

CNC WEST

Volume 40 - Issue 1

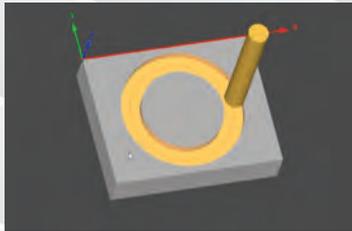
THE MAGAZINE FOR WESTERN METAL WORKING MANUFACTURING

TOOLING & WORKHOLDING

- **SVMA - BY MANUFACTURERS - FOR MANUFACTURERS**
 - **RC INDUSTRIES - LIFE IN A CARTESIAN COORDINATE SYSTEM**
 - **FIVE QUESTIONS TO ASK WHEN MACHINING THREADS**
 - **WESTEC PREVIEW**
- ...Plus Much Much More**

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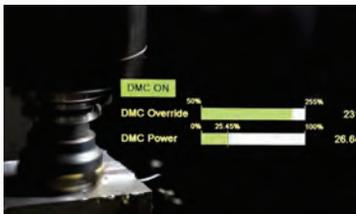
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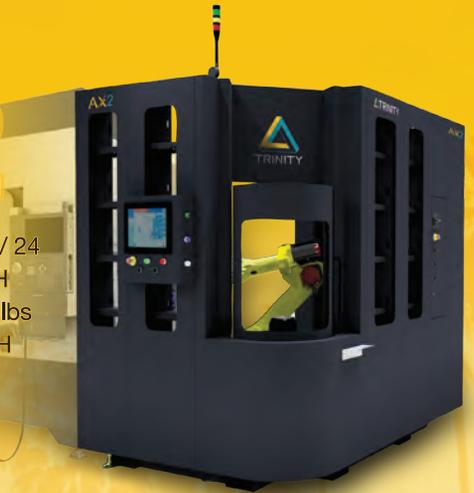
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Pallet + Work Holding = 18lbs
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CNC West

October/November 2021 • Volume 40 No 1

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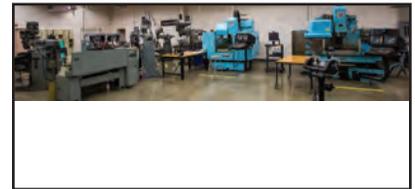
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Anaheim, Ca. based RC Industries was founded on the idea that a manufacturing company should provide more than just machined goods to customers. Page 22



SVMA’s technical learning center on the campus of Charles A Jones Education Center. Most of the machine tools were donated by allied members for student training.....Page 32



Students in Lane Community College’s Industrial Trades program acquire the programming and machining skills needed to compete in today’s demanding manufacturing world.....Page 40

Coming in Dec 2021/Jan 2022

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Look for some really great stories and features covering the latest techniques, in quality assurance and metal fabrication, plus the latest news from the world of metalworking
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CNC WEST

VOL. 40 NO. 1
Oct/November 2021

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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40 Years is Kind of a Big Deal

My father Tom Arnold had a grand illusion 42 years ago. The only regional metalworking publications in circulation were not quite up to the standards of the national magazines. And this is not a slight on those magazines as he published and owned one called Machine Tools West. These publications were printed mostly on newsprint and were more focused on ads than content. He wanted a magazine chalk full of articles and in addition to regional ads to get some national advertisers.

It was a grand plan that had as much of a chance to succeed as to blow up in his face. He felt that shops in the west did things a little differently than mid-west and east coast shops as they worked on different applications. He wanted to share those success stories of western region shops to a western region readership.

Our first issue in October, 1981 was 64 pages and we have not been less than that in the past 40 years. Seems like his strategy worked. My hope is that when we reach our 50 year anniversary I can say the same thing. I have been with the magazine since it's inception and I can say it has been a privilege and an honor to bring this magazine to our loyal readers over the years. And for all of those that have stopped reading print I know many people enjoy each magazine online at www.cnc-west.com.

This issue is our biggest in a couple of years. The size of the magazine depends on advertising and more and more advertisers see the benefit of having their message in front of our readers. Without our readers and our advertisers there would not be a CNC WEST so as much as I want to pat myself on the back I understand with them there would not be a CNC WEST. Now on to this issue.

This is our WESTEC issue along with Tooling & Workholding. We have lots of press releases about companies that will be in the show that is happening in Long Beach in mid-November. Sean Buur worked his magic on quite a few shops this issue. He visited the Sacramento area and visited six shops and crammed them all into one story. The story revolves around the Sacramento Valley Manufacturing Alliance. This is a group that has decided to pool their resources and knowledge to make all of them better and an excellent workforce development plan. Another story by Sean is on a shop in Anaheim that specializes in hard to machine, tight tolerance, high complexity parts for aerospace, automation, automotive, avionics, electronics, and medical devices.

There are some excellent supplied stories by BIG Kaiser, Allied Machine & Engineering and CG Tech. While the first two are tech articles, the last one is on a college in Oregon that still was able to teach CNC machine programming in a Zoom session during Covid. They did not think programming could be taught via Zoom but VERICUT allowed them to do exactly that.

There is much much more in this issue and I hope you can take the time to read this issue. And for those of you who have been doing so for 40 years I salute you.

Sincerely,

Shawn Arnold

Publisher



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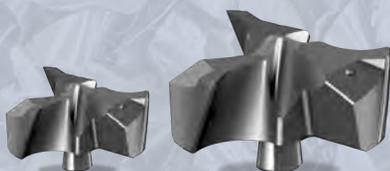
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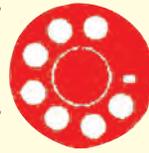
3XD

5XD

8XD



EXEC HOTLINE



Lam Research to Expand Manufacturing in Oregon

Lam Research announced the expansion of its manufacturing footprint in Oregon with a new 45,000 square foot facility in the city of Sherwood, planned to open in December 2021. Lam is one of the largest suppliers of semiconductor manufacturing equipment in the world, and this new site will supply chipmakers with the critical tools needed to build chips that power advanced electronic devices. The new facility is Lam's fifth manufacturing site in the United States and will further enhance its resilience and ability to meet increasing customer demand, as chip suppliers seek to ramp up production globally.

Lam expects its new facility to create approximately 300 new jobs and career opportunities for residents of the Sherwood and Washington County communities, including armed forces veterans, college students and high school graduates.

"We are building the manufacturing workforce of the future—from our comprehensive training program and next-generation manufacturing techniques, to our agile and collaborative work environment," said Tim Archer, president and CEO of Lam Research. "As we continue to expand our manufacturing operations, we are pleased to open a second facility in Oregon."

Phase Four Wins U.S. Space Force Contract at SpaceWERX Pitch Day

El Segundo, CA based Phase Four, the creator of the radio-frequency thruster for satellite propulsion, announced that it has secured a contract with the U.S. Space Force at the SpaceWERX Pitch Day for the company's propellant-agnostic Maxwell engine. Under the contract, Maxwell will utilize ASCENT, a green propellant developed by the U.S. Air Force Research Laboratory, to enable multi-mode propulsion capability, which combines the high thrust capabilities of chemical propulsion and the high efficiency capabilities of electric propulsion.

Raytheon Intelligence & Space to Acquire Blue Canyon Technologies

Raytheon Technologies has signed a definitive agreement to acquire privately held Blue Canyon Technologies, a leading provider of small satellites and spacecraft systems components. Closure of the acquisition, expected by early 2021, is subject to the completion of customary conditions and regulatory approvals. Blue Canyon Technologies will report into Raytheon Intelligence & Space upon closing.

Based in Boulder, Colorado with more than 200 employees, Blue Canyon Technologies was founded in 2008. The company currently has more than 90 satellites in production, and has supported missions for the U.S. Air Force, NASA and the Defense Advanced Research Projects Agency.

Boeing Nets Orders For 5 New 737 Max Jets From First-Time Customer

The Boeing Co. netted five more orders of its Renton-built 737 Max 8 jets from Dublin aircraft leasing company Griffin Global Asset Management.

The purchase is the first for Boeing from Griffin, which said in a Sept. news release it could presage additional orders as commercial airline traffic edges closer to pre-pandemic levels.

"As market conditions rebound, we are finding opportunities to serve our airline customers in innovative ways," said Griffin founder and CEO Ryan McKenna. "An important component of this strategy is providing balanced capacity that meets returning passenger demand. The 737-8 is well-positioned to support this objective, and this order lays a strong foundation for more to come with Boeing and Griffin on future opportunities."

Continued on page 88...



Discover the New 'Star' in the STAR CNC Galaxy



Machining complex components with exceptional precision, accuracy and speed just got easier...and smarter!

Star CNC introduces SK-51A, the first in their NEW line of automatic fixed headstock lathes. This new 'star' incorporates the advanced FANUC iHMI control system with 'smart' machining capabilities that easily and efficiently guide the operator through the manufacturing process.

