known in the area. With 151 employees on staff, Ka-

tie knows each and everyone by name, and there is value in that. Consequently MacKay Manufacturing receives many applicants, they take the hiring process very seriously to ensure its a good fit. It has to be a good fit for culture and skill set, but typically, employees receive extensive training opportunities on the job to learn how to tackle the tough stuff.” “Machinists interview all the time that have never seen some of the machines we have,” continues Gregg. “30 years ago a lathe was a lathe and a mill was a mill. Now we have 11 axis lathes with live tooling and 7 axis mill-turn centers. It’s a lot to process sometimes.”

Manufacturing is plentiful in this part of the state, and MacKay Manufacturing stands out amongst Eastern Washington’s abundance of machine shops. “The majority of our employees stick around for the long haul, we have a unique culture and environment for the manufacturing trade. It is a demanding, fast paced, clean, respectful, educational environment that is constantly growing and changing, if that culture fits with our employees we stay together for careers,” concludes Katie. “That’s how my dad built the business and how we continue to run it. It isn’t just a name on the building, it is my name, it’s his name, and that name stands for quality, integrity and purpose.”



As an ISO1345, ISO900 and AS9100 registered company quality is a top priority at MacKay Manufacturing. Most of MacKay’s parts are smaller than a basketball but require high precision for the industries they serve. One military part (not pictured) as an example had more than 1200 features for inspection, took 400 hours to program, had seven setups and took ten hours of spindle time. They machine Ti, stainless, aluminum and some more exotic materials. The manufacture a lot of complete assemblies like the spinal spreader pictured on the top right.

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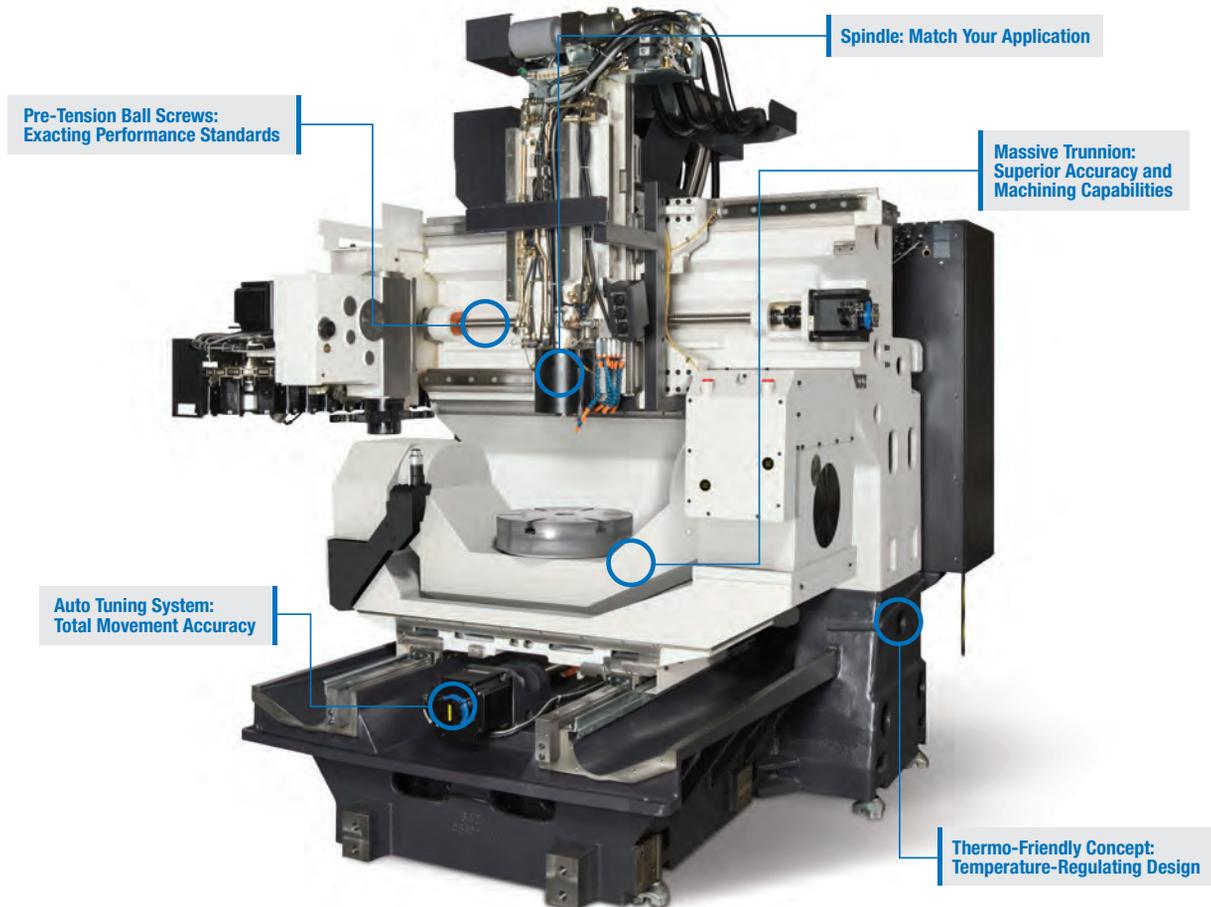
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# RONCELLI PLASTICS



CEO Riley Cole, COO Chris Cole, Founder Gino Roncelli

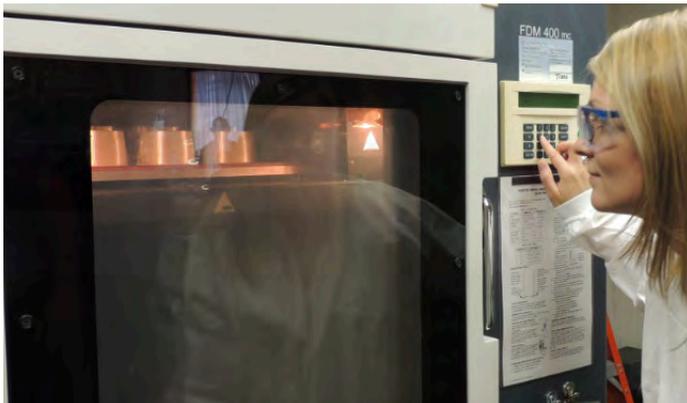
## FAST - CLEAN - PRECISE

Roncelli Plastics is headed into their 50th year of business, and even after 30+ years with the company CEO Riley Cole is still blown away by the parts and processes.

The San Gabriel valley was ripe with manufacturing in 1969 when Gino Roncelli set up shop in Monrovia, Ca. The early days saw every job that could be cut on a band saw, drilled on a drill press, or machined on a manual lathe and Bridgeport mill come through the door. All work was welcome, as long as it wasn't metal. "Our concentration has always been with non-metallic," tells Roncelli Plastic's CEO Riley Cole. "Over the years the materials and our abilities

have changed, but not our core focus. I've been with the company for 36 years and the parts we make now just blow my mind. We are manufacturing parts that were not possible even 5 years ago." Roncelli Plastics has come along way since the days of making circuit type boards and gauge windows. They grew with the technology and began manufacturing mechanical parts out of generic materials like Nylon or Delrin. Now it is high tech materials like PEEK, Torlon and Vespel that get manufactured on 5 axis machining centers.

Roncelli Plastics was an early adopter of CNC and they continue to upgrade their manufacturing technologies. "We got our first CNC machine tool in the early 80's," details Ri-



Left - 3D printing started out as an experiment for Roncelli Plastics in 2009, but now it is a key feature in their manufacturing process.



Right - The ISO Class 1000 clean room is cleaner than a surgery suite with less than 1000 particles per million.

ic Door System



The Sawyer robot is a highly deployable automated solution with the flexibility to move between mills and lathes depending on the need. It has a vision system that is used to set points around the robot to pick up and drop parts. Every joint has force control so it can seat parts as needed, but is smart enough to know if it comes into contact with something it shouldn't. They don't require a big fence around them to work, allowing them to safely operate side by side with humans.



Metal to plastic conversions is a big part of Roncelli Plastic's process. Weight reduction is a key reason. Every gram saved is a savings in fuel. When you look at launching rockets into space every pound of weight costs an astronomical amount of money. PEEK is a high temperature, high performance super stiff plastic. If you look at a part made out of aluminum versus the same part made out of PEEK, the peak part is 1/4 of the weight. Even with aerospace plastics 80% material removal is standard practice.

ley. "It was a 3-dimensional router. That led us to CNC milling and CNC turning soon after." With 42,000 sq.ft. Roncelli Plastics has 30 different CNC machining centers spread between three primary cells and 120 employees to meet the growing demands of their customers. "We don't have a single brand of mills or lathes," explains Chris Cole, Roncelli Plastic's third generation of management and new president and COO. "We work with a variety of manufacturers and pick the machines that best suit our manufacturing needs. Right now, we're utilizing Haas, Doosan, Mori Seiki, Okuma, Star, and RoboDrill for tight tolerance machining on non-metallics, laminates and composites. Our work tends to be more complex than your average job shop, but we don't have any products of our own designs. I'd label us as a build to print contract manufacturer specializing in 5 axis machining of exotic materials."

"CNC West did a feature on us 15 years ago," tells Riley. "The difference in the company then and now is night and day." "Back then our AS and ISO certifications meant something different to our customers," adds Chris. "Back then it was a big selling point, now it's just expected. So we're looking towards what that next level of expectations will be.

ISO27001, which is the new security standard, is on the radar. Our government customers are saying having that is a plus today, which means it will be a pre-requisite down the road." Roncelli Plastics is AS9100, ISO 13485, ISO 9001 and ITAR registered with the majority of their customers being in the aerospace, space, semiconductor and medical industries. "All our customers have two things in common," continues Chris. "They demand precision and cleanliness. To achieve this we continually invest back into the company via technology and systems. FOD can destroy machines or potentially harm people, so we need to make sure the shop environment stays as clean as possible." Along with state of the art CNC, Roncelli Plastics has an extensive 3D printing department, a Class 1000 clean room, temperature controlled manufacturing cells, and robotic automation.

3D printing started as kind of a science experiment for Roncelli Plastics in 2009. As the technology improved, Roncelli Plastics searched for innovative ways to utilize and profit from this rapidly growing manufacturing process. "3D printing has become a big part of what we do in a variety of ways," explains Chris. "Most 3D print houses are essentially model makers. They print it, and then you paint it up

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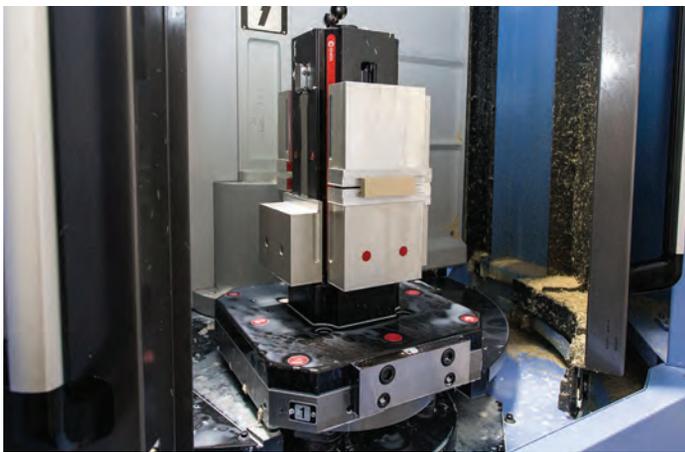


**Roncelli Plastics is a build to print contract manufacturer specializing in tight tolerance 5 axis machining of non-metallics, laminates and composites. The primary industries they server are aerospace, space, medical, and semi conductor. The regularly hold 5-10 thousands on the parts they manufacture.**

and make it look nice. We are a fabricator. We know what our customers demand as far as tolerances go and we use 3D printing for actual parts, parts that are flying today." Post processing is an avenue that many traditional 3D printing companies don't offer, let alone have in-house. Roncelli Plastics will 3D print a near net shape then place the part on one of their 5-axis mills and finish it with features too difficult to do directly on the 3D printer. They clean it, install any inserts, and assemble it for shipping to the customer. "We can achieve what is needed through our complex secondary operations," continues Chris. "You see the most degradation in the Z because the material is fused on that axis. If it meets the structural demands of the spec sheet, 3D printing is an efficient method to produce parts." Roncelli Plastics has two big production Fortus 3D printers and another half dozen smaller units that they use for production as well as internal needs. "Internally we use our 3D printers often for fixturing," describes Chris. "Fixtures on non-metallics have the same basic characteristics as you'll find in any machine shop. Vices, jaws and so forth still hold the part, but we can print our own custom pieces to speed up the process." They will print the fixture overnight then finish with a quick clean up before

it's ready to roll. "We don't have to take time away from our production cells to machine fixtures. It is pretty handy."