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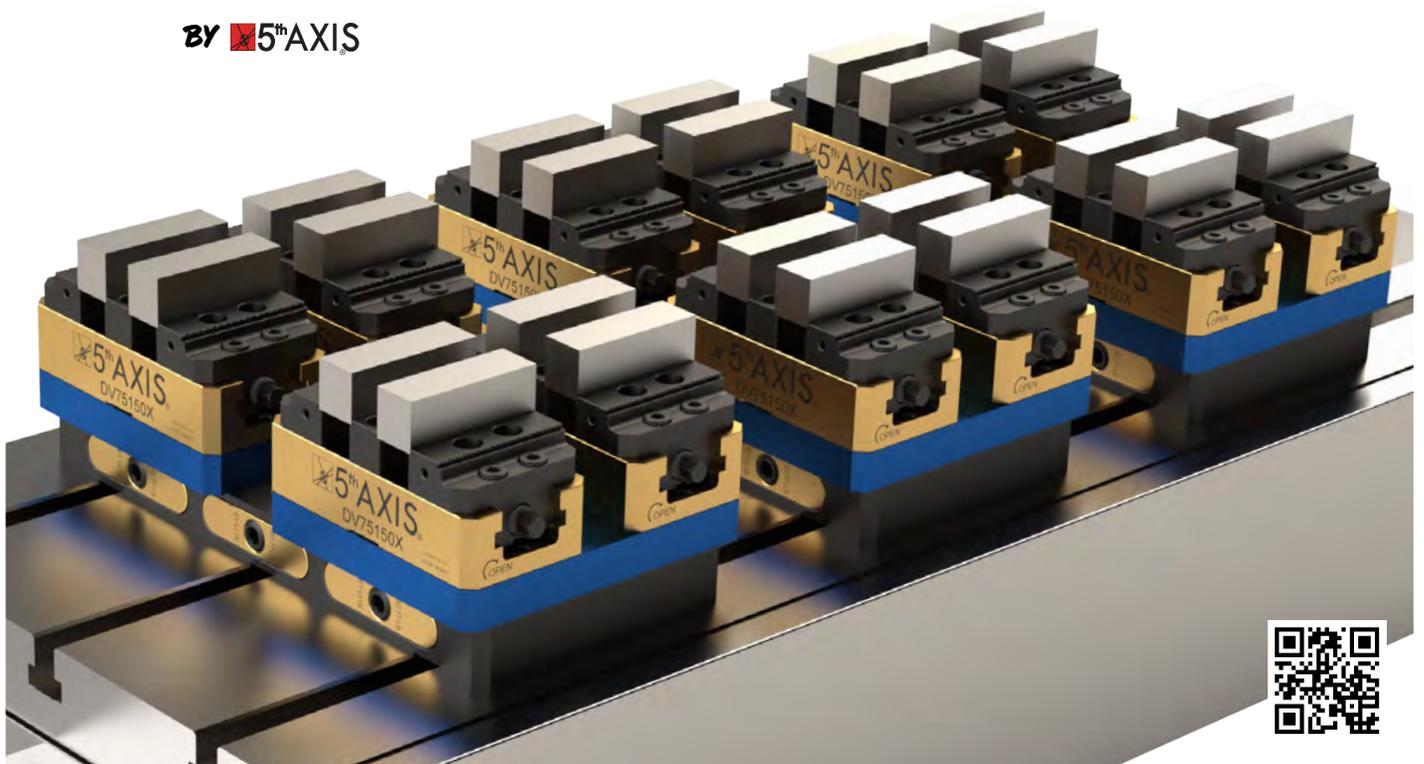
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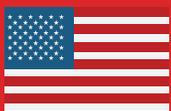
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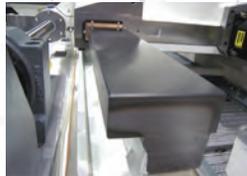
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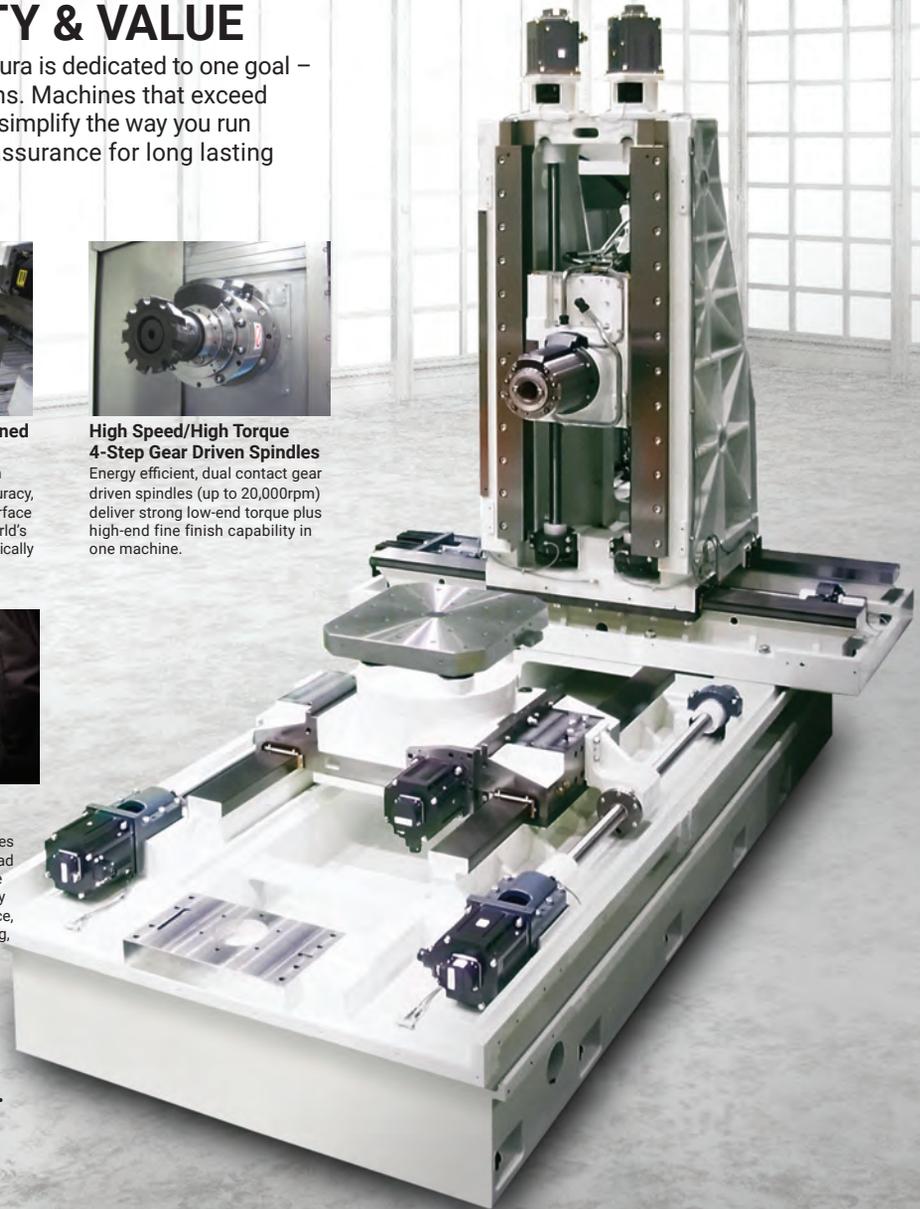
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- Additional heights available
- Custom jaws-made to order!
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Chuck Size	Groove Width	Screw Size	Hole Space	Pie Dia	Height	ALUMINUM Part Number	Price SET OF 3
1.5mm x 60° Serrations							
6"	0.472	10mm	0.787	6"	2.00"	RKT-6200A	\$ 87.07
	0.472	10mm	0.787	6"	4.00"	RKT-6400A	\$ 142.54
8"	0.551	12mm	0.984	8"	2.00"	RKT-8200A	\$ 102.36
	0.551	12mm	0.984	8"	4.00"	RKT-8400A	\$ 196.91
10"	0.630	12mm	1.181	10"	2.00"	RKT-10200A	\$ 151.40
	0.630	12mm	1.181	10"	3.00"	RKT-10300A	\$ 195.31
12"	0.709	14mm	1.181	12"	3.00"	RKT-12250A	\$ 234.40
	0.709	14mm	1.181	12"	4.00"	RKT-12400A	\$ 381.55
	0.827	16mm	1.181	12"	3.00"	RKT-12208A	\$ 213.35
	0.827	16mm	1.181	15"	4.00"	RKT-12408A	\$ 381.55
15"	0.866	20mm	1.690	15"	2.50"	RKT-15250A	\$ 570.70
	1.005	20mm	1.690	15"	2.50"	RKT-15251A	\$ 570.70
3.0mm x 60° Serrations							
18-21"	0.984	20mm	2.362	21"	4.00"	RK3-21400A	\$ 1,275.46
	0.984	20mm	2.362	24"	4.00"	RK3-24400A	\$ 1,775.07

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6"	0.472	M10	0.787	1.50	3.00	KT-6150AF	\$ 32.11	KT-6150F	\$ 27.52
	0.472	M10	0.787	3.00	3.00	KT-6300AF	\$ 49.74	KT-6300F	\$ 53.94
8"	0.551	M12	0.984	2.00	3.75	KT-8200AF	\$ 46.64	KT-8200F	\$ 48.80
	0.551	M12	0.984	2.00	4.00	KT-8201AF	\$ 56.40	KT-8201F	\$ 56.19
10"	0.630	M12	1.181	2.00	4.50	KT-10200AF	\$ 54.35	KT-10200F	\$ 54.96
	0.630	M12	1.181	3.50	5.00	KT-10300AF	\$ 71.14	KT-10300F	\$ 79.49
12"	0.709	M14	1.181	2.00	5.50	KT-12200AF	\$ 89.57	KT-12200F	\$ 86.33
	0.709	M14	1.181	3.00	5.50	KT-12300AF	\$ 115.05	KT-12300F	\$ 129.45
	0.827	M16	1.181	2.00	5.50	KT-12208AF	\$ 89.57	KT-12208F	\$ 86.33
	0.827	M16	1.181	4.00	5.50	KT-12408AF	\$ 128.86	KT-12408F	\$ 156.37
15"	0.866	M20	1.690	2.50	6.50	KT-15300AF	\$ 155.87	KT-15300F	\$ 182.68
	1.005	M20	1.690	2.50	6.50	KT-15301AF	\$ 166.68	KT-15301F	\$ 182.68
3.0mm x 60° Serrations									
18-21"	0.984	M20	2.360	2.50	7.00	K3-21250AF	\$ 166.14	K3-21250F	\$ 207.54
	0.984	M20	2.360	6.00	7.00	K3-21600AF	\$ 412.81	K3-21600F	\$ 540.17

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

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Chuck Size	Groove Width	Tongue Width	Screw Size	Hole Space	Hgt Inch	STEEL SOFT JAWS		ALUMINUM ROUND JAWS		
						Part Number	Set Price	Pie Dia	Part Number	Set Price
6"	.312	.499	3/8	1.500	2.00	TG-6200F	\$ 50.39	6"	RTG-6200A	\$ 91.92
					4.00	TG-6400F	\$ 86.71	8"	8-RTG-6400A	\$ 190.43
8"	.312	.499	3/8	1.750	2.00	TG-8200F	\$ 26.81	8"	RTG-8200A	\$ 124.47
					3.00	TG-8300F	\$ 77.97	10"	10-RTG-8300A	\$ 288.16
10"	.501	.749	1/2	2.125	2.00	TG-10200F	\$ 40.93	12"	12-RTG-10200A	\$ 221.74
					4.00	TG-10400F	\$ 91.15	15"	15-RTG-10400A	\$ 727.86
12"	.501	.749	1/2	2.500	2.50	TG-12250F	\$ 87.38	15"	15-RTG-12250A	\$ 592.44
					4.00	TG-12400F	\$ 123.85	18"	18-RTG-12400A	\$ 975.01
					2.50	TG-15250F	\$ 105.55	21"	21-RTG-15250A	\$ 1,039.59
15"	.501	.749	5/8	3.000	4.00	TG-15400F	\$ 137.62	24"	24-RTG-15400A	\$ 1,775.07

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- Straight serrations
- For Metric tongue & groove top jaw mounting
- For SMW-Autoblok® KNCS, Rota THW Plus, Röhm® DURO-T & ATS Systems quick jaw change chucks



Chuck Dia	Chuck Reference	Part Number	Set Price
6"	140/165/175/170	GBK-160-A	\$ 310.00
8"	200/210/215/225	GBK-200-A	\$ 340.00
10"	250/265/275	GBK-250-A	\$ 380.00
12"	315/340	GBK-315-A	\$ 470.00
15"	400	GBK-400-A	\$ 500.00
20"	500	GBK-500-A	\$ 970.00

ALSO AVAILABLE!



HARD JAWS

For 1.5mm x 60° Serrations Chucks

- Designed for first operation roughing, expect runout between 0.005-0.010
- Reversible- for OD & ID workholding
- 2 steps (1 step hard jaws also available)
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- GRIP-RITE OEM Style with ground tips
- **XTRA BITE:** Very aggressive bite with conical teeth for extra gripping



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	\$289.25	KT-60HJ2-X	\$301.96
B208, HS08	8"	KT-80HJ2-U	\$346.67	KT-80HJ2-X	\$368.06
B210, HS10	10"	KT-100HJ2-U	\$396.18	KT-100HJ2-X	\$436.01
B-12	12"	KT-120HJ2-U	\$461.37	KT-120HJ2-X	\$488.95
B-212, HS12	12"	KT-128HJ2-U	\$460.11	KT-128HJ2-X	\$489.97
B-15	15"	KT-150HJ2-U	\$594.26	KT-150HJ2-X	\$653.06



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POWER CHUCKS

Strong FREE SHIPPING!*



- STRONG® N200 Series Interchangeable With Kitagawa® B-200 Series Chucks
- Available in 2, 3 & 4 jaw models
- Higher gripping force and larger bore
- ISO 9002 certified
- STRONG® replacement parts available and interchange with Kitagawa® B200 series chucks

6" Chucks
w/ A2-5 Mount
\$1,781.00 each

Part # K-206A05-N-B

*Free ground shipping. Kitagawa® is a registered trademark of Kitagawa-North Tech

8" Chucks
w/ A2-6 Mount
\$2,040.00 each

Part # K-208A06-N-B

10" Chucks
w/ A2-8 Mount
\$2,678.00 each

Part # K-210A08-N-B

COLLET PADS & TOP JAWS



Warner & Swasey Collet Pads
Prices Starting At:
\$75.65 Set

Part # CP-WS3RM02500-Y



"S" Style • Warner & Swasey • Emergency Pads
Serrated, Squares & Hexes • Top Jaws • Made in the USA!

"S" Style Collet Pads
Prices Starting At:
\$76.73 Set

Part # CP-S12RM02500-Y



Top Jaws For 8" CNC Chucks
Prices Starting At:
\$635.25 Set

Part # CPJ-KT0800WS4-U

USST JAW BORING RING

A Faster, Easier & Accurate Way To Bore Soft Jaws!



- Ideal for machining soft jaws
- Attaches quickly without tools
- Bore jaws in a single operation
- Reduces set-up time
- Allows for through boring of jaws

Chuck Dia	Part Number	Price
4"	JBR-04	\$176.58
5"	JBR-05	\$176.58
6"	JBR-06	\$200.83
8"	JBR-08	\$246.86
10"	JBR-10	\$278.68
12"	JBR-12	\$309.81
15"	JBR-15	\$465.50

Fits Kitagawa, Samchully, Strong, TMM, MMK, Howa, SMW, Seom, Autoblock and other CNC chucks!

CNC COLLET CHUCK SYSTEM

Use 5C Collets On Your 3-Jaw Power Chuck!



- Available for 6", 8", 10" & 12" CNC lathe chucks
- Allows you to use your 5C collets on your 3 jaw chuck
- Easy Installation! Includes master jaws & sleeve
- Saves you time and money!
- **MADE IN THE USA**

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

Additional systems available. Please call for more information.

LATHE TOOLHOLDER BUSHINGS



Bush Rite

- Type C, Z, J, LB, LBF, B & Boring Bar Sleeves!
- Concentric ground & diamond polished
- Wrench flats for easy removal
- "Easy Entry" feature on OD
- Large variety available

TYPE J
Starting At:
\$45.08 each

Part # TBJ-07-0250-B

TYPE C
Starting At:
\$58.80 each

Part # TBC-07-0250-B

TYPE B
Starting At:
\$48.02 each

Part # TBB-07-0375-B

EDGE TECHNOLOGY 5C COLLET STOP



- Fits standard 5C collets with internal threads
- 6 hardened steel stop rods included-1/16", 1/8", 3/16", 1/4", 3/8", 3/4"
- 3/4" stop rod keeps parts square to spindle axis
- Proprietary locking system prevents the possibility of the stop rod slipping in the body
- Body is red anodized 6061-T6 aluminum
- Body fits a 7/8" wrench

NEW ITEM!

5C COLLET STOP
Part # EDGE-45000
Mfg's List: \$49.99
\$34.27 ea

PH Workholding 16C & 3J COLLETS

With Internal Threads



- Crafted to exacting standards from alloy steel
- Heat treated threads and spring tempered body for accuracy and long life
- **Internal threads** for use with threaded collet stops
- Large variety of round, hex and square sizes
- **EMERGENCY COLLETS** also available in 5C, 3J & 16C

16C & 3J ROUND Collets
\$59.00 ea

16C & 3J SQUARE Collets
\$74.00 ea

16C & 3J HEX Collets
\$69.00 ea

PH Workholding 5C STEP COLLETS



- For OD workholding
- Allows for large diameter parts to be held in 5C collets
- Soft face for easy machining
- Diameters from 2" to 6"

Head Dia	Part Number	Price EA
2"	550-002-PH	\$45.16
3"	550-003-PH	\$52.42
4"	550-004-PH	\$76.40
5"	550-005-PH	\$109.90
6"	550-006-PH	\$128.34



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- AH120-The "Super Grade" for steels, stainless and super alloys!
- TM Chipbreaker-Medium cutting of steels and hi-temp alloys
- SM Chipbreaker- Medium cutting of mild steels and stainless

COMPLETE LINE AVAILABLE!

Insert No.	Rad.	Grade	Chip-Breaker	Application/ Material	Part Number	BOX QTY EACH
CNMG431	.015	AH120	TM	Super Alloys	TO-1285	\$8.94
CNMG432	.031	AH120	TM	Super Alloys	TO-1364	\$8.94
DNMG431	.015	AH120	TN28	Super Alloys	TO-1727	\$12.21
DNMG432	.031	T6130	SM	Stainless	TO-6805431	\$12.21
VNMG331	.015	AH905	HMM	Super Alloys	TO-6859407	\$11.55
VNMG332	.031	AH120	TM	Super Alloys	TO-3194	\$11.55
WNMG431	.015	AH120	TM	Super Alloys	TO-3277	\$8.94
WNMG432	.031	AH120	TM	Super Alloys	TO-3338	\$8.94

YG HI-PERFORMANCE ENDMILLS

4 Flute • Variable Helix • Made From C10 Micrograin Carbide



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

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

WOODRUFF KEYSEAT CUTTERS



- High speed steel
- Straight tooth
- 1/2" diameter shank
- Right hand cut
- Staggered tooth and cobalt also available

Am Std#	Dia	Width	OAL	Part Number	Price
202	1/4"	1/16"	2-1/16	KEO-62010	\$26.91
303	3/8"	3/32"	2-3/32	KEO-63030	\$26.91
204	1/2"	1/16"	2-1/16	KEO-62040	\$26.91
304	1/2"	3/32"	2-3/32	KEO-63040	\$26.91
405	5/8"	1/8"	2-1/8	KEO-64050	\$27.18
806	3/4"	1/4"	2-1/4	KEO-68060	\$28.48
608	1"	3/16"	2-3/16	KEO-66080	\$34.02

SPIRAL POINTED TAPS



- Spiral point, 3 flutes, H3 limits
- HSSE-V3 3% vanadium
- Ideal for hardened tool steels such as 4140, H13 & D2
- Up to 35 HRC
- Additional sizes available

Spiral Pointed- H3 Thread Limits

Size	# flutes	Part Number	Price EA
6-32 NC	3	SOWA-123-300	\$ 6.72
8-32 NC	3	SOWA-123-302	\$ 6.72
1/4-20 NC	3	SOWA-123-308	\$ 7.44
5/16-18 NC	3	SOWA-123-310	\$ 8.40
7/16-14 NC	3	SOWA-123-314	\$ 12.32
1/2-13 NC	3	SOWA-123-316	\$ 14.24
5/8-11 NC	3	SOWA-123-318	\$ 25.84

SOLID CARBIDE ENDMILLS



- 4 flute, single end
- TiAIN Coated
- Center cutting
- 30° helix, right hand



Dia	LOC	Shank Dia	OAL	4 Flute TiAIN Coated	Price Each
1/8"	1/2	1/8	1-1/2	MO-EM001067-4	\$ 7.40
3/16	5/8	3/16	2	MO-EM001107-4	\$ 11.34
1/4	3/4	1/4	2-1/2	MO-EM001137-4	\$ 14.19
5/16	13/16	5/16	2-1/2	MO-EM001153-4	\$ 18.30
3/8	1	3/8	2-1/2	MO-EM001177-4	\$ 21.90
1/2	1	1/2	3	MO-EM001207-4	\$ 35.58
5/8	1-1/4	5/8	3-1/2	MO-EM001226-4	\$ 66.51
3/4	1-1/2	3/4	4	MO-EM001244-4	\$ 88.88

CARBIDE DRILLS

STUB LENGTH • TiAIN Coated

- 135° drill point
- Right hand cut
- Made from premium submicron carbide with 10% cobalt
- For steels, stainless, titanium & nickel alloys



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

COMBINED DRILL & COUNTERSINKS



- Plain type
- 60° angle
- HSS or M42 cobalt
- Additional sizes available

Size	Body Dia	Point Dia	OAL	HSS M2	Price
#1	1/8"	3/64	1-1/4	MAG-1150100	\$5.85
2	3/16"	5/64	1-7/8	MAG-1150200	\$5.94
3	1/4"	7/64	2"	MAG-1150300	\$6.30
4	5/16"	1/8	2-1/8	MAG-1150400	\$6.48
5	7/16"	3/16	2-3/4	MAG-1150500	\$10.22
6	1/2"	7/32	3"	MAG-1150600	\$15.12
7	5/8"	1/4	3-3/4"	MAG-1150700	\$22.14
8	3/4"	5/16	3-1/2"	MAG-1150800	\$34.29



HAND PADS



- 6" x 9" size
- Scotch-Brite™ material never rusts and can be used with water solvents
- For cleaning, deburring or finishing by hand

7447 20/ct ONLY \$18.00!

Mfg Ref.	Description	Color	Pkg Qty	Part Number	Pkg Price
7447	Gen. Purpose Hand Pad	Maroon	20	3M-04029-5	\$ 18.00
7447B	Gen. Purpose (Bulk)	Maroon	60	3M-04229-9	\$ 73.18
6444	Extra Duty Hand Pad	Brown	20	3M-16553-0	\$ 31.43
6448	Light Duty Hand Pad	Dark Gray	20	3M-16555-4	\$ 28.55
7440	Heavy Duty Hand Pad	Tan	20	3M-04050-9	\$ 36.02
7445	Light Duty Cleansing Pad	White	20	3M-16976-7	\$ 27.44

EXL DEBURRING WHEELS



- The top choice for high performance and durability
- Finish, debur or polish metals and composites
- SC-Silicon carbide
- AO-Aluminum oxide
- 6,000 max RPM



OD x W x AH	Density	Mineral Type	Grade	Part Number	Price Each
6" x 1/2" x 1"	8	SC	Fine	3M-09548-6	\$ 53.58
	9	SC	Fine	3M-05790-3	\$ 53.58
6" x 1" x 1"	8	AO	Medium	3M-13617-2	\$ 75.01
	8	SC	Fine	3M-09549-3	\$ 75.01
	9	SC	Fine	3M-05132-1	\$ 75.01



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KURT 6" MACHINE VISE



- 6" vise, full 9" opening
- Narrower body style allows for more vises on the machine
- Recessed pocket for easier lifting
- Thru-body chip evacuation
- Same bed height as D688
- 4 bolt stationary design fastens from the top



SAVE \$122.00!
KURT DX6
6" Vise w/ 9" Opening
Mfg's List: \$721.00
\$599.00 each
Part # KURT-DX6

ALUMINUM 10 PACK VISE JAWS



- Fits KURT Dx6, D688 and other standard machine vises
- Machinable aluminum- customize jaws for your application
- Buy the 10 pack and save BIG!
- Made in USA

FREE SHIPPING!
Prices Starting At Only \$16.05 per pair!
SAVE UP TO 15%!

Length	Height	Width	Part Number	Reg. Price	PROMO!
6"	2"	3/4"	VJ-601-10	\$187.70	\$160.52
6"	2"	1"	VJ-602-10	\$208.40	\$178.20
6"	2"	1-1/4"	VJ-603-10	\$246.50	\$210.77

CAT-40 BALANCED TOOLHOLDERS

- KINGSTON:** Balanced to 15,000 RPM @ g6.3
SPIN TRU: Balanced to 20,000 RPM @ g2.5
- Balanced on a HAIMER machine
 - Includes certificate of balancing
 - Runout 0.0002" TIR or better
 - Manufactured to ISO 9002 standards
 - Traverse ground taper to AT3 specs
 - H5 bore tolerance
 - Collet chucks, Shell mill, Jacobs/ Morse Taper holders available



BUY 10 OR MORE-GET 10% OFF!



Dia	Proj	BALANCED TO 15,000 RPM		BALANCED TO 20,000 RPM	
		KINGSTON Part Number	Price Each	SPIN TRU Part Number	Price Each
1/8"	1.75"	C40-01EM175-K	\$ 59.23	C40-01EM175-KB	\$ 76.99
3/16"	1.38"	C40-18EM138-K	\$ 59.23	C40-18EM138-KB	\$ 76.99
1/4"	1.38"	C40-25EM138-K	\$ 54.95	C40-25EM138-KB	\$ 76.99
	1.75"	C40-25EM175-K	\$ 59.23	C40-25EM175-KB	\$ 76.99
5/16"	1.38"	C40-31EM138-K	\$ 59.23	C40-31EM138-KB	\$ 76.99
	1.38"	C40-37EM138-K	\$ 54.95	C40-37EM138-KB	\$ 76.99
3/8"	2.50"	C40-37EM250-K	\$ 59.23	C40-37EM250-KB	\$ 76.99
	1.75"	C40-50EM175-K	\$ 59.23	C40-50EM175-KB	\$ 76.99
1/2"	4.00"	C40-50EM400-K	\$ 59.23	C40-50EM400-KB	\$ 76.41
	1.75"	C40-62EM175-K	\$ 59.23	C40-62EM175-KB	\$ 74.89
5/8"	3.00"	C40-62EM300-K	\$ 59.23	C40-62EM400-KB	\$ 80.32
	1.75"	C40-75EM175-K	\$ 59.23	C40-75EM175-KB	\$ 76.99
3/4"	3.00"	C40-75EM300-K	\$ 59.23	C40-75EM300-KB	\$ 76.99
	1.75"	C40-10EM175-K	\$ 59.23	C40-10EM175-KB	\$ 76.99
1"	6.00"	C40-10EM600-K	\$ 66.49	C40-10EM600-KB	\$ 81.92

CAT-40 BALANCED COLLET CHUCKS

- KINGSTON:** Balanced to 15,000 RPM @ g6.3
SPIN TRU: Balanced to 20,000 RPM @ g2.5
- Balanced on a HAIMER machine
 - Includes certificate of balancing
 - Runout 0.0002" TIR or better
 - Manufactured to ISO 9002 quality control standards
 - Traverse ground taper to AT3 specs
 - H5 bore tolerance
 - Collet chucks, Shell mill, Jacobs/ Morse Taper holders available



BUY 10 OR MORE-GET 10% OFF!

Collet Series	Proj	BALANCED TO 15,000 RPM		BALANCED TO 20,000 RPM	
		KINGSTON Part Number	Price Each	SPIN TRU Part Number	Price Each
ER 16	2.50"	C40-16ER250-K	\$ 91.94	C40-16ER250-KB	\$102.39
	3.12"	C40-16ER312-K	\$ 94.81	C40-16ER312-KB	\$102.39
ER 20	2.50"	C40-20ER250-K	\$ 90.69	C40-20ER250-KB	\$102.39
ER 25	4.00"	C40-25ER400-K	\$ 94.81	C40-25ER400-KB	\$101.74
ER 32	2.50"	C40-32ER250-K	\$ 94.81	C40-32ER250-KB	\$102.39
ER 32	4.00"	C40-32ER400-K	\$ 94.81	C40-32ER400-KB	\$101.74
ER 40	2.50"	C40-40ER250-K	\$ 94.81	C40-40ER250-KB	\$102.39

TOOLHOLDER TIGHTENING FIXTURES



- Change retention knobs, collets, drills and end mills quickly
- For CAT & BT taper toolholders
- Crafted from 6061 anodized aluminum
- For vertical or horizontal use

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

RETENTION KNOBS

Your VALUABLE Machine Deserves A Premium Knob!