Tight tolerance machining of non-metallics has a unique set of parameters different to that of standard materials used in the aerospace and medical industries. Non-metallics typically are more susceptible to environmental changes than their metal counterparts. "The laminates we could machine in the parking lot," jokes Chris and Riley. "Plastics generally speaking expand and contract at a rate of ten times that of most metals. Our tight tolerance parts regularly see us holding 5 to 10 thousandths." A slight change of 5 degrees in temperature can be the difference of them staying within spec or being out. Before having temperature controlled machining cells Roncelli Plastics would have employees come in early in the morning to run a part, then if need be finish the run later that night. "Here in So-Cal it can get hot in the shop," details Riley. "Currently we have two of our three machining cells completely regulated at a steady and cool 68 degrees. The employees love it, and our customers appreciate our dedication to manufacturing precise parts. We started by climatizing our rapid prototype cell. The quick turn department was the smallest cell, and gave us a way to test out the benefits with the least amount of expenditure." Right away they noticed less of a variance from part to part and how much easier it was for the operator to maintain the needed tolerances. The last of the three cells is scheduled to get their temperature controlled work environment later this year.

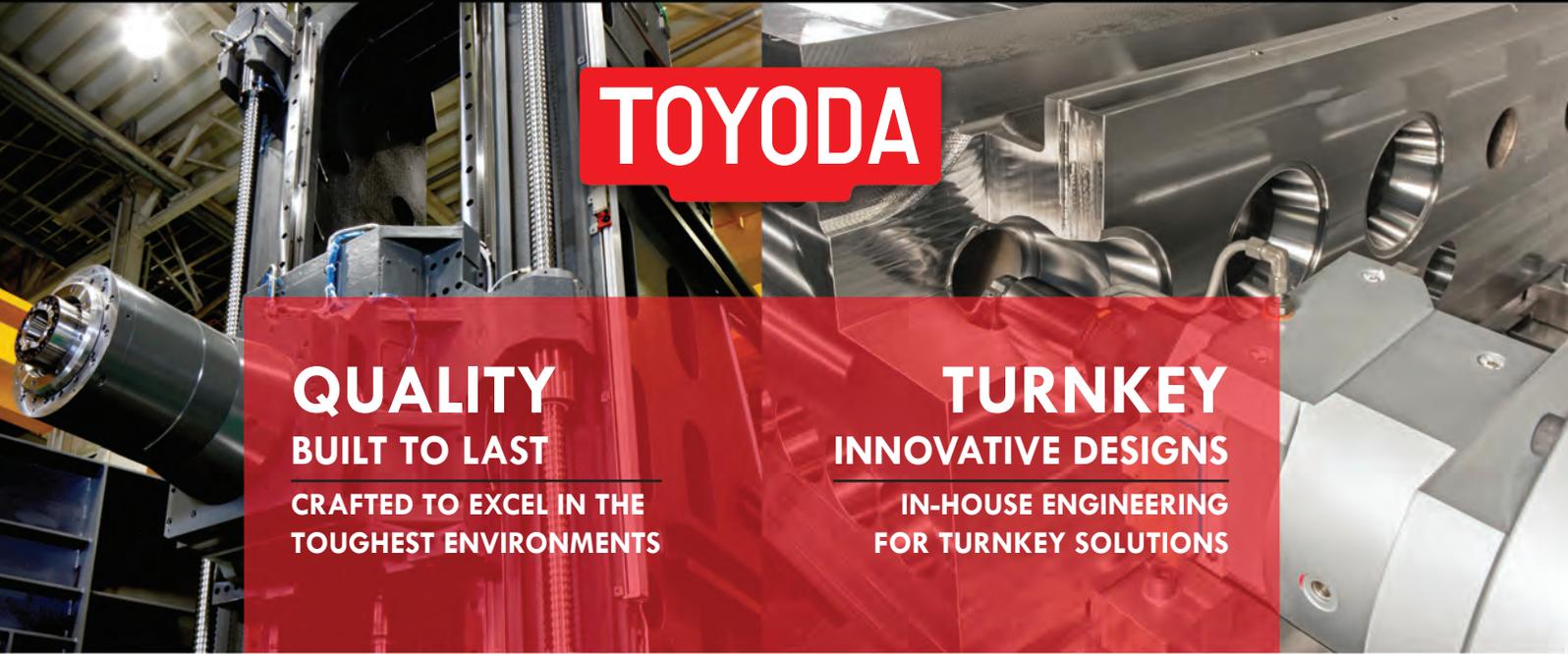


**Roncelli Plastics has more than 30 CNC machining centers spread between three cells. They utilize a variety of manufacturers and configurations depending on the need.**

Like any job shop “how fast can I get it” is a daily ask from Roncelli’s customers. Being as lean as possible is one way they stay ahead. “We just added robots to our workflow and let me say how much we love them,” touts Chris. “It is our first foray into full blown automation and the results have exceeded our expectations. The Rethink Sawyer robots came on line less than six months ago and have added 24/7 lights out capabilities to our machining.” The Sawyer robot is a highly deployable automated solution with the flexibility to move between mills and lathes depending on the need. They have two now and will be ordering more. Management was initially concerned about the perception of adding such automation, but employees have latched on to the Sawyers and are learning new skills. “Our goal was not to eliminate jobs, but to grow the company,” details Riley. “Over the next ten years you will see more and more automation and trained people to work with that automation will have a higher level of demand than those who didn’t embrace the technology. Our employees stay with us a long time, but even if they go somewhere else we’re glad to see them expanding their skillset.” The Sawyer robots are amazingly flexible with the ability to be moved from location to location. You set points

around the robot with its vision system. It then knows exactly where to pick up and drop parts. Every joint has force controls so it can seat parts as needed, but its smart enough to know if it comes into contact with something it shouldn’t. The Sawyers don’t require a big fence around them to work, allowing them to safely operate side by side with humans.

Roncelli Plastics has served the industry for 50 years, providing high quality made in America parts to their customers. Seeing out the next 50 years will require them to stay at the forefront of technology. “We dedicate 100 hours a month looking at new technology,” tells Chris. “We have a group that sits down every other week and goes over hard and soft technologies.” Topics range from machine tools and software to inspection equipment and robotics. They bring together a brain trust to help see what might be the next big thing in manufacturing. “We know what is innovative and exciting to the customer today will be expected tomorrow,” concludes Chris. “If we don’t stay ahead of that we will get passed up by someone else. Our goal is to be around for another 50 years supporting California jobs. We can do that by building the best efficiencies using technology and with the best people.”



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# LED//MANUFACTURING ON A GRAND SCALE

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Rick Hobbs lead programmer at Tapemation

## DEK//LARGE PRECISION PROTOTYPE MANUFACTURER TAPEMATION MACHINING, INC., SAVES TIME AND GAINS ACCURACY WITH SURFCAM TRADITIONAL

Maintaining tight tolerances on large precision parts is no easy feat, which is one of several reasons that manufacturers shy away from projects of the massive variety.

Such is not the case with Tapemation, a 55-year-old Scotts Valley, Calif., company that specializes in manufacturing a wide range of large parts — including precision pieces that ultimately make their way into the reaches of space.

“We specialize in the crazy stuff that no one else wants to do,” says lead programmer Rick Hobbs, who has been with Tapemation for 18 years. “There are very diverse industries that we work for, so there’s an absolute variety of work.”

Nestled in the redwood-populated foothills of the Santa Cruz mountains, the company tackles its unique projects with

a crew of 25 and a mechanical workforce of two vertical lathes and 12 three and 5-axis mills — the largest of which offers 20 feet of travel.

“The large pieces that we do are most often prototypes, and we do very little production,” says Hobbs. “Many of our customers are repeat clients, but some wander in for one-of-a-kind jobs.”

The manufacturing of aerospace prototypes for both space-flight and ground support is typical of the jobs undertaken at Tapemation, as are pieces for the architectural, energy, and defense industries. Among its unique projects are an aluminum cross lattice made to support a custom glass ceiling in a mansion, as well as a titanium keel for a sailboat. Many parts manufactured by the company are in orbit, some on the moon and



**Curiosity Descent Panel**

on Mars, among them Descent Stage and the wheels for Mars Rover Curiosity.

The company, which is ISO certified for aerospace work, also manufactured parts for Stratolaunch Systems, a subsidiary of Vulcan Aerospace. The Stratolaunch system makes it possible to launch spacecraft from the bottom of aircraft at high altitude; Tapemation manufactured prototypes for gear used to attach the two vehicles.

“The stuff that comes through here is amazing, and I very rarely get bored,” Hobbs says. “I’m amazed at the changes that have taken place in programming since I started.”

To manufacture its diverse array of precision parts, Tapemation has used the Surfcam Traditional computer-aided-manufacturing (CAM) solution, by Vero Software, for the past 20 years.

“Prior to Surfcam, they used to have to prove everything out on a piece of foam before cutting metal,” Hobbs says. “It used to take us at least 10 times as long to program and verify a project as it does now.”

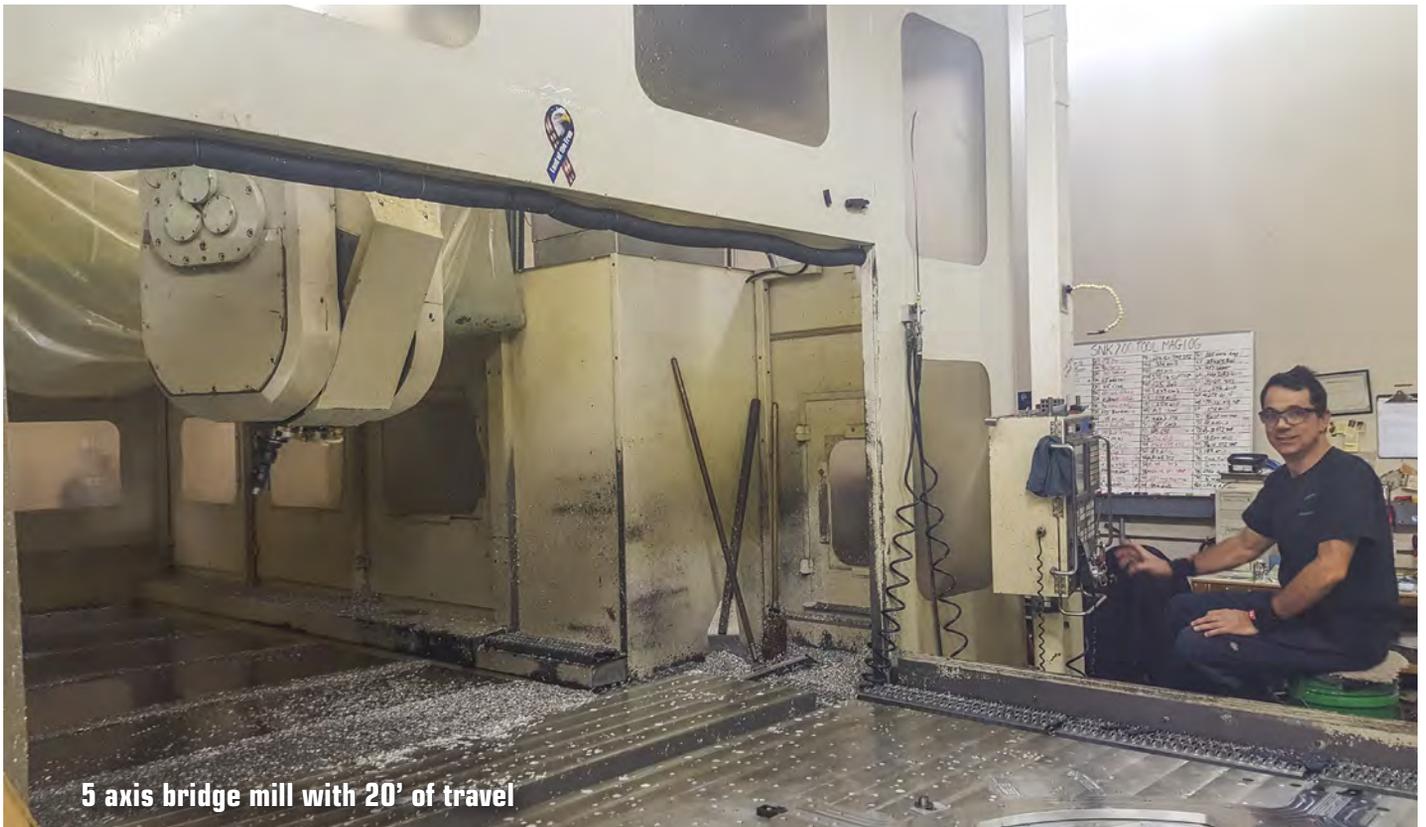
One of the challenges to manufacturing large parts is the acquisition and handling of massive pieces of material. While scrap is a negative in any shop, great pains are taken at Tapemation to avoid scrapping what would ultimately amount to thousands of pounds — and sometimes tens of thousands of dollars — of waste.

“Sometimes the material has a two or three-month lead time because it’s a custom casting, and a single forging can be 15,000 pounds,” Hobbs says. “When you have a \$50,000 piece of material that took months to get here, scrap is not an option.”

Hobbs credits the strength of Surfcam Traditional toolpath verification with helping to ensure that error-free code is sent to the machine. Verification allows programmers to simulate whole programs, or to run verification on individual toolpaths and, or, setup.

“Verification in Surfcam is amazing because being able to verify toolpath and compare it to the model is extremely helpful in making sure that we’re on the right track,” he says. “I almost never get to complete a program before the part goes to the machine, so I have to be able to verify toolpath as I go, against the as machined SCMOD file. It’s not the ideal way to do things, but it often happens, and Surfcam helps us to make sure that mistakes aren’t being made.”