QUANTITY DISCOUNTS
10% OFF!
10 or more knobs

- Individually Magnetic Particle Tested
- Made in the USA!
- LARGE VARIETY Available!
- Made of 8620, Heat Treated to Rc 56/58
- Exceeds Industry Standards For Tolerance (ANSI, DIN, JMTBA)



Machine	Thread	Head Dia	Angle	Coolant	Part Number	Price EA
Fadal BT40	M16-2.0	.740	90°	No	B40-4501S	\$ 18.61
HAAS BT40	M16-2.0	.590	45°	Yes	B40-4500H	\$ 23.94
HAAS CAT40	5/8-11	.589	45°	No	C40-4501S	\$ 18.61
Fadal CAT40	5/8-11	.740	45°	No	C40-4500S	\$ 15.96
Okuma CAT40	5/8-11	.589	60°	No	C40-6000S	\$ 18.61
Mazak CAT40	5/8-11	.740	45°	Yes	C40-4500H	\$ 16.54
Mori Seiki CAT50	1-8	.905	90°	No	C50-9000S	\$ 22.94

EDGE TOUCH OFF GAGE



- Accurately establishes tool length offsets for CNC milling machines
- The contact face is lightly spring loaded to protect against overrun
- Contact face diameter is 0.250"
- Rectangular base fits between vise jaws on a pair of parallels
- Offset height 4.000 in (101.6mm)
- Large 2.2" easy to read indicator face
- Easy calibration check using 1-2-3 blocks
- Gage graduations 0.001"-repeatability 0.0002"
- Body and contact face are red anodized 6061-T6 aluminum
- Base: 2.4" wide x 1.3" depth x 4" height
- Padded case and manual included

TOUCH OFF GAGE
Part # EDGE-52000
Mfg's List: \$134.99

\$114.27 ea



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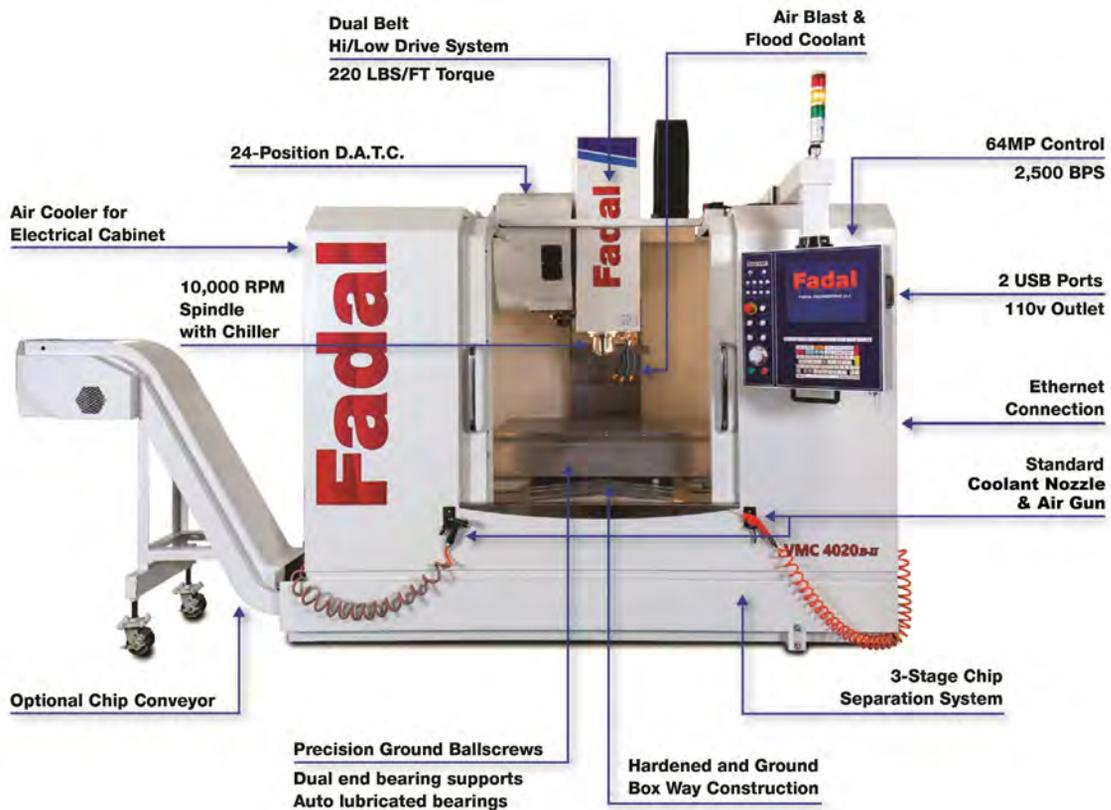
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- 10,000 RPM liquid cooled spindle
- Dual belt high / low drive system
- Best in class 220 lbs/ft spindle torque
- Dual supported & pretensioned ballscrews
- Auto lubricated ballscrew & bearings
- Monitored lubrication system
- Three stage chip separation
- Coolant nozzle & air gun

Fadal 64MP Control

- 2500 BPS processing speed
- High speed software
- Coordinate rotation and scaling
- Custom macros
- Spare M functions
- Ethernet port plus two USB ports
- 2nd home position
- Color 15" monitor

ALL BACKED BY OUR INDUSTRY-LEADING 2-YEAR WARRANTY

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ALTERA C

Trustworthy technology for precise measurement at an affordable price!



Pictured on left: ALTERA C 7.7.5 with Keyboard and Monitor Arm and PH10M Probe Head

Pictured on right: ALTERA C 10.7.5 with PH10T Probe Head



Compact Footprint

LK Metrology's ALTERA C coordinate measuring machine is perfect when floor space is limited or only available at a premium

Integrated Tech

Integrated controller and PC are tucked away under the CMM granite table, with optional monitor and keyboard arm available

Software

All CMM software packages and options available from LK Metrology are available with ALTERA C

Multi-sensor Technology

Tactile, optical, and laser sensors are integrated into a single measurement platform



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BEFORE

the mirror



the rotor



the blisk



there was



MITSUBI SEIKI

before the part, there was the idea, the concept — the need for a special, probably critical, component in a new or existing product. We operate best for our customers when we are brought in at this early stage, conferring on design for manufacturability, specifying out just the right features on a precision machine tool before we build it. If high quality, ultra-accurate, solution-driven machining is required, we deliver. We are your people, the best team to talk to when it comes to parts that don't exist yet, or those that need to be improved upon. If it's the right fit, we'll both know early on. Please reach out to us today. In short...



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Why is it Important to Preset Outside the Machine Tool?

Article provided by Haimer



Recently, more machinists have started talking about presetting outside of the machine tool but only 30% of shops are currently using this method. Why is there so much hesitancy with investing in a separate tool presetting machine? Many would argue that their machine tool already comes with a laser. While using the laser in the machine tool is good to double check that the tool is set up properly or to monitor wear, it was never intended to be used for the entire presetting process.

When a machinist touches off the tools manually in the machine tool or uses the machine tool laser to preset for the next job, this requires the machine tool to stop running. This is not what the machine tool was designed to do and by presetting manually by touching off or with

the machine tool laser, it turns the machine tool into the world's most expensive presetter. The more time that the machine tool is not making parts, the more money it is wasting.

Presetting outside the machine tool allows the machine tools to be running, while the tool assemblies are being set-up as back-ups or for the next job. Presetting also allows machinists to catch errors in their setups before starting the job that could have caused the tool to break or for the work piece to be turned into scrap. Also, it is a very easy process so machinists at any skill level can use it.

After understanding the importance of presetting tool assemblies outside the machine tool, there are many reasons why a machinist would consider investing in HAIMER Microset presetting technology. Firstly, Haimer Microset machines have a release-by-touch function which allows machinists to move the optical carrier single

handedly, without having to hold down a button. Also, it is equipped with a red, laser edge finder that helps machinists find the edge of the cutting tool quickly and eliminates the guesswork. All HAIMER Microset presetting machines are made with cast iron (both in x and z axis), allowing it to go right on the shop floor, next to the machine tool. It measures height, diameter and runout using Heidenhain scales very accurately and offset information can either be printed out on a label, added to an RFID chip or QR code, or sent directly to the machine tool. All of these features allows the machinist to keep the machine tool running, helps save money and allows for consistent tool set up.



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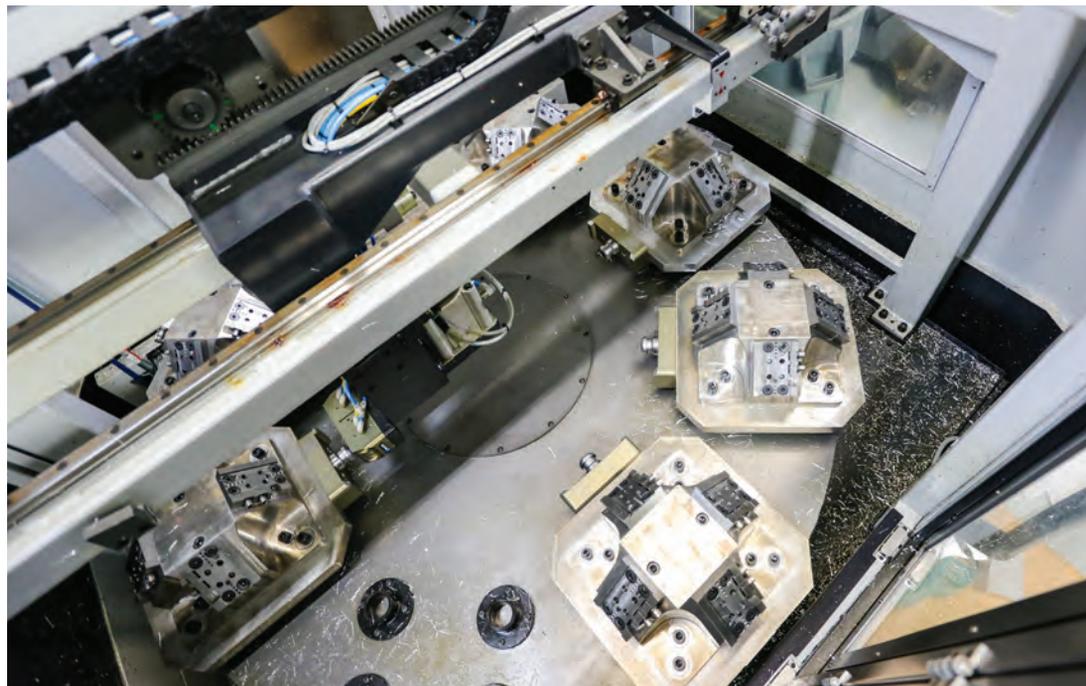
Anaheim, Ca. based RC Industries was founded on the idea that a manufacturing company should provide more than just machined goods to customers. They provide full-circle product development services from concept design, creating prototype parts, to assembly, and delivery of high-quality manufactured products. “We are honored to contribute our unique full-circle services in many divisions within the manufacturing industry,” tells Rob Champlin, founder and president of RC Industries. “Our specialty is hard to machine, tight tolerance, high complexity parts for aerospace, automation, automotive, avionics, electronics, and medical devices. We have 20,000sq.ft. filled with 25+ 3, 4, and 5 axis CNC machining centers. And we are ISO9001 and AS9100 certified.”

Rob Champlin got his start in the industry like many others, his mom found him a job. Rob was welding trailer hitches in Corona, Ca and looking for more part time work to fill his schedule. “My mom was employed by a forging company at that time,” tells Rob. “She asked one of the machine shops they did business with if there were any part time openings. The answer was no, but full time, 50 hours a week was on offer.” Being closer to home offset a slight pay cut, and Rob unknowingly began a career in manufacturing. “In high school I needed another elective and took auto shop over typing,” laughs Rob. “I didn’t think I would need that skill any more than

I thought I needed sophomore geometry. Now here I am with essentially the same job since 1986 and I type everything and live a lot of my life within a Cartesian Coordinate System.”

He was a quick learner and within the first two years all the hard and critical jobs were going to Rob. Sadly, four years after Rob started his new career the company’s owner passed away. Rob ran the business for the widow for another four years before buying it off her and rebranding to RC Industries. “I was using the RC Industries name for all my side projects,” tells Rob. “It just made sense to continue on with it. That was 1994. We were mostly machining aluminum forgings back then. We still do, but we’ve grown a lot as a company and with our capabilities.” As the need for higher precision and automated manufacturing presented itself, Rob upgraded his equipment from conventional machines to 3-axis machining, then to 4-axis, and now 5-axis. “With each improvement, we’ve positioned ourselves higher and higher up the food chain as a leading provider of precision machined parts, tooling, forgings, castings, and hog-outs,” touts Rob.

For Rob and RC Industries 5-axis is everything. Admittedly If he were to start over, he would do it with a 5 axis Haas and a small dovetailing/second op machine. “Right off the bat you save money on tooling and fixturing with a setup like that,” explains Rob. “I put a dovetail on



Left - RC Industries added the palletized 5 axis Doosan DFV500 back in December 2019 and it quickly has become a favorite. Middle - Rob looked at the price of vises when he got the Doosan and decided he was going to make his own palleting and fixtures. He settled on a design that gave him the most access. Right - The Doosan is armed with an 8 pallet system.

most parts and get 90% of the part done. Sometimes the part is 98% done and I just need to clean up a small ridge. We have half a dozen of the Haas 5 axis vertical machines and just love them. My big mill is a Haas VF7 84"x32" with a 4th axis trunnion. We have a bunch of VF4's, and VF3's, and 3 mini mills. The Haas machines are great. You get more than what you pay for out of them. They are easy to program and understand. Most people who come in



RC Industries largest mill is a Haas VF7 with a 4th axis trunnion. They need the 4th axis for larger parts that orbit the earth. The table is extended right now for an orbital part.



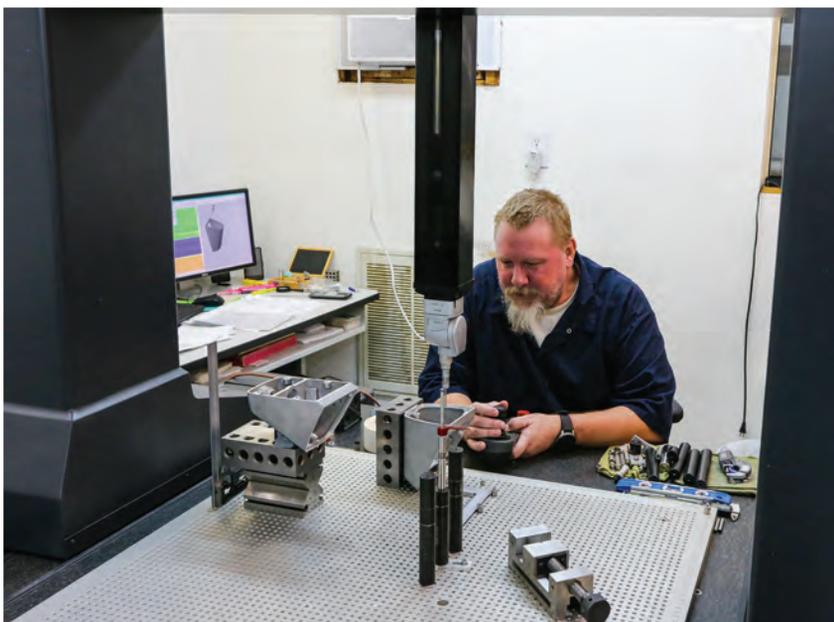
The Okuma MB-400H is a beast of a production machine. With a 12 pallet Fastems system and 218 tools, it does some of its best work while everyone is fast asleep.

looking for a job have experience running a Haas. They are by no means perfect, but if you look around this shop you will see I am a fan. We run the hell out of our Haas machining centers, but when it comes to 24/7 production my Okuma MB-400H and Doosan DVF 500 are called into action.”

RC Industries added the Okuma MB-400 at the end of 2016. With a 12 pallet Fastems system, the Okuma is designed for lights out production running. “Our Okuma has 218 tools, and we regularly have 20 part numbers set up and ready to go when the customer needs them,” explains Rob. “It knows everything and will go from job to job-to-job 24/7. For example, the throttle housing I showed you earlier takes seven hours to machine. The

rudder pedals are three hours for both, and the throttle levers take about two hours. Adds up to 12 hours of spindle time overnight. Come back the next morning and those parts are ready to go. Making money while we sleep. With 12 pallets we have the versatility needed to keep regularly scheduled jobs setup on deck and still have room to mount and machine whatever we need that isn’t in the normal rotation. It has a ton of HP, a fast spindle, and really is a great machine that we trust to run and run. It opened our eyes to the possibilities of palletized lights out manufacturing”

RC Industries newest machining center is a 5 axis Doosan DVF 500 with 8 pallets. It was installed by Ellison Technologies and even during a global pandemic has quickly become a shop favorite. “Like on the Okuma, we tend to machine shorter runs during the day when employees are around to reload pallets,” tells Rob. “By the time the afternoon is here we are all set for overnight lights out manufacturing. The Doosan DVF 500 is a fast and accurate machine. We got it just before Covid in December 2019, and unfortunately with airline sales grinding to a halt I haven’t been able to utilize it at full capacity. Looking at sales orders, we are beginning to ramp production back up, and I expect it to be near capacity by the beginning of the year. I chose the Doosan DVF 500 for price, pallet system, number of tools, and the physical footprint.” RC Industries are overloaded with machines in their primary manufacturing building and have already began arranging machining centers in the



As an ISO9001 and AS9100 certified company quality is king at RC Industries.

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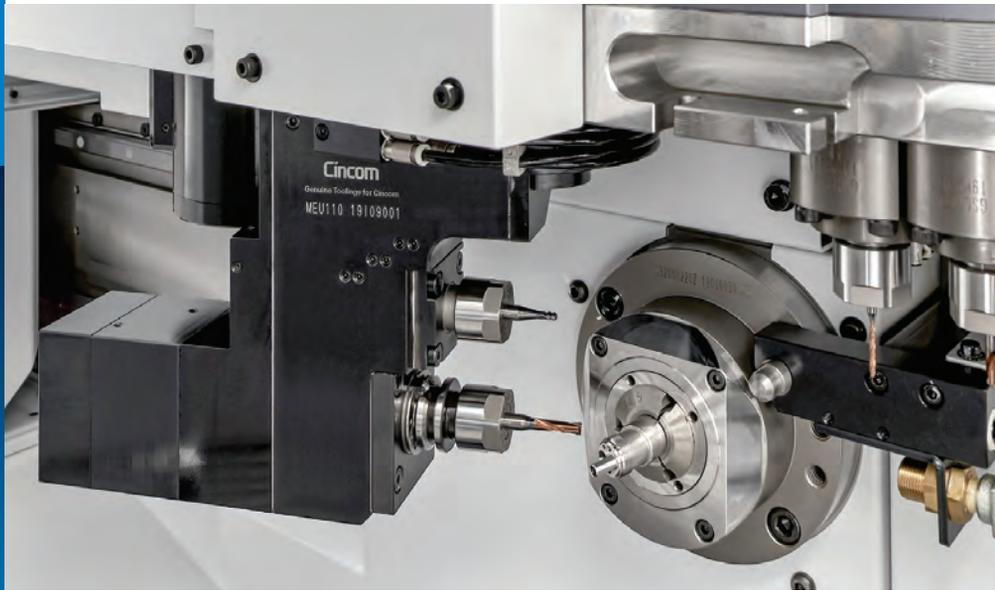
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RC Industries is a long time user and fan of Haas machining centers. Haas 5 axis machines are a popular choice, and RC Industries have half a dozen at their disposal.

JAMAR building next door. “The DVF 500 gives me advanced 5 axis capabilities, tool detection, a generous work envelope, has eight pallets, and takes up very little floor space,” continues Rob. “Blake Adham at Ellison Technologies is a super good guy, and we get fantastic service from Ellison. So far it has delivered everything that was promised. I had a couple of specific commercial airline parts in mind when deciding on the Doosan. They fit the capabilities perfectly. But honestly the machine is more versatile than I imagined. Programming and the controls are straight forward, my guys and I were able to adapt quickly to it. Right now, if we get a new part in that is more than 10 pieces our first thought is put it on the Doosan. We have four or five monthly jobs set up and ready to go on it at all times, and still have room to spare.”

The last year and a half have been trying to say the least, but RC Industries were as prepared as possible. You can’t be in this game for three decades without being able to adapt to an always changing narrative. “We’ve been

using the down swing in the commercial airline business to focus more on other industries,” adds Rob. “Our satellite customers are going gangbusters right now, and we are seeing more automotive and medical jobs come our way.” Everyone used the pandemic to pick up new hobbies. Side-by-sides and sand car sales are through the roof. That’s great for Rob’s other company JAMAR which produces high end aftermarket performance mods for off-road toys. Rob’s JAMAR products are keeping a lot of RC Industries’ machines busy and that will only increase as they head into prime sand season. “Overall, I think we are pulling up out of all this mess,” concludes Rob. “We are pulling up, but I still fear a tail strike, so we are spending wisely and running lean. I didn’t have to lay anyone off, we are cutting chips every day, producing quality parts, making deliveries and servicing the customers. Same as we’ve done for almost 30 years, and the same we will do for decades more to come.”



Left - Rob also owns JAMAR, an aftermarket performance line of products for off road toys. Since purchasing the company they have brought all manufacturing in house. Right - A shipment of recently approved commercial aerospace parts await packaging and delivery to their customer.

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Fullerton College Machine Technology Program

George Bonnard-Fullerton College Instructor

Over the years, increased global competition has reinforced the need to continuously pursue improvement in all of the areas that help run a manufacturing facility. Within Fullerton College's Technology and Engineering division and other divisions, we offer training and continuing education opportunities to not only stay ahead of the innovation curve, but to develop our students into the industry's top talent.

To support our students and employers, the Fullerton College Machine Technology program has embarked upon a partnership with the California Tooling and Machining Apprenticeship Associate (CTMAA) as of March 2021. This partnership will enable apprentices from various participating companies in the machining trade to obtain their journeypersons card from the State of California.

So "What is Apprenticeship?"

A registered apprenticeship is a voluntary partnership between an Employer and one or more employees who receive on-the-job training, employer-paid schooling and supervision by a qualified and experienced 'expert' machinist. "Registered" apprenticeships are approved by and certificates are awarded by the State of California and the US Department of Labor.

Registered Apprenticeships are required to have an Apprenticeship Committee to determine wage and skills standards, represent the training needs of all their industry employers - and to assure equal access, quality of instruction and determine standards for the certification of apprentices for graduation - as Journeypersons of their designated job (trade). CTMAA is a Unilateral Apprenticeship Committee ("UAC") for the State of California. That means we are certified by the California Division of Apprentice Standards ("DAS") -on a statewide basis- to:

- Establish and Certify Training and Curriculum Standards
- Keep Legal Records of Apprentice Academic and Performance Attainment
- Survey Merit-shop Employers to Determine Appropriate Wage Levels
- Conduct Recruiting and Outreach to Colleges, Schools and the Public
- Serve as Advocates for both Apprentices and

Employers

- Receive Employment Training Panel ("ETP") Funds from California, on Behalf of Employers

A regular (Machinist) Apprenticeship is 8,000 Hours On-the-Job supervised training from the designated skill standard plus approximately 576 Hours of an approved College Certificate

An entry-level candidate with good mechanical aptitude, reasonable math and language skills, working full time and taking class one or two nights (or a Saturday) per week for 2 Semesters per year will complete our program in four years -- all the while earning an increasing wage as his or her skills increase -- and not incur college debt!

The Fullerton College Machine Technology program is certified by CTMAA and can provide you with all the courses required to obtain your Machinist Journeyperson card.

If apprenticeship is not something you want or something that an employer wants to pursue then you may take courses separately (day and evening) and obtain a variety of certificates and degrees in the manufacturing area which include (but are not limited to) the following:

- Machine Technology Level I Certificate
- Machine Technology Level II Certificate
- CNC Operator Certificate
- CNC Certificate
- Metrology Certificate
- Metrology Mini Skills Certificate
- Mastercam Skills Certificate
- Surfcam Skills Certificate
- Swiss Lathe Certificate
- Manufacturing Technology Associate Degree

For more information or if you would like to visit our facility please visit us at:

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SVMA

SACRAMENTO VALLEY MANUFACTURING ALLIANCE

BY MANUFACTURERS FOR MANUFACTURERS

Article by Sean Buur

It isn't always that you are picked up at the airport and chauffeured around all day for a CNC West Magazine interview. In fact, this was a first. Tim Schaefer has spent a lifetime in the manufacturing business and was kind enough to put together a day of interviews and enlightenment. As a metal working specialist for MSC Industrial, Tim is part of their advanced technical support team, but today he is also Director of Training for SVMA (Sacramento Valley Manufacturing Alliance) and a tour guide. Besides his vast knowledge of all things machining, Tim's knowledge of the area and the history of its manufacturing is unparalleled. You will not find a more educational experience than spending the day going from shop to shop with Tim. Every SVMA member shared their passion for the industry, and the desire to build a better organization that will benefit all those in the valley for years to come. With nearly 50 allied members and growing the SVMA mentality truly is that a rising tide lifts all boats.

SVMA offers many standard membership benefits that you would find in similar organizations. Networking opportunities, shared database of vendors, volume purchasing agreements and so forth are all pretty standard, but what everyone we met with was most interested in was SVMA's workforce development. SVMA has partnerships with the local high schools and colleges, but also have their own technical learning center on the campus of Charles A Jones Education Center. Equipped with manual and CNC mills and lathes the learning center is an intricate part of SVMA's US Department of Labor accredited apprenticeship program.

SVMA's apprenticeship program is not based on number of years in the trade or where you have worked, but solely on what you can do, a 100% competency-based program. There is a very specific and difficult written and verbal online assessment test used to determine a participant's skill level. There are 8 different levels, with 8 being the most skilled. Upon completion of level 8 students earn a CNC credential. It isn't a milling program or a turning program, level 8 graduates are familiar with both. After six months of employment at a member's facility level 8 graduates will earn a set wage of \$33 an hour.