The ability to color code various elements of programs as verification is run helps Hobbs to quickly and easily identify any problem areas.



**5 axis bridge mill with 20' of travel**



Hobbs with the rover wheel in Scotts Valley, Ca.

In the past, Hobbs and the company's two additional programmers would occasionally make the mistake of removing too much material during the roughing stage, which left no remaining material to complete finish passes. Hobbs explains that continuous verification improvements made to Surfcam Traditional over the years have created reliable programming fail-safes for users.

When the company manufactured aluminum wheel prototypes for the Mars Curiosity rover, the project required achieving a very thin wall section and whittling 350 pounds of aluminum down to seven pounds. The wheel required three different lathe operations, and lots of mill work, which amounted to 14 different machine setups and about 100 hours of chip time.

Hobbs, who explains that machining large parts is "part experience and part feeling," notes that challenges related to heat are significant hurdles in the manufacturing of massive workpieces.

"Thermal expansion is a major challenge, so if you don't have good temperature control, it will kill you," he says. "We often have to do multiple roughing operations because the parts change shape and size during the process."

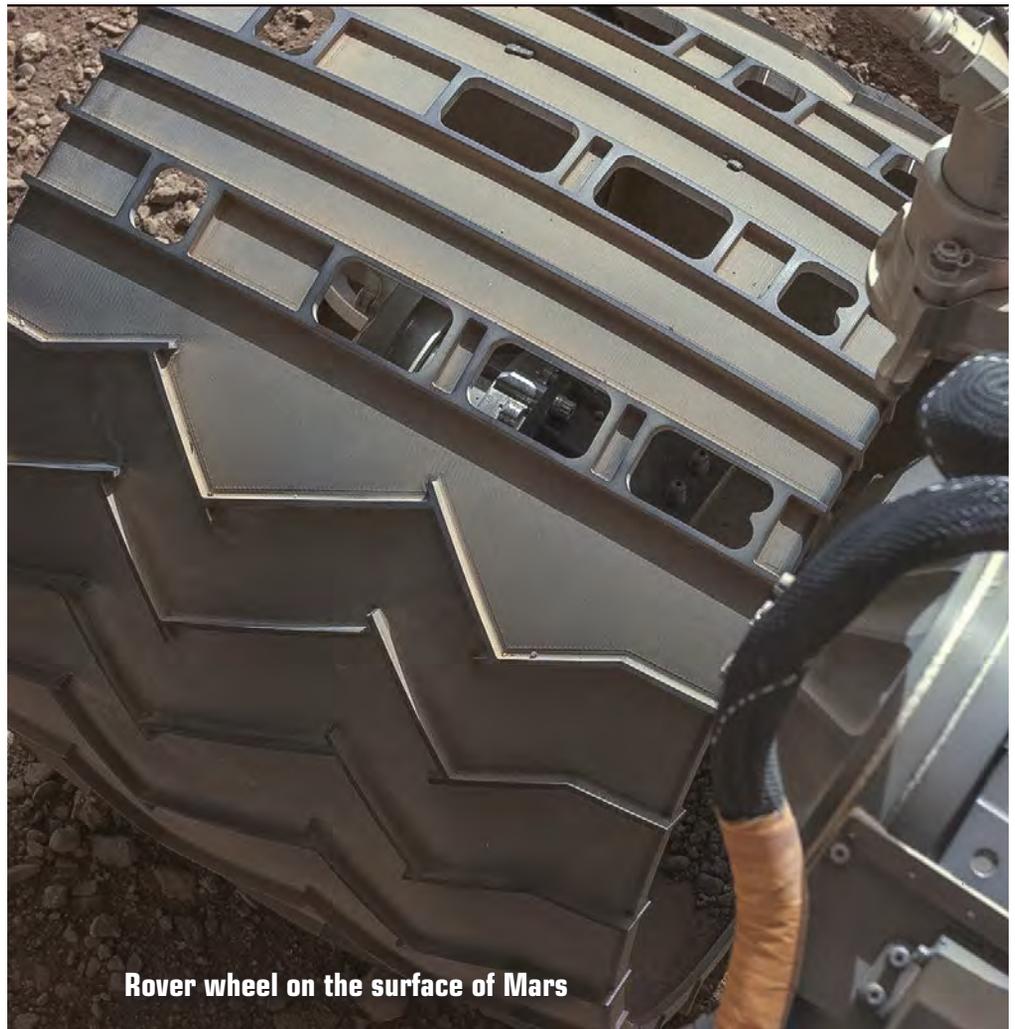
Hobbs and his team take advantage of the 3-and-5-axis milling features within Surfcam Traditional to create their precision parts, including the Z-level roughing strategy. The Z-rough cycle performs tool movements along the X and Y axes, using Z-axis increments to remove large amounts of material.

Many users also take advantage of Surfcam's Z Finish toolpath, which is capable of cutting multiple surfaces by using a two axis (X and Y) contour cycle in Z-axis increments. The Z

Finish cycle is best utilized for cutting surfaces or areas that are steeper or close to being vertical.

"Two of the biggest capabilities in Surfcam that we use are multi-surface 3-and 5-axis milling, and the 3-axis roughing features," Hobbs says. "Those cycles have been vastly improved over the years, and today you have much better gouge control, and you can cut multiple surfaces with much greater overall toolpath control."

Tapemation also uses Surfcam Traditional's TRUeMill machining cycle, an optimized roughing toolpath that can be completed with a one-step 3D roughing through pre-finishing operation. The toolpath creates uniform step



Rover wheel on the surface of Mars

height across all surfaces, regardless of how many tools are used. It also removes material at significantly faster rates, and at greater depths of cut.

"The three and five axis capabilities of Surfcam have come so far, and that's really improved a lot for us," Hobbs says. "Surfcam makes the entire process so much easier, and we know that what's being sent to the machine is going to result in the best possible product."

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# MARTINDALE MANUFACTURING

Article & Photos by Sean Buur



Tony Martindale

## NEW FADALS BOOST PRODUCTION, ACCURACY, AND REPEATABILITY

Tony Martindale has been in manufacturing his whole life. After college he worked at the NUMMI plant in Fremont, Ca. NUMMI was the joint venture between Toyota and GM, after the NUMMI plant closed it re-opened to manufacture Tesla Vehicles. He moved from there over to Cisco, but always wanted to own his own business. “I have a degree in industrial technology with a Master’s in New Business Ventures and Startup’s,” tells Tony Martindale, owner of San Marcos, Ca. based Martindale Manufacturing. “The goal was always to have my name on the door of a manufacturing business, but when I began my search it wasn’t aimed specifically as CNC machining.” Tony came across a business that was for sale in San Diego County. It met all his requirements and just happened to be a CNC machine shop. “The previous owner was set to retire after being in business for almost two decades,” explains Tony. “The company was tiny and profitable and came turn key, so my wife and I sold our house in the Bay Area and headed south to begin Martindale Manufacturing.” Sunny San Diego sells itself, and 15 years later Martindale Manufacturing is thriving in their So-Cal location.

AS9100 certified Martindale Manufacturing mills aerospace components, specifically seals that go on planes, he-

licopters and rockets. They have hundreds of part numbers for numerous customers, but all the parts share similar characteristics. The parts are a thin flat metal carrier that the customers mold rubber to creating a seal. “Think machining sheet metal and that’s what we do,” explains Tony. “Sounds kinda weird, but the metal is so thin that we have to make custom vacuum fixtures to hold the material in place.” Thickness in material varies, but ranges from .025 to .125. Some of the pieces are made from stainless or titanium, but 90% of parts machined by Martindale Manufacturing are made from various flavors of aluminum. After the grooves are cut, they machine out the part’s final shape. It then gets deburred and maybe part marking or anodized before being sent our customers. “Most of our parts are a connection point where hoses might come together,” details Tony. “Our parts go on commercial, military, planes, helicopters, missiles and even get launched into space. Where ever you need a seal on something that flies. We have no set sizes or quantities. It could be one or it could be fifty, but rarely is it more that a few hundred.” Sizing too varies by customer and application. It is not uncommon for Martindale Manufacturing to have a 1”x1” running on a Fadal 4020 while a 4’x4’ carrier is being machined on the Fadal 6030.



Martindale Manufacturing specializes in aerospace components, specifically mechanical seals that go on anything that flies. Size range is 1"x1" to 4"x4', but most parts are the size of an iPad. Thickness in material varies, but ranges from .025 to .125. Tony describes the process as machining sheet metal. Once finished the part is sent to a second process where rubber will be molded into the grooves that were just machined.



**Eddie Gonzalez is the production manager. Every job comes in to him. He cuts the material, stages the job with the fixture and tooling so it is ready to go on a machine. The job is handed off to the operator who completes the machining process. The part goes to finishing where it will be deburred before it goes to final inspection and on to shipping.**

When Tony bought the company in 2003 it came with five older style Fadal milling centers crammed randomly into the warehouse. He has reconfigured the layout multiple times since then, always looking for a leaner and cleaner way to manufacture. “We now have 8 machines and 20 employees,” tells Tony. “Fitting all that into our building in an efficient way is daunting. We are in the process of building out a new office area and expanding the manufacturing footprint for better workflow. We should be able to add one or two more Fadal mills once the construction is finished.” Adding machines is something Tony has become accustomed to. “We’ve replaced or added five new Fadal mills all in the last three years,” tells Tony. “Our go to machines are the Fadal 4020 3 axis vertical mill. We also have a larger 6030, but what I like is that all my guys can run all the machines. All the programs work on all the machines. It simplifies things and gives me the flexibility to run what I need anywhere in the shop.”

The Fadal brand was retired for a number of years before recently being reintroduced to the industry. Tony loved how his older Fadals performed, but honestly was considering a different brand of machines to replace them. “I was still a few months away on pulling the trigger on a different brand machine,” tells Tony. “Then I heard they were coming out

with a new and improved Fadal. So, I waited and spoke with the guys at All American Sales and Service. I’d bought a refurbished machine from them before, so I was confident in what they were telling me. Well I bought one, then another and now have five.” The speed and accuracy are a big improvement over the old machines. Tony is thrilled with his decision to stick with the brand that served him so well. “I always liked not having many issues with the older Fadal; they were a workhorse. My experience has been that the current evolution of Fadals has the same reliability that I count on. Walter Frank, Tim Consalvi and Mike Woodridge at All American have all been great to deal with on sales and service. We were one of the early adopters of the new machines and they were quick to address any issues we were having. The goal was to have a similar customer interface and they got it pretty close right off the bat. There were a few simple things like a knob turning a different direction than before, or a button that switched from left to right and now it is right to left. When your operator is used to it one way it having a change is sometimes counter productive. They addressed those type of items right away and we never really missed a beat.”

One of the biggest selling points for Tony was the value. Fadals are not the most expensive nor are they the cheapest but he feels they represent a good value for the machine

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**Martindale Manufacturing uses custom vacuum fixtures to hold the ultra thin material in place. They have a variety of styles depending on the part they are making.**

to worry about because it just works, works really well.” Martindale Manufacturing doesn’t make millions of the same part, so they don’t chase gains of seconds, but when you see minutes shed off production times it is probably a safe bet that you made a good decision.”

Martindale Manufacturing mills, that’s what they do, and do well. Their top priority is providing the highest level of service for their customers. “We really shine when it comes to customer relationships,” concludes Tony. “What we do here is not rocket science, even though parts find their way onto rockets. The day-to-day communications required to service our customers properly is a big part of what we do. Obviously delivering a quality part on times is mandatory, but without all the back and forth communication our ability to deliver would be more difficult. Customers like the flexibility we offer. Part of that flexibility comes from having a shop full of the same Fadal machining centers and the rest of it comes from my team of dedicated and talented employees.”

you get. Tony orders his 4020 machines with 24 tools since most job numbers require fewer than 11 tools. Each machine comes with a 10,000 RPM spindle and 15 HP motors. “The Fadal is a solid platform,” tells Tony. “They will remove a lot of metal quickly. We typically don’t do giant hog outs, but the speed difference was noticeable right away. The new machines just zip along. There are a ton of upgrades on the new generation of Fadals. Repeatability and accuracy have been improved to go along with the better speed.” Martindale Manufacturing still has three more of the older units that are next in line for replacement. “The gains we’ve seen have been night and day, easily 30%,” claims Tony. “A part that was taking 10 minutes now is under 7. Even with the added speed I don’t have to sweat the tolerances that I used

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5/8	1-1/4	5/8	3-1/2	YG-EMUGMF68911	\$ 92.61
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# CAD/CAM/CNC Perspective

By: Tim Paul

Customer Success Manager Fusion360 CAM

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Instagram: OneEarTim

## Are we failing our own industry?

We have all heard the seemingly abstract numbers of how short our trade is of skilled workers and the alarming rate at which our skilled and knowledgeable work force is retiring while so few are entering the trade. I want to dig a little deeper into this topic with this article and ask everyone in our industry what we are doing to solve the problem. I travel the country and interact with machine shop Managers and Owners almost constantly and many of the conversations I have reflect the same statistics that are plastered all over every trade publication we read. I mentor some local CTE programs and have spent the past few years beating the war drums to encourage them to recruit and train as many people as possible. Am I doing the right thing?