SVMA's apprenticeship program is not designed to replace trade schools or college programs, but rather to integrate with them for fast tracking people into the workplace. "Our program teaches the skillset that manufacturers are looking for," tells Tim. "We build that into our curriculum and help educate the educators on what the industry needs. If we need a CNC programming course and a Community College has a spot, we place people into the class. If nothing is available, we get together as an organization and do a workshop with one of our experts." SVMA's apprenticeship program isn't just designed for people with zero experience. It's about teaching a baseline set of skills that someone already working in the industry might not possess. Garner Products for example sent two of their employees through the pilot program, InSight Manufacturing Services hired someone from the pre apprenticeship program and Ruxco Engineering Inc. is hopeful that the vetted SVMA graduates will reduce the need to teach basic skills as part of their onboarding process.

Inspired by manufacturing day October 1st, SVMA had a booth and provided expert speakers at the SME Manufacturing Expo 2021. "This was a great event," tells SVMA President Kevin McGrew: 51 exhibitors and 375 attendees provided a broad cross section of our region's manufacturers getting together in a responsible way (outdoors and masked in all info sessions) to commit to the proactive development of persons new to advanced manufacturing. Further, we had the opportunity to invite regional experts to present on topics like cyber security, better usage of virtual resources, a brand-new competency-based apprenticeship program, and the promotion of women in manufacturing. This year has been hard for all of us but with an event like this we can envision our path forward."

SVMA is organized by and for Sacramento's manufacturers. As the region's manufacturers, they are committed to working with educators and industry partners to proactively develop vocational, educational and workforce initiatives and programs leading to fulfilling manufacturing career paths for the region's students and workforce. To learn more or to be a part of SVMA find them online or flag down Tim when you see him.



SVMA's technical learning center on the campus of Charles A Jones Education Center. Most of the machine tools were donated by allied members for student training.



Garner Products Inc. Justin Stofan, Ron Stofan, and Michelle Stofan.

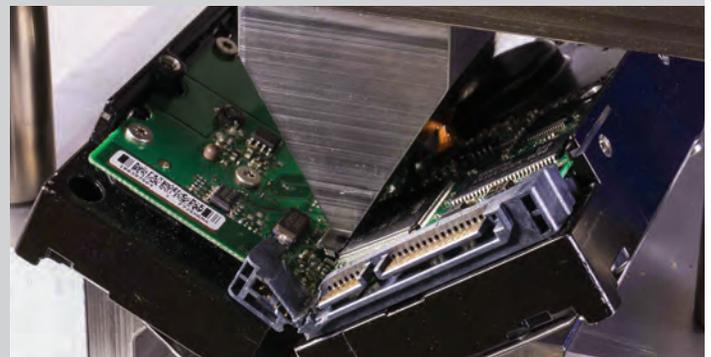
GARNER PRODUCTS INC - Roseville, Ca. based Garner Products design, manufacture, and sell equipment that delivers complete, permanent, and verifiable data elimination. Founded more than 60 years ago, they provide time-tested solutions for permanent data security of working and nonworking hard drives, magnetic tape, and solid-state media.

Garner Products are founding members of SVMA and Michelle Stofan was one of the dozen local business owners who were part of the first exploratory meeting. She sits on the board and is a 100% believer in the power of the organization. "Since day one SVMA has been a benefit to us as a local manufacturing business," tells Michelle. "We were isolated, living really on our own island. We have an impact globally, our products are known around the world, but we didn't know our neighbors. Without SVMA we would never have met people like Tim Schaefer, director of training at SVMA. He is a wealth of information about everything. Having a group of like businesses is such a resource, that allow us to share best practice information from automation, machining, general employee policy issues and sources of labor. We can't wait for the apprenticeship program to get in full swing." Garner Products believe so much in the SVMA apprenticeship program that they sent their son Justin and another employee through the program. At 28 Justin has been a part of every operation in the company and now is tasked with overseeing the machine shop. The shop consists

of a Flow water jet, a Hyundai WIA L 150A with live tooling, Fadal 3020 and 4020 mills, three YCM NXV 1020A mills, Shop Sabre router, and multiple Raise 3D printers.

"Thanks to SVMA we have personal contacts with other CEO's," adds Ron Stofan. "Big companies are giving us the time of day, us a 30-person shop. And not only that but answering any questions we have about anything." "Being able to network in good times is valuable, but even more so when you get things like Covid," continues Michelle. "We were all able share resources like documents to send to employees, response to our local codes and regulations."

Labor as we all know is a big problem for everyone. Finding skilled machinists, or young people interested in learning the trade is nearly impossible. "We've established so many great relationships with SVMA companies," concludes Michelle. "If we interview someone and they are a great applicant, but I can't use them I send their information out to our membership. If I can't keep them, I want our members to be able to. Our goal is to keep talent local; we've got to keep the skilled labor here. We need the skilled to teach the next generation, so the industry doesn't die. SVMA is an organization with those same goals. We are in competition for the same labor pool, but as members we are trying to work together, not poach, and grow the talent pool in the area. I was a founding member of SVMA, I served three years as treasurer, and now I am on the board and concentrating my efforts on workforce development."



Everything is manufactured in house at Garner Products. After degaussing hard drives are bent, and mangled, deterring any attempt to recover data.



Machine shop supervisor Donnie and Herman Kaiser VP/COO of Insight Manufacturing Services and SVMA board member.

INSIGHT MANUFACTURING SERVICES - are a supply chain management and contract manufacturing specialist. They do it all from prototype and engineering support to CNC milling, CNC turning, fabrication, assembly

and kitting. Their principal manufacturing center is in the city of Murphys, CA. but today we are at their satellite facility in Rancho Cordova. "Our primary industries are medical and defense," details Herman Kaiser, VP/COO of InSight. "Our largest customer makes radiation therapy machines. We have for many years provided them with hydroelectric and electromechanical assemblies. The majority of our machining centers are at the Murphys facility where we have a mixture of Hurco and Haas machine tools. We started with the Hurco because of their conversational programming. Not always being able to find employees with the necessary skills, the Hurcos sped up the learning process. We added the Haas line because Selway gives us great support, but now we must train on multiple platforms. We mainly assemble



Herman (right) & Tim (left) discuss the tooling used on these parts.

and kit from this location, but a year ago we brought over two Haas CNC mills to machine aluminum castings. Donnie has been with InSight for 16 years and is one of our machine shop supervisors. He is involved with the internal training of employees and came to this location to get everything setup to run the castings.”

InSight is in the process of bringing on board another large contract manufacturing customer and to do so requires building another climate-controlled shop, relocating some of the machines, adding a new horizontal, and hiring more people. They have 25,000sq.ft. at the main facility and two 10,000sq.ft. buildings in Rancho Cordova. “One of the biggest challenges we face as a business is employees,” details Herman. “We have 52 now and could use more, and many more as the new program ramps up. Right now, it is all about people for us and others in this industry, specifically getting people trained. We participated in the pre-apprenticeship program. I was impressed with how they were able to take someone with no CNC background and make them a viable employee after a 90-hour program. They are by no means a journeyman machinist, but they can operate the machines safely, and at a minimum we know what skills they possess. We donated a couple of our older Hurco mills to SVMA’s manufacturing lab, anything we can do to help get more people into this as a career. It is important that people get trained on technology that is relevant to the industry. Being a board member with SVMA lets me connect with people like Tim who are passionate about growing the local industry. InSight are SVMA members and share that passion. Leveraging every resource available to us through the organization.”



Donnie runs one of the two Haas mills currently online in Rancho Cordova.



Ruxco Engineering Inc. - Michael Ruck, Michael Ruck Jr. and Silva Ruck.

RUXCO ENGINEERING INC. is a fourth-generation family run business servicing the aerospace and defense industries in Diamond Springs Ca. For over 40 years, their reputation stems from machining high complexity, tight tolerance parts with the latest technologies and equipment. “Michael Jr. does all of the programming,” tells father, president and CEO Michael Sr. “He is the one that keeps us on the cutting edge. Most everything we do is satellite or aircraft related and manufactured from Invar, titanium, stainless or aluminum.” Ruxco has a mix of 20+ CNC machine tools. Their shop is packed in with Haas, Kitamura, DMG Mori, and Sodick. They have 3 and 4 axis milling, advanced 5 axis milling, standard lathes, live tooling lathes, a wire EDM machine, and they inspect with a new Zeiss Contura CMM.

“We are part of SVMA for the future of this company and the future of the industry,” explains Michael Jr. VP at Ruxco. “It is hard to find people that want to work, let alone skilled people who want to work. SVMA’s apprenticeship program allows us to filter out potential employees without putting anything in our shop at risk. We don’t have to rely on what they tell us to be true and let them loose on our DMGs. We know anyone coming out of the apprenticeship program as a level 8 graduate that they are at a certain level of competency. The apprenticeship program gives SVMA members confidence that the person we are letting in our businesses is equipped to do a job. It’s arduous for us to invest the time to teach someone basic skills only for them to be here 6 months and ghost us. The men and women going through SVMA’s apprenticeship program want to be there. They are investing in themselves and their future. SVMA is quite an opportunity for companies in our area. Tim approached us about SVMA and we were sold on it without question.” “We operate with 17 people now and would have another full shift running if we could hire enough qualified workers,” adds Michael Sr. “We have high hopes that this program is going to add to the local talent pool.”



5 axis machining on their DMU 95 monoBLOCK.

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THE ONE TENTH = 10% RULE AND THE EFFECTS OF RUNOUT

Article & Photos Supplied by *Big Kaiser*

Runout is one of the sneakier issues machinists and tool managers must deal with. Put simply, runout is variation in the diameter of a cutting tool at certain points as it rotates. It's almost impossible to recognize in-process and difficult to diagnose after the fact. The potential sources are numerous and different.

When it comes to the holder, the lower the ratio of taper-to-taper contact, the more runout. (We machine holders to sub-micron tolerances, achieving at least 96% contact.) The same goes for the point of contact between the cutter and the holder.

The standard collet angle, for example, is 16 degrees, which provides an appealing clamping range. However, a chuck at 12 degrees will make more contact and offer more control of the tool. Solid nuts also introduce more risk of runout in collet assemblies. The last few degrees of wrench pull twists the collet, while a bearing nut maintains low torsion for smooth, concentric clamping.

The size of the tool assembly plays a role; the length-to-diameter ratio and mass are going to affect force as it spins. The larger the tool, the more resistant it is to

runout. With tools 3/4"-diameter tools or larger, runout of 0.0005" may not impair tool life. However, with smaller tools runout may need to be much better.

We've also found, in our own research, that the cutter material reacts to runout differently. We tested nearly identical carbide and HSS drills with the same runout and found carbide to be more sensitive to runout.

Another variable that's even more difficult to control or diagnose is that cheaper, mass-produced holders and cutters can have extra runout essentially built in. It's just not easy to make high-performance holders and cutting tools. Holders, specifically, need to deliver clamping force, concentricity, rigidity and balance for high speeds. A cheap OEM pullstud made of weaker metal is susceptible to deformation that can affect centerline alignment too.

That said, even the best holder cannot deliver superior performance in a worn or imprecisely ground spindle. Keep those gage bars handy, especially if you're doing high-speed work when centrifugal forces increase exponentially.

Runout Quality Vs. Tool Life

ø.125" Carbide Drill (Hole Depth 4xD)

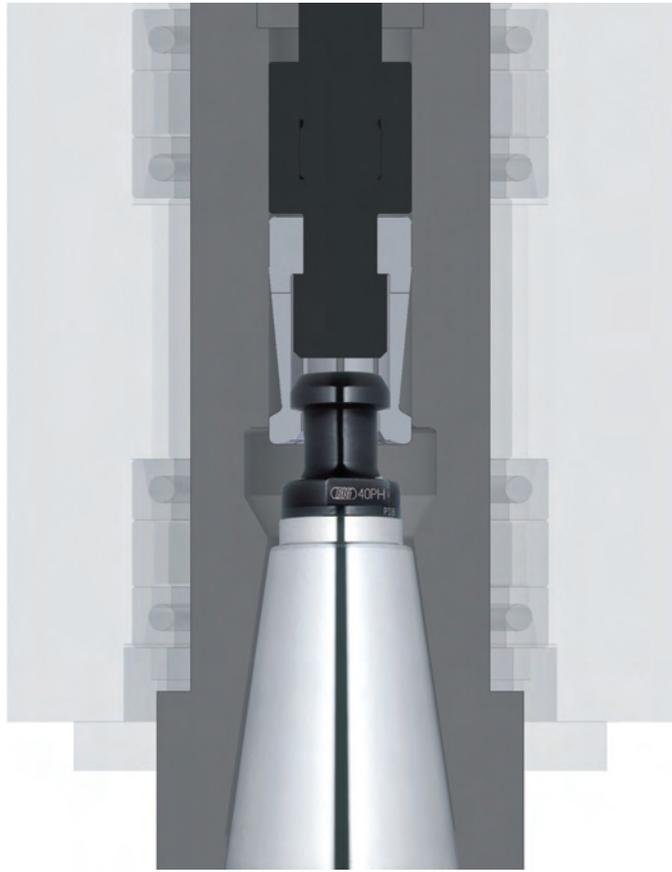


So, if runout is tricky to identify, what's the bottom line? If a drill or mill doesn't run concentric to its centerline, more forces are generated in the direction of the biggest margin. This causes just one side of a tool to work. Even if this results in on-spec parts, and it can, the cutting tool is essentially being wasted.

Each tooth should hit at the exact same spot along the workpiece. If one tooth is hitting the workpiece more frequently, it's doing the bulk of the work. In other words, if you have six teeth on a cutter but the tool is runout out by more than a thousandth of an inch, you're likely only using three of the teeth.

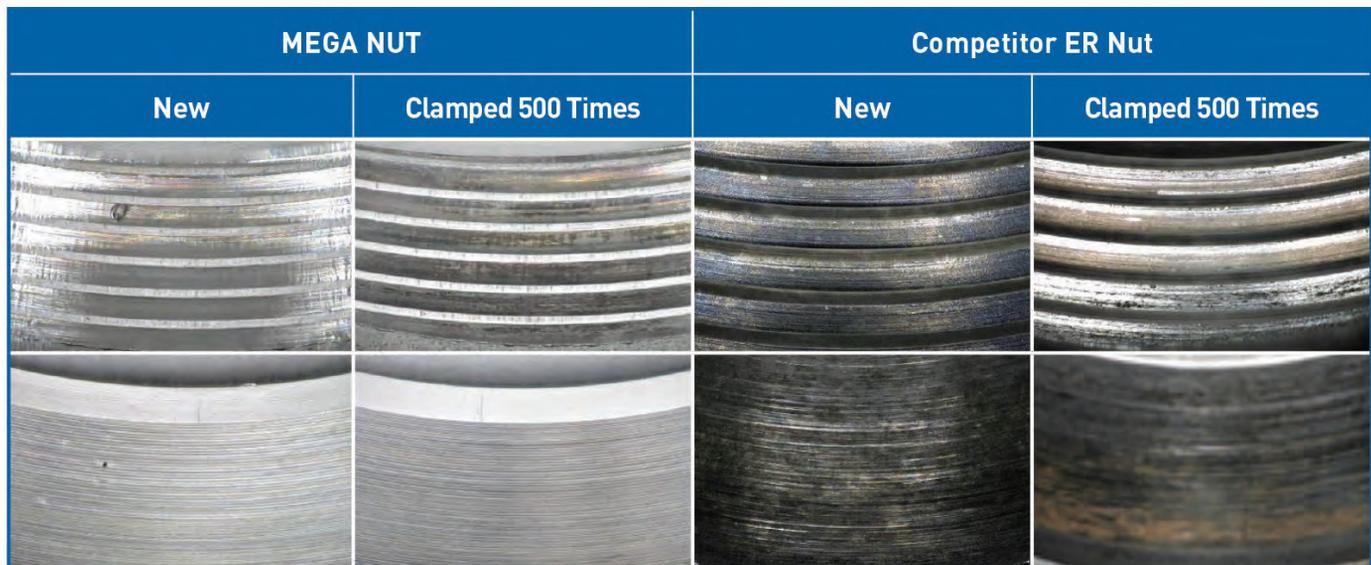
To calculate the impact of this on tool, we use the One Tenth = 10% Rule. That is, one tenth (.0001") of runout will increase or decrease tool life by 10%. In other words, if five tenths of runout is your baseline and you swap in a holder that that reduces runout to one tenth, tool life should improve by 40%.

What's more, if you're worried about carbide costs, you'll want to use the whole cutter. Remember, runout uses certain teeth or flutes more than others. If you're using carbide cutters larger than about a quarter inch in diameter, tool wear can get expensive quickly. There



are significant carbide savings to be had by changing to a lower runout holder.

What many shops believe is acceptable runout is actually unacceptable if the shop wants to improve tool life. A manufacturer basing a tool holder purchase decision solely on the price of the tool holder may end up choosing a more expensive alternative, based on tool life and cost per cut, while sacrificing quality and accuracy. Runout accuracy pays. We've done the math.



IN THE LANE

SIMULATION SOFTWARE HELPS STUDENTS AT THIS PACIFIC NORTHWEST TECHNICAL COLLEGE CHART SUCCESSFUL CAREER PATHS



Supplied by CTEch/VERICUT

Like many schools, Lane Community College (LCC) in Eugene, Oregon has been challenged by COVID-related closures. Students and staff alike look forward to a return to normalcy, especially those in the manufacturing programs.

One of Steve Caffey's students likened toolpath simulation and verification software to the navigation system in his car, in that it guides him through a series of step-by-step directions. Another, a devotee of manual machining, had sworn off CNC operation entirely until taking Caffey's class on toolpath simulation; he's now one of its biggest fans. And given the impact of pandemic-related school shutdowns over the past year or so, Caffey—a 50-year veteran of the machine trades—has become even more of a believer.

"When COVID first hit, we were struggling," said Caffey, the Manufacturing Program director at Lane Community College in Eugene, Oregon. "Unlike some

of the courses taught here, it's practically impossible to teach CNC machine programming in a Zoom session. But VERICUT has allowed me to do exactly that. In fact, the classes where we use it are my favorite. By giving them a much better understanding of what's going on inside the machine tool, it's made a huge difference to our students. I'll even go so far as to say VERICUT has become indispensable."

TEACHING THE TRADES

Among its many career opportunities, Lane Community College (LCC) offers two-year associate degrees in manufacturing technology, one focused on



Students in Lane Community College's Industrial Trades program acquire the programming and machining skills needed to compete in today's demanding manufacturing world.

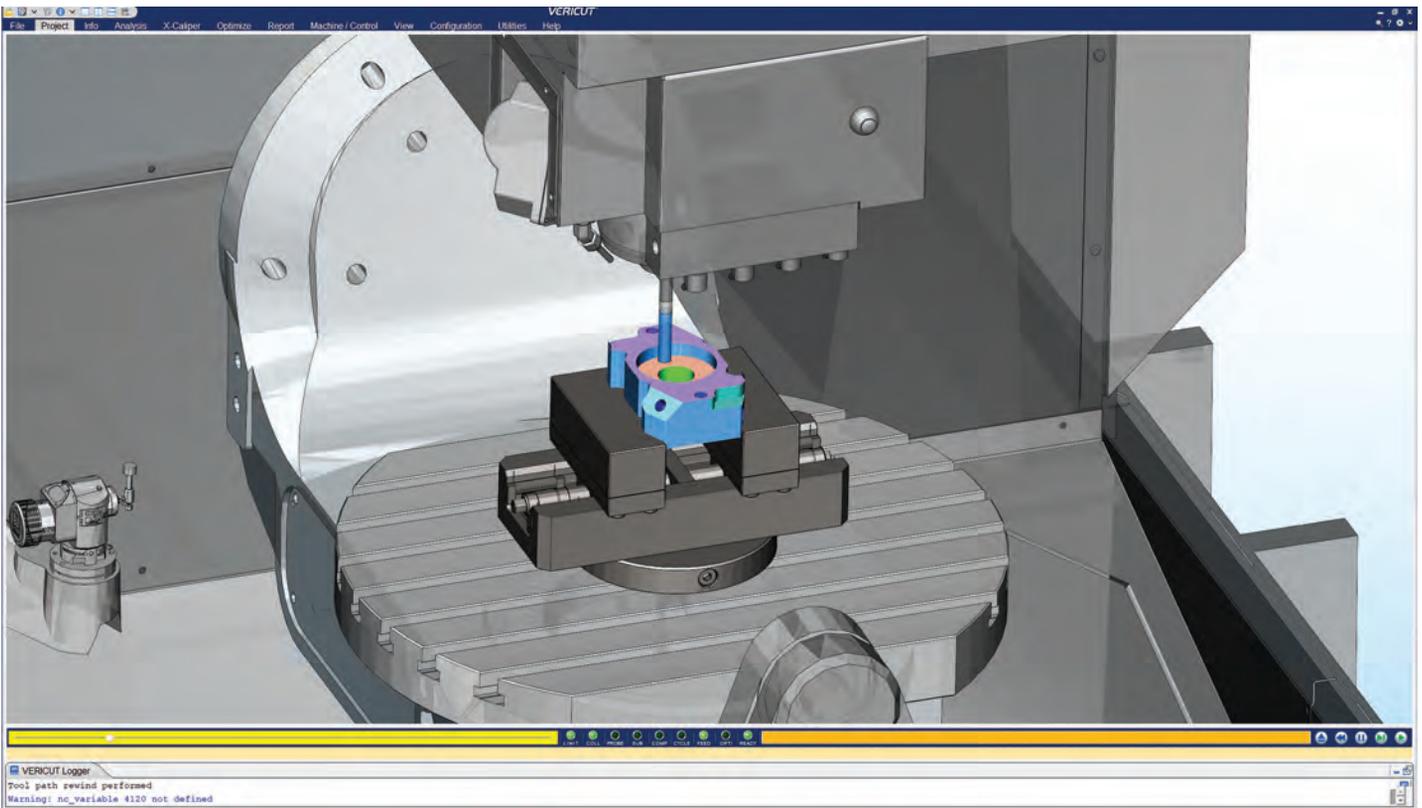
manual machining and the other on CNC. It's the latter that draws the most interest, by far. There are also Career Pathway Certificates of Completion (CPC), designed to qualify students for entry-level machining jobs or advance in their current ones.

LCC's 10,000 sq. ft. manufacturing technology facility boasts more than 65 different machine tools. These include fourteen CNC lathes and machining centers, the

majority of which are from Haas Automation. Students also gain design skills using Solidworks CAD software, learn CNC programming with Mastercam, and have access to Tooling U-SME's suite of online manufacturing classes. And, of course, they learn how to use VERICUT from CGTech Inc., a software development firm in Irvine, California, that specializes in CNC toolpath simulation, verification, optimization, and analysis.



Mathematics knowledge is a must for any machinist, but nothing beats hands-on machine tool experience.



Lane Community College is one of a growing number of technical schools that recognize the importance of toolpath simulation as an educational tool.

Despite the wide range of learning options, there's nowhere near enough students to meet employer demand, Caffey explained, a situation that has only gotten worse since the pandemic. "I have a lot of pressure from local businesses to supply them with people that I simply don't have," he said. "Because of this, many of them are going directly to the high schools for new employees, which short-changes the student and employer alike. It's the trade schools that should be the natural bridge for young people wishing to enter the workforce."

RETHINKING REMOTE

Caffey has been working to change this unfortunate turn of events. Shortly after the outbreak started and he was forced to send his students home, the school equipped them with laptop computers, each with a seat of Mastercam installed. Because VERICUT offers cloud-based licenses, all Caffey had to do was provide each student with templates that include virtual representations of the different machines and the cutting tools needed for each one.

"They could then just program the part in Mastercam and load the code into VERICUT," said Caffey. "If someone ran into problems, they could share their screen with me and we'd work it out together. I was constantly amazed at how effective it was as a learning tool. More importantly, it gave us a fighting chance to keep the class going."

Caffey has first-hand experience with toolpath verification software. Before starting as a full-time instructor at LCC, he would teach nights and work during

the day at an area machine shop; even though he is fluent in reading and writing G-code, he found that VERICUT made the job easier.

"I was glad to have access to it through my school laptop," he said. "If I came across a legacy program that didn't make sense to me, I'd load it up and do a quick simulation, just to see what was going on. It was quite handy to have at my disposal." He hears similar tales from his students. "Anytime someone comes in wondering about a program, we put it in VERICUT and simulate the toolpaths. Suddenly, the code starts making sense to them. They can also play around with the program—changing a line here or tweaking something there—and immediately see what effect that will have on the part, the cycle time, and whether it's going to cause a crash. You can't do this in a CAM system."



As most machine shops today can attest, knowledge of robotics and advanced automation is a valuable asset for any aspiring manufacturing technician.

MAKING THE CASE

Caffey cites these and other examples when making the case to local business owners trying to shortcut the educational process. “I tell them that learning is costly,” he said. “When students come here for training, they’re making all their newbie mistakes in a virtual environment, not on a CNC machine tool. They can see the results of their decisions in a very realistic software simulation, rather than hearing a piece of expensive equipment come to a screeching halt. That’s why they need to work with us to encourage young people to attend school.”

As mentioned, LCC attendees also have access to another important virtual learning tool. Chad Schron, senior director at Tooling U-SME in Southfield, Mich., explained that students can take more than 500 interactive online classes covering everything from “Introduction to Abrasives 101” to “Drill Bushing Selection 230” and more.

“We offer a wide range of training opportunities through our digital books and videos,” he said. “And later this year, we’re planning to introduce a virtual reality (VR) product, which will use an Oculus headset to augment our existing programs and provide a more hands-on, skills-based approach to learning.”