Recently, I was asked to help a few people get into the Machining Industry. They are the exact people we should want to pursue a career in our industry. Smart, passionate, mechanical people with a good work ethic and no substance abuse problems. I realized there are some different schools and resources to learn the software I support and some machining basics. But, is there a clear path to enter the machining industry as a career? I couldn't articulate a clear path. That made me want to learn more about what Dan Frank from Rocklin High School has for options to guide his students. Recently, I had the pleasure of sitting down with Dan Frank and one of his star students (Tanner Knight) to discuss our industry from their perspective. It's conversations like these that shape the way I think and view our industry.

Tanner Knight is one of the bright stars in Dan Frank's Engineering Support Technologies class at Rocklin High School. Dan has put together an impressive program that most of us would have killed to have available when we were in High School. Dan does an amazing job at partnering with the industry and get-

course in machining. I wanted to get him excited about what he could make with Fusion 360. In two hours Tanner designed, programmed, setup and machined a simple 3D scrabble tile with his initial. I say simple but Tanner's first machined part had a Face, Adaptive Roughing, Rest Roughing, 3D Parallel with semi finish & finish passes, a 3D Pencil and was fully machine chamfered. I was in this industry for many years before making my first 3D tool path. When I left I felt bad that I only had two hours to spend with him. I hoped I hadn't turned him off from machining. Yesterday when I sat down with Dan and Tanner I started by apologizing for not finding more time to spend with their class. Dan stopped me and said, "In those couple hours you spent with Tanner you changed a kid's life. Tanner has a self confidence that he never had before. Now he knows he can make things." I honestly had goosebumps at the thought that just a couple hours could change a kid's life. I don't bring this up to brag. It's actually uncomfortable for me to talk about. I bring it up because it makes me ask the question, "What can we do as an industry to inspire more kids to have the confidence and interest to make things?" And next, do they have a clear path to pursue a career in manufacturing?

ting support from individuals such as Kathy Looman with the Gene Haas Foundation. Dan's passion and dedication to his students, his program and our industry should stand as a shining example of how things should be done. I'm embarrassed and a little ashamed that I haven't made more time to mentor Dan's class.

A little over a year ago I had the opportunity to spend a couple Saturday hours giving Tanner a crash

I won't pretend to have all the answers to my questions but I do see a few critical challenges when it comes to filling the Machining Industry with a smart, passionate work force that we need now and for years to come. First, we need to get people interested into joining our industry. Second, we need to have a path to learning the trade. Third, we need a clear path to enter and grow within the trade. I believe the alarming numbers found in reports such as the recent Deloitte and Manufacturing Institute report where they predict an estimated 3.5 million manufacturing jobs will need



Photos: Katie Paul



to be filled over the next decade. If their predictions are correct over 2 million of those jobs will go unfilled due to the skills gap. Unfortunately, I think we are failing as an industry to make significant strides to fix the problem holistically. I see a lot of smart people doing a lot of good things. But, I don't see a lot of dots being connected from inspiring, to training, to real world jobs. So, let me break down each issue as I see it. Maybe we as an industry can own and fix our own problems...

**First challenge:** Drive people to our industry as a career. This is a big and systemic problem that starts with parents and their young kids and it carries over through school and well beyond. There is a lot of data that shows kids categorize themselves by the time they get to 3rd grade. They put themselves in categories of being good or bad at school, tackling challenges, athletics etc. I truly believe that most humans are happiest when they use both their minds and their hands to create and fix things. I clearly see this with my ten-year-old daughter and other young people around me. I have no doubt that if our children were exposed more to fixing and making things when they were young that our CTE (Career and Technical Education) programs would see more students that were serious about exploring careers in manufacturing. I do feel like our states and education systems are starting to see the value in offering CTE programs, but we need more good candidates entering the programs. I've heard guestimates as low as 1-3% of CTE students have a real chance at pursuing a career in manufacturing.

**Second challenge:** A path to learning the trade. I see well-funded and well-run school programs and I see poorly funded and poorly run school programs from the High School level through the four-year Colleges. I also see private companies offering terrible training where profit is clearly their focus while others appear to be doing good work. My biggest concern is the content and curriculum being so jumbled and often disconnected from the realities of our industry. I mean no disrespect to anyone in the field of training people in our trade. I believe this is also a systematic problem that often starts with how our school programs are funded. How our school systems set requirements for teachers that often exclude the most passionate, knowledgeable and talented people in the trade from

teaching. Lastly, how involved are we (people in the trade) with our local programs? I think we are failing to be involved enough with our local programs.

**Third challenge:** A clear path to enter and grow within the trade. This is where I think we as an industry are failing the most. On one hand I feel extremely fortunate that experienced machinists are in high demand, but how do people get experience? I recently did a job search for CNC Machinist in my area. It was nice to see that there were pages of openings. But, most openings listed five years of experience required. Looking back on the few people that asked me for guidance to get into our industry they all said it looks like a great place for someone who already has experience but not for someone new to the industry. Are our shops too busy to train people?



Are they worried about training someone to only lose them to another shop at a higher wage? Knowing what many "experienced" machinists are making, it seems clear that many shops are driving wages up by finding employees from other shops by paying them higher wages. I know it's basic supply and demand, but can we change it?

**A**s with most things in life, there is no one silver bullet solution. I think as an industry, we should be more holistically involved from the beginning to the end. The one thing I am certain of, is that we have a small window to make changes to fix the problem before the skills gap becomes our biggest competitive liability.



# Industry News

## RÖHM Expands Sales Team

RÖHM Products of America has expanded its sales team with the addition of Steven Onik as national sales manager. He is responsible for supporting the company's chucks, centers, vises, tool clamping and automation systems as well as customized solutions for turning, milling, drilling and grinding.

Onik comes to RÖHM with extensive sales and marketing experience in the cutting tool industry. Most recently, he held the position of director of sales and marketing for Fraisa USA, Inc. His career also includes sales management and sales engineering positions with other cutting tool providers.

As national sales manager, Onik will lead RÖHM's entire sales team including its regional sales managers and inside sales associates. With a focus on providing exceptional service to customers, he is responsible for managing growth and profitability for the company's varied product lines and wide selection of workholding solutions.

## Protek CNC to Offer Milltronics to Southern California

Milltronics USA, Inc. has named Protek CNC as the new exclusive distributor for Southern California and Southern Nevada. Protek will offer new machine sales, factory certified service, parts, applications and training support.

"We're very excited to be partnering with Milltronics," said Angelo Ariondo, president of Protek. "They specialize in machines for job shops, tool, die & mold, toolrooms and R&D labs. And they make a very powerful and intuitive conversational PCbased controller. It's what they're known for – the Milltronics control is very

user-friendly and can be programmed either conversationally, with G-code or toolpaths from a CAM system, whatever is the most efficient way to make the part".

Founded in 1998 by Angelo Ariondo, Protek has sold thousands of CNC machines throughout its history.

Protek also offers extensive applications support, having been a Gibbs CAM partner for more than 20 years. Based in Simi Valley, Protek has a modern showroom where customers can see Milltronics machines in action.

## David Doyle of Heidenhain Corporation To Receive ITLG Silicon Valley 50 Award

Heidenhain Corporation's president and managing director David Doyle received a 2018 Silicon Valley 50 Award at Stanford University. This is the 11th annual Silicon Valley Global Awards being hosted by ITLG (Irish Technology Leadership Group), which brings together the most entrepreneurial minds in the Silicon Valley and beyond to honor top Irish and Irish-American executives making a significant impact in their field.



A total of fifty executives are selected and honored each year.

With 25 years of experience in technical, product management and senior leadership roles, Doyle joined Heidenhain in 2016, and currently assumes full responsibility for the customer-focused operations in North

America. Doyle is spearheading the organization and business development activities within Heidenhain's electronics, automation and machine tool capital equipment markets. Heidenhain's products and technology also enable advanced systems capabilities in the robotics, automotive, energy, agriculture, medical and life science industries.

As Heidenhain's president/managing director, Doyle is also currently investing in the California Bay Area resources and infrastructure, supporting OEM partners with both the Heidenhain product portfolio and ETEL-brand motion control systems expertise.

Born in Nenagh, Co. Tipperary, Ireland, David attended St Paul's College, Dublin, and Maynooth University (National University of Ireland), earning a double honors degree in chemistry and experimental physics. He has also attended Stanford University for professional development programs.

## Star Rapid Partners with Tool Manufacturer Guhring

Star Rapid, a global rapid prototyping, rapid tooling and low-volume manufacturer, announced its partnership with Guhring, a German manufacturer of carbide and PCD cutting tools. Through this partnership, Star Rapid will implement a new custom tool management and computerized tracking system. In addition, Guhring will provide full-time onsite technical support and regrinding expertise.

Star Rapid will now use Guhring's Custom Tool Management System which provides tool storage, inventory control and real-time monitoring of tool consumption. This system creates an efficient work flow through improved tool tracking and allows for

# Industry News

more precise tool ordering based on anticipated future usage. Guhring's family of cutting tools also have proprietary thin-film, vacuum deposited coatings. Guhring reports this coating technology extends cutting tool life and performance by protecting against the high temperatures, friction, vibration and chip adhesion associated with everyday use.

In addition to being Star Rapid's vendor for new tools, Guhring will also now supervise sharpening and regrinding of the company's tools that are currently in use. With Guhring's expert understanding of the metallurgy and the complex geometry of each end mill or cutting insert, they can ensure that these sophisticated tools are in peak condition and able to hold precise tolerances. Star Rapid's machinists will also work with Guhring's onsite technical support to optimize the "speeds and feeds" for every cutter.

## Mazak to Spotlight Automation at Western Region Technology + Education Event

Mazak will host its annual Discover More With Mazak™ Event at its Western Technology Center in Gardena, California, June 5 - 8. The capabilities of 17 of Mazak's latest machine tools will be in action.

One of the machines in action will be the VC-500A/5X vertical machining center. It has a trunnion-style rotary/tilt table and new 60-tool capacity magazine.

More than 10 different robots completing different manufacturing tasks will also be on display. Several machines – including the Quick Turn 250 turning center and the Multiplex 6200 turning center with multi-tasking capability – will be paired with cost-effective automation systems. The Quick

Turn 250 will feature a prepackaged robotic loading system that maximizes profit potential by enabling unmanned

operation, while the dual-spindle, dual-turret Multiplex 6200 will have a gantry loader.

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# Industry News

Mazak and several of its Value Inspired Partners (VIPs) will present a series of TEK talks on some of the industry's hottest trends and techniques.

## Mastercam Celebrates 35th Anniversary

This year marks the 35th anniversary of CNC Software developers of Mastercam CAD/CAM software. In 1983, brothers Mark, Jack and Brian Summers developed a PC-based CAD/CAM software package that laid the foundation for what would be Mastercam.

"It started out as a simple idea,"



says Chairman Mark Summers. "I was a machinist. My brother was a mathematician. We combined our experience to put what was out of reach for most shops—NC programming software—right onto their desktops."

They first called the software pro-

gram "Meghan," after Mark Summers' eldest daughter, and then changed it to "Mastercam" as a clearer descriptive of the software's primary function. Today, Meghan is the CEO.

In the 35 years since its founding, the company has supported technologies including "smart" tool paths, hybrid machining, mill-turn, multi-axis and Dynamic Motion technology, as well as basic packages for milling, turning and wire EDM.

The company says that this wouldn't be possible without the feedback from the industry and user base. "Mastercam users help drive our innovation," says CEO Meghan West. "We're in constant contact with shops, machine tool builders, educators, tooling suppliers, and



## ModelMaker H120 Handheld Scanner

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# Industry News

they all help us focus on what shops need the most now and in the future, so we can deliver.”

“One of the biggest reasons for our success is our global dealer network,” she says. “They are true partners with our customers, offering advice, training and applications experience to Mastercam users around the world.

In addition to manufacturers, the company focuses on selling and supporting the software in the education sector. “Helping to train the next generation of skilled manufacturing personnel is an important mission of ours,” says Ms. West.

## Heidenhain, Open Mind Partner to Connect CAM Simulator, CNCs

Open Mind Technologies has partnered with Heidenhain to provide first use of its NC code-based simulation solution Hypermill Virtual Machining with Heidenhain’s TNC controls.

Open Mind’s Connected Machining module enables networked controls to be run from remote locations, a key component for digital production systems. The simulation solution is available with the Hypermill 2018.1 release.

“Open Mind’s bidirectional virtual software will allow the user to start or stop the machine tool, review or override some settings, run simulations,

synchronize the machine simulation to the actual machine position and modify the Heidenhain control from anywhere our software is networked,” says Alan Levine, Open Mind managing director, North America. “This promises to increase machining efficiency by optimizing machining productions, and reduces the chance of errors while connecting a CAM programming environment with the shop floor machining world.”

The shop-oriented Heidenhain TNC 640 control is for high speed cutting and five-axis machining on machines with as many as 18 axes. Guiding basic to advanced machining, it pairs with the virtual software by connecting with the company’s DNC software and TNC

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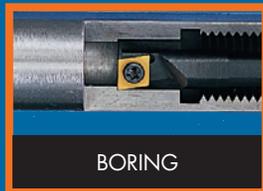
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## Industry News

Remo SDK options. Three Hypermill system modules will improve communication between the CAM suite and the machine tools: the Center, Optimizer and Connected Machining modules.

### GF Machining Solutions Announces New Sales and Marketing Team Members

GF Machining Solutions has appointed several new members to its sales and marketing team. Dante Payva, Sammy Shabib, Heather Natal and Jon Carlson all fill key roles that will enable the company to continue its focus on enhancing the sales, service and support for its milling, EDM and laser texturing solutions.

Dante Payva is now product manager for the company's portfolio of milling machines. He brings more than 18 years of experience in technical and manufacturing fields to his new position, including 17 as a technical service specialist and a technical support engineer with GF Machining Solutions.

Sammy Shabib has joined GF Machining Solutions as sales manager for the company's milling products. Previously, he was district sales manager for JTEKT Toyota Americas Corporation where he managed the southern California distribution team. Shabib earned Associate of Science degrees in physics, mathematics and natural sciences from Cosumnes River College and Bachelor of Science degrees in mechanical and aerospace engineering from University of California Irvine.

Heather Natal has also joined GF Machining Solutions as marketing manager. She has more than 15 years of marketing communications experience with global organizations DSM Functional Materials and DMG America.

Jon Carlson, who previously served as GF Machining Solutions' marketing coordinator, has been named product manager for the company's range of advanced manufacturing solutions. In his new position, he will be responsible for delivering on the growth objectives for additive manufacturing, laser texturing and micro-machining products.

### Absolute Machine Tools Marks 30th Year as Machine Tool Importer and Distributor

Absolute Machine Tools, Inc. is marking its 30th year as a machine tool importer and distributor in North America. The company sells and supports a comprehensive selection of machine tools including Johnford

# Industry News



Hayden Wellman founded the company in 1988. Working as representative for digital readout maker Anilam,

Ortner made contact with Taiwanese machine tool manufacturer Johnford in 1990, which became the company's

heavy-duty machining and turning centers; Tongtai high production machining and turning centers; You Ji vertical lathes; QuickTECH mill/turn centers; LICO multi-slide multi-axis screw machines and mill/turn centers, APEC 5-axis gantry-style linear motor machines. Nexturn Swiss-type lathes; AccuteX Wire EDM and Sinker EDM machines; Yougar EDM hole drilling machines; and Precihole gundrilling machines.

According to Absolute founder and president Steve Ortner. "Not one of our partners is new to the machine tool industry," he said. "In fact, we've had a partnership with Johnford going on 28 years now. We've made it a focus to remain reliable and consistent in our relationships with our OEMs, which carries through to our customers and our support to them with service and spare parts."

In addition to vastly expanding the selection of machine tools it provides, the company increasingly offers engineering services. Chief marketing officer Courtney Ortner noted that Absolute's business "has changed from customers simply buying a standard machine and applying it themselves — to purchasing more complete turnkey system solutions for a certain application or family of parts. We help customers be flexible and profitable with their investment."

Absolute Machine Tools, began in a garage. Steve Ortner and friend



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# Industry News

first OEM partner.

Partnerships with You Ji for vertical machines and Tongtai for drill tap machines and turning centers came next, followed by relationships with Nexturn, QuickTECH, and Precihole. In 2009 the AccuteX lines of Wire EDM equipment.

In 2017 they acquired Advanced Machinery Systems, thereby becoming the exclusive importer/distributor of LICO CNC screw machines for turning complex small parts. EDM drilling specialist Yougar also became a partner in 2017.

## IMTS Becomes Founding Partner Of Inaugural Smart Manufacturing Experience Event

IMTS – The International Manufacturing Technology Show, has announced that it has become a founding partner of the Smart Manufacturing Experience, which takes place April 30 – May 2, 2018 at the Boston Convention Center. Created by SME and AMT – The Association For Manufacturing Technology, the Smart Manufacturing Experience provides a setting for technology providers and users to be immersed in an interactive learning atmosphere.

IMTS will bring some of its front-end technology partners to the Smart Manufacturing Experience, including the Department of Energy's (DOE) Manufacturing Demonstration Facility at Oak Ridge National Laboratory (ORNL). ORNL will showcase fundamental research on qualification and certification of additively manufactured parts leveraging capabilities in data analytics. Data analytics application tools are being developed by ORNL researchers to optimize and certify components for end use, in addition to reducing costs and time to market.

IMTS will also bring technology partner Local Motors and the famous

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# Industry News

Strati 3D printed vehicle to the Smart Manufacturing Experience. 3D printed and assembled live from the ground up and driven off the show floor on the sixth day of IMTS 2014.

Other technologies associated with IMTS that Smart Manufacturing Experience visitors can discuss include MTConnect. A royalty-free open standard that fosters interoperability between controls, devices and software applications, MTConnect was created with support from AMT, introduced at IMTS 2008 and is now one of the most widely-used protocols.

## Komet Service Partner Earns ISO 9001:2015 Certification

Komet Service Partner Countyline Tool and Komet of America have announced that Countyline Tool has attained ISO 9001:2015 certification. All Komet Service Partners are currently working to obtain the ISO 9001:2015 certification and Countyline Tool is the eighth partner to have completed the certification. This certification, ensures that customers receive goods of a consistently high quality, and that all regulatory requirements are met, regardless of the nature of the product or the industry. "A certification with such broad applicability naturally

carries with it a great degree of steps and requirements; as such, Countyline Tool' certification shows the commitment to quality and customer assurance that they share with Komet," said a Komet Service spokesperson.

"This is exciting for our partner, Countyline Tool, but it is equally exciting and motivating for us all at Komet Service," said Tom Whennen, manager, Komet Service North America. "All of our partners are actively working towards ISO certification, and getting closer each day. Countyline Tool's accomplishment shows the dedication we all have towards being ISO certified. ISO certification is an added stamp of quality and reliability."



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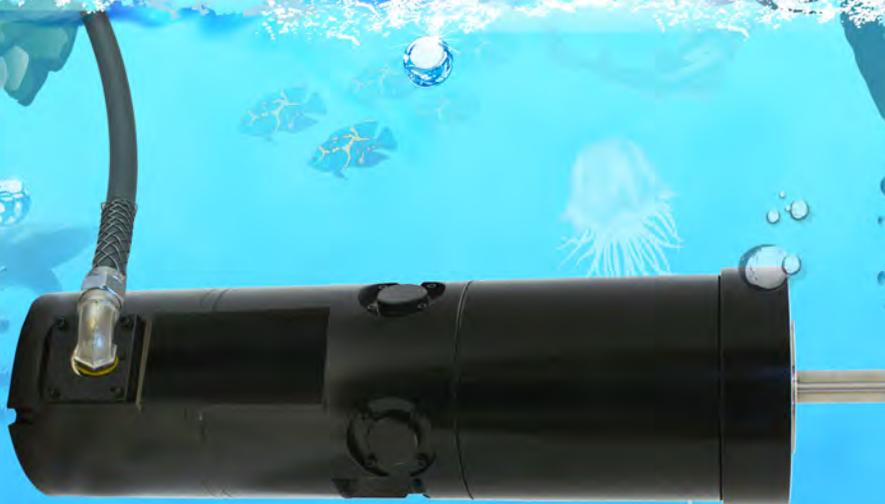
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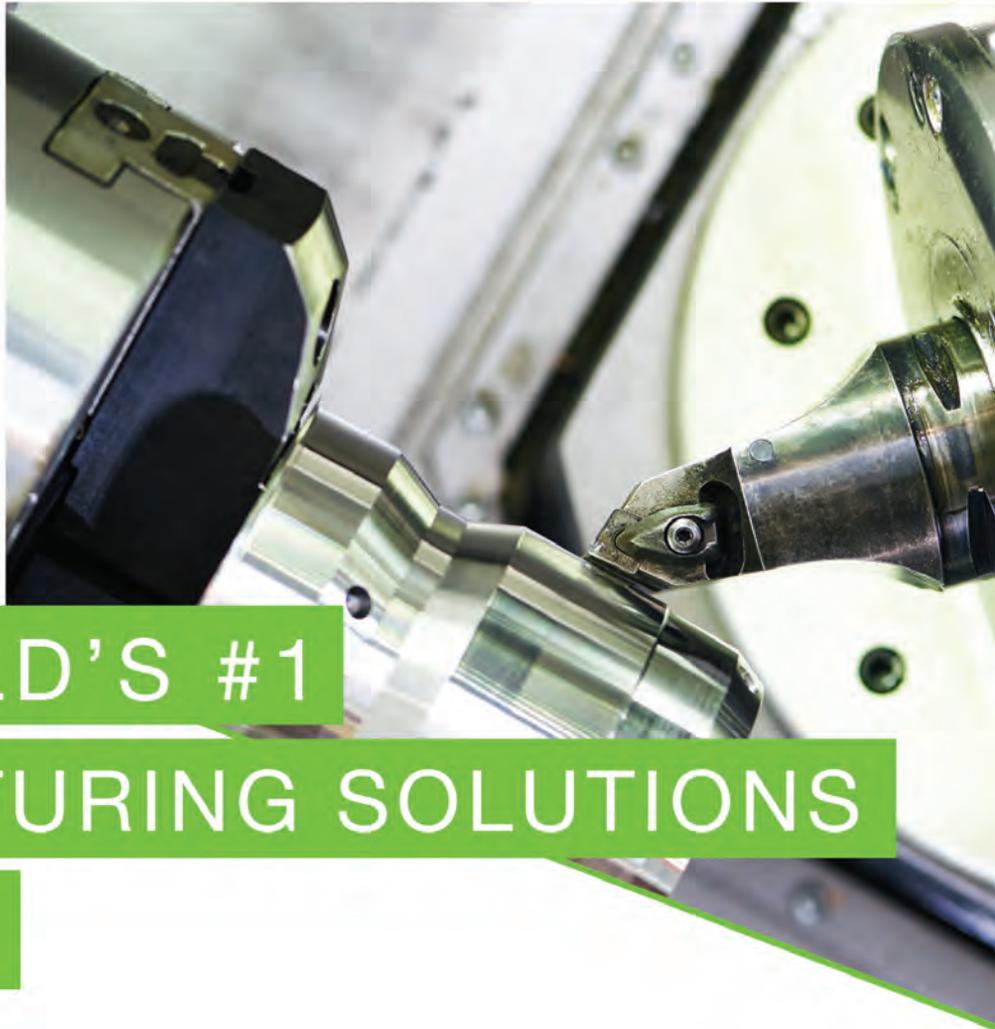
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# Industry News

## Hexagon Manufacturing Intelligence Supports Workshops for Warriors Program

Hexagon Manufacturing Intelligence has announced its support for Workshops for Warriors (WFW), a non-profit school created to train military veterans in the field of advanced manufacturing. Hexagon has contributed several portable ROMER Absolute Arms to help expand the program into metrology. Located in San Diego, WFW has produced 421 graduates earning 2,500 nationally recognized certifications from the National Institute of Metalworking Skills (NIMS), the American Welding Society and more.

Hernán Luis y Prado, the school's founder who served in both Iraq and Afghanistan, wanted to help his community of veterans struggling in their transition back to civilian life. Since 2008, Hernán has built a vocational training program for his fellow service members to learn and earn portable and stackable credentials in their chosen manufacturing career field.

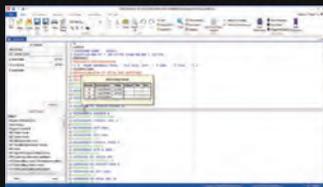
Luis y Prado, said, "Hexagon provides calibration services for its products locally, which is important to us, and supports the needs of our dynamic hands-on teaching environment. Most manufacturers in our area already have Hexagon technologies, so students can gain experience on industrial grade equipment here, then move into a real manufacturing environment.

Employers have told us specifically that having graduates with metrology training and experience on Hexagon equipment is one of the main reasons why they were hired.

"Metrology is crucial for Industry 4.0 and advanced manufacturing as a whole. Students trained in metrology can confirm what they build - verify if a part is actually what they intended to produce or reverse engineer.

Veterans are taught to use billion dollar pieces of equipment in the military. You train like you fight, and when you fight, you fight like you were trained. WFW wants to place an incredibly powerful portable CMM into the hands of 20-something veterans and have them master that device".

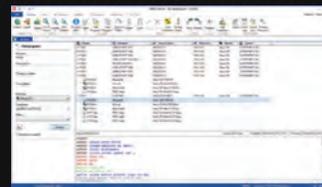
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VMC-3Axis	Ingen	Patrick	00:00	00:00
HMC-48	1404	Roark Jr	03:21	03:50
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## Bystronic Acquires Italian Technology Company for Tube and Profile Processing, TTM Laser S.p.A.

Bystronic announces the full acquisition of their strategic partner TTM Laser S.p.A., a successful Italian technology company that specializes in the development of 2D and 3D laser systems for the cutting of tubes and profiles, and for the welding of large-format metal sheets. Recently, Bystronic has significantly expanded its existing portfolio of sheet metal fabricating technologies with new solutions for automation, warehouse integration, and digital networking.

The development of a strategic partnership with TTM Laser in November 2017, and resulting positive feedback from existing customers, has shown there is a strong demand for customers to be able to purchase all these solutions from a single source. The added value that is created allows customers to position themselves more successfully on the market. A supplier with a strong sales and service network not only simplifies the purchase and maintenance, but also the successful integration and operation of manufacturing solutions.

With the acquisition of TTM Laser, Bystronic is deepening its existing portfolio for the laser cutting process step with applications for tubes with diameters between 1/2 inch - 32 inch, and for profiles.

## Arizona Manufacturers Council Appoints New Executive Director

The Arizona Manufacturers Council has a new leader as the group selected Allison Gilbreath to serve as its executive director.

Gilbreath previously was vice president of business development for the

Greater Phoenix Economic Council and worked with the Arizona Commerce Authority for nearly a decade, also in a business-attraction role.

"Allison's breadth of experience and understanding of the issues that are important to job creators in the manufacturing sector will serve the Arizona Manufacturers Council incredibly well," said Dawn Grove, AMC chairwoman.

Connected with her role at the council will be to serve as vice president of strategic initiatives for the Arizona Chamber of Commerce & Industry. The council, which is the official state affiliate of the National Association of Manufacturers, is under the chamber's umbrella.

"(Allison) knows what it takes to create jobs, and she has earned an outstanding reputation among business leaders and government officials across the state," said Arizona Chamber president and CEO Glenn Hamer in a statement.

In her role with the council, Gilbreath will oversee a host of manufacturing industry issues. Arizona has manufacturing in numerous industry sectors, with more than 30,000 workers in the semiconductor industry and tens of thousands more working in aerospace and defense manufacturing.

For the chamber, Gilbreath will work on legislative issues regarding technology and infrastructure.

## TRAK Machine Tools to Host Western Region Open House Events

TRAK Machine Tools will showcase its TRAK 2OP portable VMC at two upcoming West region open house events. The first will take place May 2-3, 2018, at its showroom located at 4710 B Street NW, Unit 104, Auburn, WA 98001. The second will be held May 16, 2018, at 3511 Thomas Road,

Unit 8, Santa Clara, CA 95054). Complimentary lunches will be provided at the events.

Designed primarily for second operation machining, the TRAK 2OP streamlines a shop's workflow by bringing an additional spindle quickly and easily to an operator idled by the cycle time of his or her primary machine.

Like all TRAK Machine Tools' products, it utilizes ProtoTRAK CNC technology with easy to learn and use conversational language programming. Programs can be generated either at the machine or remotely to perform tasks normally associated with second operation machining, including drilling, tapping, countersinking, face milling and the machining of profiles, pockets and bolt hole patterns.

Other TRAK 2OP standard features include an eight-station tool changer that eliminates the need for manual tool changes, built-in Jergens ball locks that facilitate quick changeovers, and a pallet jack. The latter is designed to allow a person to move the compact (2.5' x 4' footprint) TRAK 2OP to any desired shop location within minutes to improve workflow.

TRAK Machine Tools will also display its TRAK LPM VMC for high-mix, low-volume work, and TRAK product line of bed mills, lathes and knee mills.

## Precision Drive Systems Announces West Coast Office

Precision Drive Systems (PDS) has announced the opening of a new West Coast branch. The office is located in Arlington, WA, part of the Seattle Metropolitan area, and will be headed up by Bill Pyle, west coast regional sales manager.

PDS provides full service precision spindle sales and service for CNC

# Industry News

routers, milling machines and robotic units. Along with the new office, PDS has expanded its area of service to include moulder spindles, panel saw arbors and aggregate repair, in addition to mechanical, belt driven spindles and multi-spindle boring units.

“We have determined that there is an overdue need for precision spindle repair on the west side of the Rocky Mountains,” said Bob Barone, vice president, PDS. “The Sea-Tac area is home to hundreds of high-tech manufacturing companies and we look forward to assisting them with their maintenance needs.”

PDS will offer a drop off service for customers in the Sea-Tac area as well as training on spindle maintenance.

## XYZ International Enters the Waterjet Industry by Acquiring WARDJet

XYZ International, a leading global manufacturer of CNC router systems and CNC knife systems based in Burlington, Ontario, Canada announces the acquisition of WARDJet, a Tallmadge, Ohio firm that manufactures waterjet cutting machines and offers custom waterjet solutions to a variety of industries.

XYZ President, Alf Zeuner, who will oversee the combined company as president, says, “XYZ believes in providing localized sales and service support through our own offices. This ensures fast and reliable customer service. We want to bring this same value to WARDJet’s customers.” Due to innovative and specialized manufacturing capabilities and advancing technology, “people are excited about creating a new future together,” he adds. Both firms have become industry leaders by offering customized products tailored to the specific needs of the end user.

WARDJet products will continue to be made in the USA at their Ohio facility and will now be supported

by XYZ’s global network of sales and support offices. Founder Richard Ward will retain the title of WARDJet

president and says that he is looking forward to the next steps for the business he founded 23 years ago.

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# Industry News

## Optomec Appoints Former Machine Tool Industry COO as VP Business Development

Optomec, a leading global supplier of production grade additive manufacturing systems for 3D printed metals and 3D printed electronics today announced that Jamie Hanson, former chief operating officer at Methods 3D has assumed responsibilities in the newly created position of VP business development at Optomec.

For the past 10 years, Mr. Hanson served as the director of corporate development at Methods Machine Tools and COO of Methods 3D, one of the largest US distributors of ma-

chine tools, where he also initiated their activities in 3D Printing. Prior to that, Jamie was at Applied Materials for 17 years, where he was director of eastern regional account operations. Mr. Hanson is a graduate from the US Military Academy at West Point and was an Airborne Ranger.

"I am thrilled to be joining Optomec, particularly at this inflection point, where additive manufacturing is being adopted into production processes" said Jamie Hanson. "Optomec technology is uniquely positioned to take advantage of this opportunity and I am excited in my role to help our customers implement this technology to make a difference in their business."

## Mahr, Inc. Appoints Quality Manager

Mahr Inc., announced that Lara Rapport has joined the company as quality manager to support its continued growth and ongoing commitment to excellence. In her new role, Rapport will focus on improving processes through customer feedback, ensuring ISO compliance, management of the ISO auditing system and more.

Rapport is a certified ISO 9001:2015 lead auditor with more than 20 years of experience in manufacturing and quality management. She has expertise in ISO 9000, lean manufacturing, facility energy management, program management and the quality disciplines of: Six Sigma, FMEA, PPAP, auditing and CAPA problem solving.

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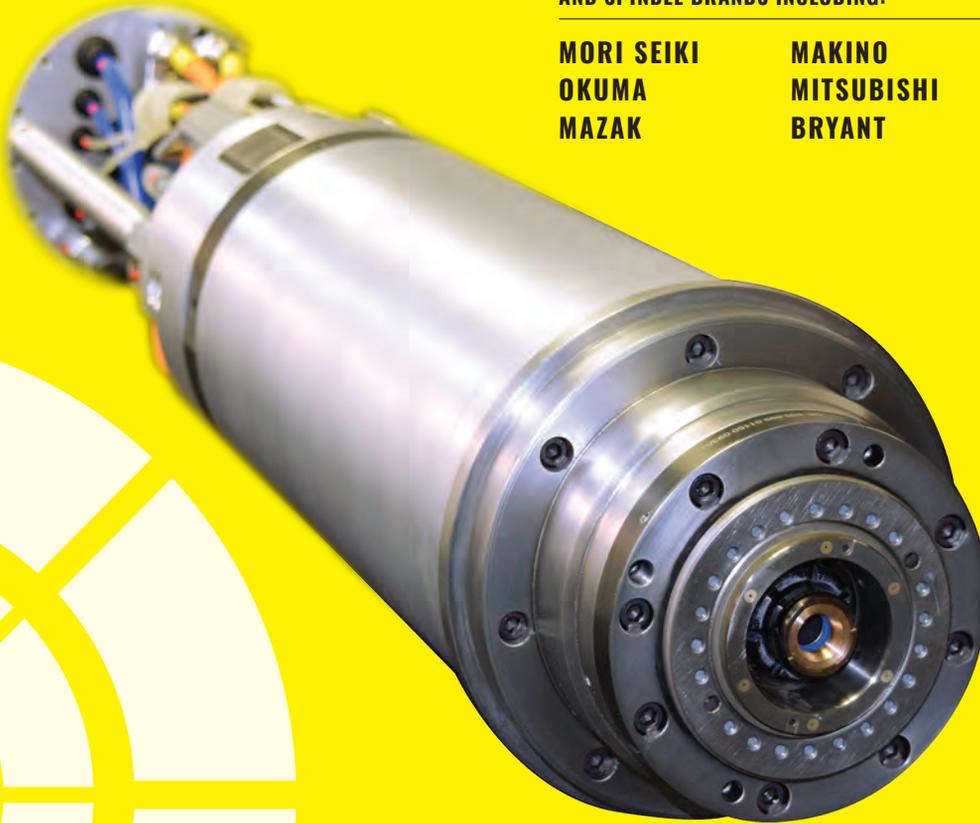
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# New Products

## New Compact VMC Built for Small Parts in Tough-To-Machine Materials —Doosan

Doosan Machine Tools announces the addition of the DNM 4000 to its line of vertical machining centers. This compact VMC was designed for lean cell applications where space is tight, but productivity and cutting performance are essential.

Able to take more aggressive cuts than similarly sized 30 taper drill – tap machines, the DNM 4000 is ideal for machining small parts in tough-to-machine materials for a range of industries including medical, aerospace, automotive, job shops, firearms and

die & mold. Featuring a 12,000 PRM, 25 HP 40 taper spindle with 86 ft-lbs of torque and a standard BIG-PLUS dual-contact interface, the DNM 4000 delivers shorter cycle times, improved part surface finishes and longer tool life than competitive machines.

This vertical machining center has a compact footprint of only 65” W x 112” L x 108” H and travels of 20.5” in X, 15.7” in Y and 18.9” in Z. The two-door design incorporates the largest opening width in its class, allowing for easy operator access. The coolant system is located in the rear of the machine so the DNM can be placed mere inches from the neighboring machines.

The DNM 4000 comes with a long list of standard features. These

include a 20-tool capacity magazine with a 1.3 second tool-to-tool time, standard spindle cooler, Doosan Smart Thermal Monitoring software, grease lubrication system and 230psi through spindle coolant. The FANUC i control with Easy Operation Package (EOP) software developed by Doosan provides numerous functions designed for convenient operation and reduced setup time.

“The DNM 4000 was purposefully developed to be small in size, but not in power,” said Andy McNamara, director of sales at Doosan Machine Tools America. “Manufacturers can now enjoy increased productivity and performance without sacrificing compactness.”



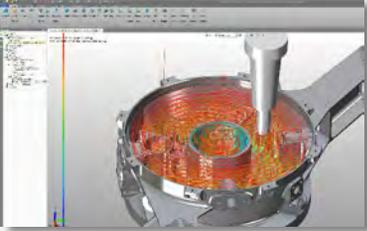
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# New Products

## Fully Automatic NC Circular Cold Saw —Kaast Machine Tools, Inc.

Kaast Machine Tools, Inc. announces a new fully automatic NC cold saw in the company's already impressive line of circular saws. The HCS boasts a rigid design and sophisticated anti-vibration features.

The HCS is extremely fast at up to 500 cuts/hour for 2.75" bars, and 400 cuts/hour for 24" clean-cut lengths. The automatic material diameter sensing fast cycle times. The thin-kerf blade design (0.079") keeps waste at a minimum.

The design of the HCS also includes



a top vice which keeps the material clamped allowing bundle cutting for increased throughput. The bar loading magazine can hold 13 pieces of 2.75" x 20" bar with the option to upgrade capacity. The electromagnetic brake and gear transmission are designed to decrease noise, vibration, and power consumption.

Other standard features for the HCS

include a NC Control with 7" touch-screen, trim and remnant sorting, fast bar feed (944"/min), and saw blade feed by AC servomotor and ballscrew.

## New Compact Brankamp Machine Monitoring System —Marposs

Marposs Corp. has announced the availability of its new Brankamp CMS-02 stand-alone system for collision monitoring and crash damage mitigation in machine tools. The system employs a ceramic strain sensor to detect irregularities in the production process

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# New Products

by measuring elastic deformation in the range of 0.1 microns, and both slow and dynamically increasing forces which have damage potential. It then reacts extremely fast -- in the range of 1 millisecond -- by sending a stop signal to E-STOP helping to alleviate or even eliminate machine crashes.

As compared to previous Brankamp (CMS-1) offerings, the CMS-2 is very compact, single channel unit. It has 16 bits resolution, 25kHz sampling rate, three operation modes and three limits per mode (warning, soft and hard stop outputs limits), stop-event data recording, and signal values log file. Visualization of the data, analysis, and statistics, as well as the HMI, is realized by connecting an Ethernet cable to a Windows®-based industrial PC unit

or the newest IPC4 dedicated monitor.

Additionally, the system can be expanded to work in conjunction with the Genior Modular monitoring solution, achieving both collision detection and process monitoring simultaneously and visualizing the processes in parallel.



## Doosan's Puma SMX Series Adds Lower Turret for Increased Versatility —Doosan Machine Tools

Doosan Machine Tools announced that its Puma SMX super multi-tasking turning centers are now available with a lower turret for enhanced versatility and productivity. The turret will be

available on both the 10" chuck (Puma SMX2600ST) and 12" chuck (Puma SMX3100ST) models.

Doosan's Puma SMX Series is a twin-spindle, multi-tasking turning center built for completing complex parts in a single setup. Both turning spindles feature 0.0001° resolution on the C-axis for high precision contouring, and the 12,000 RPM



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# New Products

dedicated milling spindle features 0.0001° resolution contouring B-axis as well. With a Y-axis stroke of 11.8” and an orthogonal X/Y structure, part accuracy and machine accessibility are both improved.

Doosan reports the addition of a lower turret allows operators to be even more productive on a single CNC machine. A twelve-station static tool turret is standard on SMX ST models, and a 5,000 RPM milling turret is available as an option. The turret is also designed to accommodate steady rests, follow rests, tailstock centers and two-jaw vises.

“Adding a lower turret to our Puma SMX Series makes a variety of new ap-

plications possible,” states Jim Shiner, director of sales and marketing at Doosan Machine Tools America. “This will be invaluable for shops that are looking to take on more complex parts and need a way to get them done more quickly and accurately.”

## New Jetstream Tooling® Delivers High-Pressure Coolant to Thread Turning —Seco

Seco Tools has introduced Jetstream Tooling® high-pressure coolant technology for threading shank holders. The new range includes shank



holders for external applications, boring bars for internal applications and GL-heads for use with Seco Steadyline boring bars.

The Jetstream Tooling thread turning holders deliver a concentrated high-pressure jet of coolant through

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a hose connection for up to 275 bar/3,988 psi coolant inlets to the optimum position close to the cutting edge. High-pressure coolant can penetrate the heat vapor barrier that develops on a cutting tool and workpiece in the cut zone. This Jetstream technology also makes it possible to guide or steer chips away from the cut and increases tool life, even with minimum coolant pressure.

Jetstream Tooling thread turning holders are available in 16 external, 28 internal and 14 GL-head types in insert pocket sizes 16, 22 and 27.

## Expanded Thread Milling Cutter Family Offers New Tool Bodies and Inserts —Walter

Walter has expanded the range of its innovative T2711/T2712 thread milling cutter family for cutting large threads with two new tool bodies for the M56 and M64 threads and three new thread milling cutter inserts.

Walter's multiple-row T2711/T2712 thread milling cutter family can now be used for all dimensions in the coarse-pitch thread range. Walter reports the T2711/T2712 is the first

thread milling system to combine the advantages of thread milling with those of thread tapping. Multiple thread sections can be machined simultaneously with high cutting parameters.

In addition to quick machining, users also benefit from the high degree of process reliability of thread milling and the cost benefits of an indexable insert tool. The new thread milling cutter inserts with smaller corner radii enhance the versatility of the existing tool bodies, and the two new tool bodies allow M56 and M64 coarse-pitch threads to be cut. UNC, UNF, M and MF thread sizes starting



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at 1" dia. can be machined with the existing T2711/T2712 tool bodies and inserts.

The new thread milling cutter inserts enable users to cut finer pitches. Because of these inserts, the multiple-row bodies can cut not just one or two pitches, but many when the row spacing is an integral multiple of the pitch. And with the new tool bodies, virtually any pitch between 6-18 TPI. can be cut. This means that users who are already working with the Walter T2711/T2712 thread milling cutters can now produce numerous pitches, instead of just one or two, with a single tool body. In addition, with just a few tools, users

can cut not just multiple pitches, but also common and less common thread sizes.

## Laser Systems Now Available With nLIGHT Light Sources

### —Cincinnati Incorporated

Cincinnati Incorporated's (CI) fiber lasers now are available with high-performance light sources from nLIGHT. The new partnership combines nLIGHT's advanced laser technology with CI's laser cutting systems to provide job shops and OEMs with



the ability to cut reflective "red" metals. The nLIGHT light sources are available on CI's 900 series fiber lasers

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technology allows cutting of even the most reflective metals like polished stainless, aluminum, brass and copper at full power and stability. Incredibly reliable and designed to be serviced onsite, the nLIGHT alta family of fiber lasers delivers maximum uptime and withstands harsh environments.

“These light sources are a jump forward in fiber optic laser cutting technology,” said Troy Wilson, product manager for Cutting Products, Cincinnati Incorporated. “Red metal cutting is historically difficult due to reflection, which causes most systems to shut down. Systems with the nLIGHT technology are able to absorb the reflection and continue running with no error

messages or operator intervention. This is a huge step forward for fiber optic laser cutting and is the latest evidence of CI’s commitment to advancing machine tool technology.”

## Carbide Grade for Tools Machining Difficult Alloys —Ceratizit

The Ceratizit Group offers from-stock rods with two helical coolant holes, as sintered, in the high-performance CTS24Z grade. This carbide grade is designed for the machining of tools out of difficult materials like titanium or corrosion-resistant alloys

for high-temperature applications.

According to the company this grade is similar in hardness to the CTS18D and CTS20D grades and still features a higher toughness. The company says that in everyday production it provides protection against breakage and provides consistent tool performance. The titanium alloy (Ti-6Al-4V) is frequently used in the aerospace industry and medical systems sector.

According to the company, comparative tests when machining this material have shown that this grade can increase tool life compared to conventional carbide grades.

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# New Products

## Carbide Cutting Tool Brand Reintroduced —H.B. Rouse

Arno Werkzeuge USA has reintroduced the H.B. Rouse brand of carbide cutting tools and inserts. Formerly sold and marketed under the Arno-Rouse name, the company has reintroduced Rouse as a standalone product offering a broad range of carbide boring bars, tools and inserts for manual turning and milling operations.

The Little Hogger mills have standard 3/4" Weldon shanks and use standard carbide inserts, useful on all milling machines. The carbide insert turning tools have triple-sided



inserts for quick change turning operations. Triple-tip boring bars offer an improved triangular insert located within a precision-machined pocket to eliminate shifting under heavy cuts; the insert requires the simple removal of

one screw for indexing. Boring bars feature carbide inserts that provide three cutting edges instead of only one (as is common with brazed-tip tooling).

## Five-Axis VMC's Monitoring System Reduces Downtime—Chevalier

Chevalier Machinery's UNi5X-400 is a 40-taper, high-speed VMC integrated with a fourth- and fifth-axis table. It is designed for high-speed, high-precision and high-productivity machining in the aerospace, medical and moldmaking industries.



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# New Products



The VMC comes with the company's iMachine Communications System, which connects users to MT-LINKi for performance data, enabling them to anticipate potential issues and prevent downtime. Remote monitoring

and service functionality eliminates direct physical contact during inspection. The software identifies and reports productivity lags 24/7.

The two-axis rotary trunnion table with heavy-duty, three-piece, cross-roller bearing provides part loading and machining capability as well as  $\pm 10''$  A-axis accuracy. The 12,000-rpm (15,000-rpm optional), 25-hp CT-40 spindle features a large-diameter Big Plus spindle design that uses four-piece, P4-Class angular-contact ball bearings. The spindle is direct-drive, reducing noise, vibration and thermal expansion. The machine provides fast interpolation, with a high linear speed of 1,417, 1,417, and 1,181 ipm in the

X, Y and Z axes.

A heavy-duty Meehanite cast iron structure provides rigidity and stability. It also features an inverted, Y-shaped column with single-piece construction and pre-tensioned Class C3 ballscrews for all three axes. All servomotors are directly coupled to ballscrews.

The VMC has a table load of 220 lbs and can handle workpieces as large as  $15.7'' \times 13.7''$ . The X-, Y-, and Z-axis travels measure  $20.5'' \times 15.8'' \times 15''$ , respectively. It also has a capacity of 30 tools.

The machine includes a Fanuc 0i-MF control for 4+1 applications. The control has a 10.4" color LCD screen and includes linear-circular-helical



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interpolation and Manual Guide i. A Fanuc 31iB-5 control is also available.

## Mastercam 2019 Released for Public Beta —CNC Software

The Mastercam 2019 public beta is now open to all currently maintained Mastercam customers. Shops have a chance to test drive the software before it is released and provide feedback to help shape the final product. Participants in the public beta get an early look at dozens of tools for both simple and complex jobs.

The beta includes 2D and 3D milling features that improve toolpath effi-

ciency and control. It can automate 2D chamfering and multi-axis deburring operations. Accelerated finishing is expanded with taper- and lens-style tool support. Surface and Solid Modeling improvements simplify CAD for CAM and deliver greater design and geometry editing tools for shop-floor programmers. Powerful Turning and Mill-Turn improve productivity with plunge and grooving strategies, additional Prime turning support, and expanded 3D tool and holder support. Additionally, it boasts barfeed and import/export operation improvements.

The beta has improved validation with advanced toolpath display and analysis, plus improvements to

machine simulation and support. It includes streamlined workflow and graphics with new sectional views, as well as level and planes management

## New Jig Grinding, Hole Drilling Packages for VMCs

### —Sodick

Machine tool manufacturer Sodick has announced the release of two new packages for users of its high speed machining centers: jig grinding and high-speed hole drilling. These new functions, which are available across the UH Series line of high speed mills, offer users the flexibility to complete

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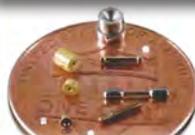
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# New Products

a variety of different operations on a single, high performance machine.

Sodick reports the jig grinding function provides the UH series the flexibility to perform high-precision, 3-axis grinding applications with ease. With independent Z-motion and high feedrate, the UH can achieve high surface quality along difficult contours.

With the added capability of Sodick's new high-speed drilling function the UH mill offers enhanced production hole drilling, even with tight tolerance requirements. Through the use of a high-speed cycle macro the company reports that production time on drilled holes can be cut in half.

## LINKi Zero Down Time Now Available to All Robotics Customers —Fanuc America

Fanuc America announced that its Robot LINKi Zero Down Time (ZDT) service is now available to all automotive and non-automotive manufacturers who purchase Fanuc robots.

Launched in 2015 (in collaboration with Cisco), ZDT is a predictive analytic service that identifies potential failures so customers can schedule maintenance and repairs, avoiding unexpected breakdowns during production.

Today, over 16,000 robots in the automotive industry are operating with ZDT. Since its introduction, Fanuc estimates that ZDT has saved customers over 1,300 hours of unexpected production interruptions, which equates to more than \$40M.

“Thanks to the success of ZDT, and lessons learned from its application in the automotive sector, we are excited to introduce ZDT to all industries,” said Joe Gazzarato, director, ZDT Cloud Development, Fanuc America.

ZDT is available for all Fanuc R-30iB Plus robots as well as R-30iA and R-30iB robots with the latest software version. ZDT monitors the robot's

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mechanical health, controller and process equipment controlled by the robot. A ZDT Data Collector located inside a customer's plant securely transfers messages from Fanuc robots to Fanuc's ZDT Data Center in the cloud. At that point, Fanuc's analytic programs review the data in the cloud for potential issues. If there is an issue, ZDT automatically notifies Fanuc's service team and the customer with recommended actions to confirm and correct the issue.



## New M800 Monitoring Control Now Available —Mitsubishi Laser Machine

Mitsubishi Laser has added the new M800 control technology to its Advanced 800 Series eX-F fiber laser machine. The company has been working hard to perfect and offer the new technology for its popular fiber laser machine.

The M800 laser control includes a 19-inch tablet style touchscreen, enabling users to swipe, pinch and tap to view data. It features a customizable home page and status bar to access data, meaning less time spent pressing



various buttons to perform the same process.

Additionally, the M800 laser series control has a processing speed up to

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100m per minute and includes an expanded cutting condition library with even more flexibility. Users will see improvements on hole circularity and process times on small geometrically intensive parts.

In line with Industry 4.0 requirements, the processing, consumption and service data available with this control ensures transparency in all production stages. The new navigation interface provides smooth and easy job operation for all operator expertise levels, allowing production jobs to be completed quickly and accurately.

Other benefits include: improved integration with remote360, expanded maintenance and help screens and larger storage for more program files.

## New Air Powered Motor Vises for Automated, High Precision Clamping-Kurt

A representative from Kurt reports that their new line of motorized air vises provides an industry first in utilizing air powered motors to provide consistent preset clamping force and programmable vise opening if desired. These vises are ideal for automated, robotized cells, and applications requiring consistent clamping not easily attained by manual operation.

Using an optional 3mm proximity sensor, the Kurt air powered motor vise is easily set to open and stop precisely at pre-configured positions. Operates on 20-100 PSI and clamps



to stall. Desired clamp force is attained through an air FRL setting. The vises utilize push-to-connect air fittings for easy set-up, and mounts to tables or fixtures using sine keys and 1/2-inch bolts. Additional options are available for adding encoder for programmability or double start thread motor option to increase stroke speed.

This air motor option is available on most Kurt vises including the all-

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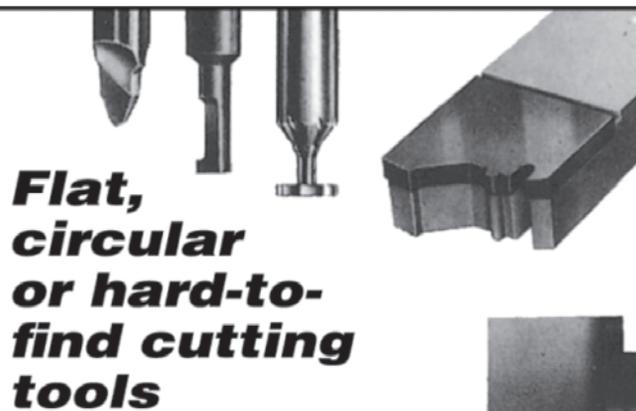
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# New Products

new DX6 vise, plus many Kurt single station vises, double station vises ranging in sizes of 4, 6 and 8-inch models and is also available on smaller vise models such model SCM420.

## New Line of ECOTek™ Waterjet Abrasives-Barton International

Barton International has introduced its new line of economical, domestically sourced ECOTek™ Waterjet Abrasives to the waterjet cutting market in North America.

Barton's general purpose ECOTek line was developed to meet growing

demand in the waterjet cutting industry for lower-cost abrasives. ECOTek includes two proven Barton products for waterjet cutting: (1) Barton 80 STL, which became available in summer 2017, and (2) Barton 80 MGS, introduced in late 2017. Barton secured new sources for these ECOTek abrasives in the wake of India's November 2016 garnet mining and export restrictions.

Barton 80 STL and BARTON 80 MGS are mined and milled right here in the U.S. Both ECOTek abrasives are engineered to meet Barton's demanding safety and performance standards.

Barton 80 STL is a naturally occurring mineral — staurolite — produced from a one-of-a-kind mining and mill-

ing process in Florida. Staurolite has a density and hardness similar to garnet and is suitable for virtually all waterjet applications, Barton 80 MGS, sourced in Oregon, is a synthetic olivine abrasive well-suited to less demanding waterjet cutting applications.

Barton 80 STL and 80 MGS meet the same strict standards for grading, health, safety, and environmental compliance as its garnet abrasives. As with all its products, Barton stands behind ECOTek Waterjet Abrasives with its 100 percent quality guarantee.



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## New Products

### CNC Machines Now Equipped with iMachine Communications System-Chevalier

Chevalier Machinery USA has launched the iMachine Communications System, a product that the company reports enables users to avoid downtime and loss of productivity. This comprehensive remote monitoring system connects clients with MT-LINKi on Chevalier machines to compile performance data, remote machine monitoring, alarm history, maintenance, data analysis and overall equipment effectiveness (OEE). It can identify and report lags in productivity on a 24/7 basis. Instantaneous communication from the machine allows the operator to make fast modifications, resulting in a more efficient and profitable machine.

"Efficiency is no longer about a machine's uptime but about how the entire machine line works as a whole," said Johnson Lan, vice president of Chevalier Machinery. "Our iMachine Communications System software is designed to anticipate potential issues and prevent stoppages, which increases productivity."

The software is user friendly and specifically designed for the end user's analytic needs. Smartphone applications will be available to provide access to the monitoring status of the machine regardless of the end user's location. "This level of monitoring fosters a greater understanding of production assessment and leads to streamlining and maintaining operations for greater efficiency and productivity," said a company spokesperson.



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# ...Hotline Continued From Page 8

## Center for Medical Device Manufacturing Opens in Carlsbad, CA.

A biomedical incubator has opened facilities for additive manufacturing and R&D in Carlsbad to aid medical device product development.

Texas-based Watershed Idea Foundry recently launched the 4,000-square-foot Watershed Center of Excellence in Carlsbad, where entrepreneurs and manufacturers will work with Watershed to develop products as well as create regulatory-compliant documentation.

"Additive manufacturing is the future of medical device design," Nick Cordaro, CEO of Watershed Idea Foundry, said in a news release. "Watershed is combining its expertise in both arenas to guide entrepreneurs and manufacturers through this innovative transition. These facilities will not only showcase additive manufacturing but also provide best practices, R&D, and training for the future of the industry."

This marks Watershed's first expansion. The facility features include Aconity 3D laser powder bed machines.

## Local Manufacturers Launch Sacramento Youth Job Training Initiative

The local research and advocacy group Valley Vision and a group of Sacramento area manufacturing companies are working together to provide more job training for local youth.

The manufacturers hope to inform schools about their current technology and training needs, so that the schools can provide programs better suited to the local labor market.

"We want to develop a workforce to meet the needs of the 21st-century manufacturer," said Dean Peckham, the project manager of the Sacramento Valley Manufacturing Initiative.

Many schools have ceased teaching industrial arts, and even the ones that do have programs might not meet the needs of local companies, Peckham said.

From a first scoping meeting that attracted 60 manufacturers in October, the volunteer group attracted 80 people to a formal organizational meeting at the end of February. That meeting included manufacturers and local high school and community college representatives, said Peckham.

## Colorado Electric Motor Company Gets Order from Chinese Customer

A Longmont, Co.-based maker of electric motors said it's received a \$1.3 million follow-up order from a Chinese customer. UQM Technologies Inc. said it received the order for its R340 fuel cell compressor systems from an unnamed Chinese customer. UQM said it received a \$2.2 million order from the same Chinese customer last year.

## LMI in Everett, WA wins Boeing Contract

Boeing has awarded a multiyear contract to LMI Aerospace's composite operation in Everett, Wa. for thermoplastic composite parts.

The components are for Boeing 747, 767 and 787 Dreamliner aircraft. Deliveries are scheduled to begin in 2019, LMI Aerospace said in a news release.

Terms of the deal were not disclosed.

"We are pleased to help expand Boeing's supply base for this lightweight and cost-effective technology," Don McEwen, general manager of LMI's Everett composite and testing facility. "Our thermoplastics work also expands LMI's portfolio of composite fabrication and assembly manufacturing work."

## Vigor Gets Big Contract for USNS Guadalupe

Vigor Marine LLC, Portland, Oregon, is being awarded a firm-fixed-price contract for a 42-calendar day shipyard availability for the midterm availability of USNS Guadalupe (T-AO 200). Work will include gravity drain line replacement, forward peak tank sounding tube replacement, tank deck cargo fuel piping maintenance, non-skid replacement, miscellaneous steel repairs, starboard main engine overhaul, main engine fuel injectors rebuild, main engine turbo charger overhaul, auxiliary boiler replacement, various pump overhauls, galley booster heater installation, lifeboat repair and maintenance, deck tile replacement, sliding block chain replacement, carpet replacement, air conditioning inspection and repair, and refrigeration system service. Work will be performed in Portland, Oregon, and is expected to begin on May 21, 2018 and is expected to be completed by July 1, 2018.

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# ...Hotline Continued From Page 88

## Denver Company Gets Modification for Upcoming Work

Birdon America Inc., Denver, Colorado, was awarded a modification for bridge erection boats and crew protection kits. Work will be performed in Denver, Colorado; and Wichita, Kansas, with an estimated completion date of March 29, 2019.

## Raytheon in Tucson Gets Bigger Modified Contract

Raytheon Co., Tucson, Arizona, has been awarded a modification to previously awarded contract to add Phase IIB/IIC tasks for the Multi-Azimuth Defense Fast Intercept Round Engagement System (MAD-FIRES) program. The Phase IIB/C program will further advance MAD-FIRES system design finalization work, perform spread-bench testing of the final system design, and create a final form-fit-function design that can be demonstrated through a series of flight tests. The modification brings the total cumulative face value of the contract to \$50,710,385 from \$27,925,395. Work will be performed in Tucson, Arizona (90 percent) with an estimated completion date of May 2020.

## GA-ASI Taps Boeing in Carrier Aircraft Bid

General Atomics Aeronautical Systems Inc. has enlisted a surprising partner in its bid to build an unmanned, carrier-based air refueling aircraft for the U.S. Navy.

The partner is Boeing Co.

The deal is surprising because Boeing is one of three prime contractors proposing its own entry in the MQ-25 Stingray contest, along with General Atomics and Lockheed Martin Corp. The project is expected to be worth billions and perhaps north of \$10 billion.

Northrop Grumman Corp. was also part of the contest until it dropped out in October, saying the project would not bring a good return.

General Atomics Aeronautical Systems announced a list of its subcontractors on Feb. 12.

Other subcontractors include engine maker Pratt & Whitney, UTC Aerospace Systems, L3 Technologies, BAE Systems, Rockwell Collins, the Fokker unit of GKN Aerospace, General Atomics Electromagnetic Systems and General Atomics Systems Integration.

Flightglobal reported that GA-ASI's choice of Pratt & Whitney engine reveals that the Poway, CA. company's MQ-25 entry will be larger than its jet-powered Predator C Avenger unmanned aircraft.

GA-ASI is based in Poway, California where it builds its aircraft. It is an affiliate of privately held General Atomics.

## Orbital Further Expanding Arizona Presence

Orbital ATK continues its growth in the Valley with plans to expand its launch vehicles operations with a new Chandler, AZ campus.

The new Orbital campus will be at Willis Road along Chandler's Price Corridor after the Chandler City Council recently approved a resolution and re-zoning to support the development.

Dulles, Virginia-based Orbital ATK Inc.'s launch vehicle business in Chandler began in the 1980s and has grown to nearly 1,600 employees.

The expansion for the global aerospace and defense technology firm isn't a surprise since earlier this month the company announced it was planning to hire another 350 mainly high-paying positions within the next year and a half while it prepares to build the largest rocket yet in Chandler.

## Harley-Davidson Invests in Brisbane, California, Startup to Help Make Electric Motorcycles

Harley-Davidson Inc. has made an equity investment in a California company that will collaborate with Harley to develop and produce electric motorcycles.

Alta Motors, whose factory is in Brisbane, Calif., designs and produces electric motorcycles, including the Redshift platform available in 19 states. A Harley-Davidson news release called Alta "a leader and innovator" in lightweight electric vehicles.

"Earlier this year, as part of our 10-year strategy, we reiterated our commitment to build the next generation of Harley-Davidson riders, in part, by aggressively investing in electric vehicle (EV) technology," said Harley-Davidson CEO Matt Levatich. "Alta has demonstrated innovation and expertise in EV and their objectives align closely with ours. We each have strengths and capabilities that will be mutually beneficial as we work together to develop cutting-edge electric motorcycles."

# Utilization Monitoring for Aerospace Industry is Crucial

Provided by Shop Floor Automations



chine monitoring, they think it is only to see when machines are down or running, and only for their benefits. On the contrary. Being able to monitor different sets of data, such as setup time, quality, feed rates, spindle speeds, and feed hold or optional stop will help evaluate your entire manufacturing process. Where can processes be improved? Having the data available to share with others gives you a competitive edge during end-of-shift meetings.

Reason 2 – Legacy equipment and non-CNC machines are eligible for utilization monitoring. Some automatically assume that because they have legacy equipment or do not have CNC machines means they can't take advantage of Industry 4.0 and the benefits of it. This is not the case.

Older machines can be updated with hardware solutions, such as an SRC Adapter, to help capture this valuable data. Many different types of machines can be connected, such as grinders, assembly equipment, lasers, deburring stations, and much more. While this data may be limited when connecting to older equipment, any machine can be interfaced to the system. Protocols such as MTConnect, Fanuc FOCAS and OPC UA have leveled the playing field and made capturing data a less proprietary process.

Reason 3 – Utilization monitoring helps to enable 24/7 manufacturing, which increases your competitive edge. Without machine monitoring, it will be difficult to get started with lights-out manufacturing. In order to delve into the benefits of IIoT for your shop, you need to ensure that machines can run without humans at the helm. The first step in getting lights-out manufacturing started is to work with machinists to evaluate glitches that need to be eliminated in the machining process. Having the added insight that machine data collection provides is invaluable so that machines can eventually be set up to run 24/7. Keeping this remote monitoring system in place also helps to know where things go wrong in the process when machines are left alone. Notification of issues via text messages and emails will help improve 24/7 machine processes.

Aerospace is a nonstop industry, and as such, big corporations in the field have become more particular about who they keep to manufacture their parts. For example, Airbus states on their website that they require utilization data from their captive shops.

“Transparency and trust are essential ingredients to work for the Airbus team,” they declare on their website. Partners and suppliers will need a proven track record of operational reliability and delivering on shared commitments.”

Whether it is to gain, or keep customers, or to just increase productivity, many shops are looking to improve OEE (overall equipment efficiency). Shop Floor Automations has discovered that most shops sadly run between 30 to 50 percent utilization, and we recommend using machine monitoring to help tackle this issue.

Being able to see when a machine is experiencing downtime provides valuable insight to production managers. Having a realistic look at utilization and ways to improve overall OEE is a great asset on the shop floor.

Here are three more reasons to instate machine monitoring via Scytec's DataXchange for your aerospace production:

Reason 1 – Knowing details about your utilization does not benefit only your customer. When people think of ma-

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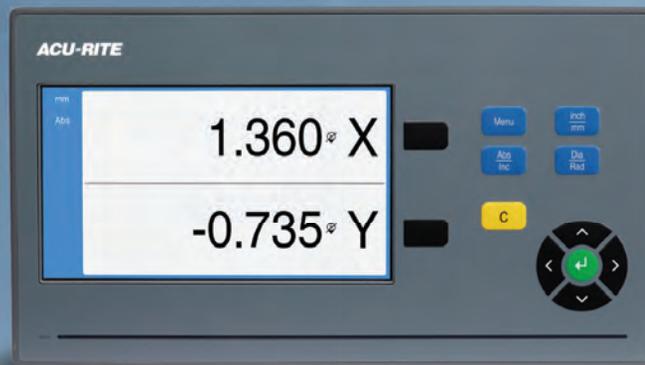
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