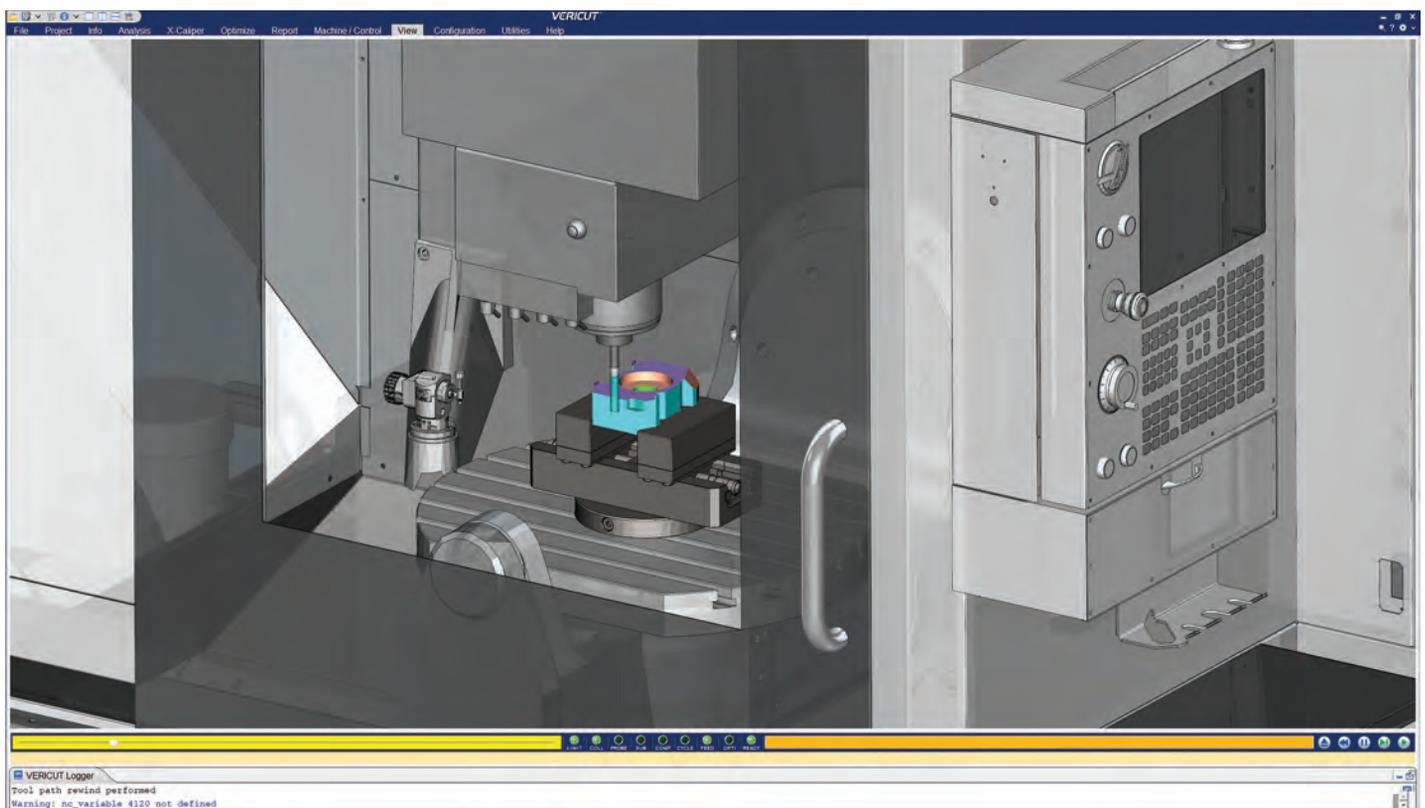
Until then, Caffey will continue to leverage whatever tools are available to him, but agreed that Tooling U-SME is a valuable piece of the LCC curriculum. He should know—he’s completed every single lesson. “I like to stay current with technology,” he said. “It also helps me to



Lane Community College offers a variety of education programs, from Arts and Communications to Health, Medical, and Fitness. To Manufacturing Director Steve Caffey, the Industrial Trades rank among the most important.

see what the students are seeing. And if I find a typo or mistake in one of the lessons, I just call or send them an email and it gets fixed in about a week. Try doing that with a textbook. That’s one of the great things about e-learning. Overall, I think it’s a good product.”

He’s also quite pleased with the support from CGTech. Said Caffey, “In all honesty, these guys have a wonderful team. I mean that. I’ve never had a problem getting hold of a CGTech person to help me through some little problem I was having. They provided us with solid models of our lathes and mills, and are always available for questions. We used a competing toolpath simulation package before VERICUT and I’m glad we made the switch. It’s been a great relationship.”



VERICUT toolpath simulation and optimization software from CGTech not only makes it easier to learn CNC programming, but helps to avoid crashing expensive machine tools while doing so.

THE CRITICAL NEED FOR CAREER TECHNICAL EDUCATION IS NOT A MYTH

David Goodreau

President, Small Manufacturers Institute david@sminet.org

It is well known that California enjoys the world's fifth largest economy. This is partly due to 50/60 years of an infrastructure built around manufacturing entrepreneurs, workers, schools, and customer supply chains. But, as they say, "Houston, we have a problem."

There is growing evidence that California's school systems have internal, critical issues that are having a negative impact on career and technical opportunities for students and the companies that ultimately hire them. The result is that businesses in the trades and industry sectors are suffering severe skills shortages for want of a technically trained workforce.

What's causing this?

Simply put, there are three common findings throughout the various studies that explain the decline of "SHOP" training programs in California middle schools, high schools, and community colleges as well as in the California University system that require attention:

1. The growing retirement of existing Career Technical Education (CTE) teachers.
2. The lack of a pipeline for new CTE teachers.
3. School counselors that lack the necessary familiarity with CTE career opportunities, providing sufficient motivation to encourage students to consider the benefits of a CTE career.

The result could be disastrous for the future of California manufacturing industries. Why?

According to an article by Boston Consulting Group entitled *Made in America: The Future of US Manufacturing*, the primary resource manufacturing companies need to succeed is, "...a bigger, more highly skilled workforce...(with) digital skills but also adaptive skills like critical thinking and complex

problem solving in order to install, operate, maintain, and optimize the new technologies." Unfortunately, there is a shortage of this type of worker, largely due to a diminishing number of teachers necessary to train them.

So, where is this workforce going to come from?

The hard truth is that there is no easy answer. For instance, we can't rely solely on policymakers. While policymakers are often vocal about how important manufacturing jobs are to the economy and the skill level needed to fuel those jobs, what they fail to understand are the components necessary to populate the jobs with skilled workers.

For instance, according to a survey by the Small Manufacturers' Institute (SMI) with 300 California Career Technical Educators between April 18, 2020, and May 14, 2020, a majority of high school and college teachers who participated in the study are nearing retirement and participants reported difficulty in finding replacement teachers when someone does retire. To make matters worse, as more experienced teachers with graduate degrees retire, newer teachers who replace them with less education and less experience may not be able to teach students to industry standards, further putting manufacturing at risk because graduating students could potentially fail to meet employment expectations.

Survey participants also pointed to the lack of an adequate number of CTE teacher training programs funneling teachers into local community colleges and trade schools. Today, there are no California State Universities (CSU) offering traditional degrees in multi-discipline Industrial Technical Education. Instead, these universities offer single subject credentialing programs, and the California Community Colleges are attempting to bridge the teacher gap with a program called Teach California. These institutional solutions have been marginal and the question over the next three to five years will be if these efforts will be enough to fill the pending gaps.

Clearly, we need a specialized workforce pipeline.

Recruiting teachers directly from industry, however, can be problematic because while stable paychecks may be appealing, salaries are much higher for industry tradespeople. This eliminates the incentive for tradespeople to leave the workforce and join the classroom. Add to that the fact that the pay is even lower if these individuals don't have a 4-year degree, which many don't. Additionally, tradespeople are trained for 'hands-on' work and may find it difficult to obtain a teaching credential, partly because they may not have the temperament nor the management skills necessary for a classroom.

Where does that leave us?

It leaves us in a difficult place because we waited too long. We can't rely on policymakers. We're losing CTE teachers too quickly through retirement and natural attrition. Career CTE teachers are often replaced by teachers with less qualifications, giving their students a shaky foundation with which to look for jobs. And recruiting teaching professionals from the industry itself is difficult because of the lower pay and need for teacher-training. Lastly, survey participants reported that school career counselors are not adequately informed on CTE job opportunities and therefore tend not to encourage students to follow that path, even though students who focused on CTE courses in high school had higher median annual earnings than students who did not focus on CTE.

So, where do we go from here?

First, we must agree that the critical need for Career Technical Education (CTE) is not a myth. In fact, if something isn't done and done soon, the status quo will kill many of these trade programs, leaving Career Technical Education as a shadow of what it was. This could potentially destroy many critical industry sectors within 10 years. The only question will be, which ones?

Therefore, all of this points to the need for a concerted effort to:

- 1) Encourage and facilitate college students and/or trades people to take the necessary steps to move into teaching.
- 2) Train counselors appropriately to support CTE programs and encourage students to enroll in CTE programs.
- 3) Raise public awareness of the economic and community benefits of having robust CTE programs.

If it is true that the ratio of jobs in our economy is 1:2:7, meaning that for every job in a field that requires a graduate degree, two (2) jobs will require a bachelor's degree, and seven

(7) jobs will require a two-year degree or technical industry certification, then it is the 7 jobs out of 10 that CTE trains students for. And that's a statistic that can't be ignored.

The Small Manufacturers' Institute (SMI) is a manufacturing-driven institute that supports California Manufacturers through state-wide, regional, and grassroots participation in identifying their specific needs, coordinating existing resources and services and disseminating those programs through established providers and associations. SMI is a California 501-c3 not-for-profit corporation, incorporated

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Article and photos provided by Mitee-Bite



OP2 solution using 16mm Threaded XYZ Xpansion® Pins.

Akron Gear & Engineering had a problem to solve – how to vertically hold a large 1-ton ring (4340) as their VTL was down, and the customer needed it ASAP. Working with the Engineers at Mitee-Bite Products they came up with the solution. Less than 10 days after the initial call Akron Gear was making chips and more efficiently than in the past.

Dennis Miller, of Akron Gear & Engineering said, “To the best of my knowledge this is the largest one our customer has required in the States. Right now this is a one-time piece and we are doing it this way as our large VTL is currently being updated and rebuilt, and to keep the work in-house. I had the pleasure of working with Rich Jones from Atwood Industries and Mike Witzgall from Mitee Bite Products - getting the right information and clamps to hold this.”

David Bishop, general manager at Mitee-Bite Products said, “There was a lot to be considered with this project, going vertically opposed to their VTL, now all the stress from the weight of the part is working against you and the machining forces are applying even more



Each Pitbull® Clamp develops 12,000 lbs of pressure.

pressure on the pins and clamps.” After discussions with Michael Witzgall, senior applications engineer at Mitee-Bite, a modular solution mounted on t-slot sub plates was recommended. Using the new Mitee-Bite Heavy Duty™ T-Slot Clamps with Blunt Edge Pitbull® Clamps and the large Multi Fixture Stops for OP#1, then Modular XYZ Xpansion™ Pins for the I.D./O.D. and facing operations leaving the part completely free from any clamp interference.

Dennis went on to explain how the project took shape. “The top section had no real support and the only issue encountered was the span between the top supports due to the position of our angle plates... it created lots of vibration. Initially, I was using a 6” face mill to cover the entire face in one pass. The crust was much harder than under the surface, machining this unsupported portion of the ring resulted in chatter marks. I switched over to a 4” face mill to get thru the surface, once below the crust I was able to go back to the 6” mill which I ran at a .060 depth of cut and 90IPM feed rate. It still had a very slight vibration during machining. To take a final pass for the finish I used a 6” boring bar with a single point insert which produced a nice finish and cleaned up all of the vibration. Thanks to Mike for suggesting the XYZ Xpansion™ Pins, which I be-



OP1 with Mitee-Bite T-Slot Plates and HD™ T-Slot Clamps.

lieve had less vibration, and we can do 3 sides in one setup saving a load of setup time from moving clamps

and indicating the bore in countless times. Now we are setup with the XYZ 16mm Xpansion™ Pins and I am roughing the O.D. down close to size where it will be finished using an O.D. turning setup.”

Dennis closed with, “I cannot say exactly how much time was saved on the set up but it was significant, being I did not have to keep changing the clamping setup and indicating it in. Just goes to show you that you don’t need the biggest clamp to hold the bigger parts!” He then added, “All in all, it was a great learning experience and now I have much respect and admiration for Mitee-Bite and the products they manufacturer.”

“Imagine if this job had to be routed overseas... correspondence can be difficult not to mention the 2-month transit time for ocean freight delivery, that cost alone could exceed manufacturing expenses. We are humble and proud to help keep this job in the US”, said David Bishop. He wrapped things up by saying, “Akron contacted us looking for a solution to hold a large heavy ring vertically, and we provided a low cost modular solution using some of our newer products. What really impressed me was how quickly they put the plan in action - as the old saying goes, if you’re not making chips, you’re not making money!”

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FIVE QUESTIONS TO ASK WHEN MACHINING THREADS

Supplied by *Allied Machine & Engineering*

There are many elements to consider when threading a workpiece. When is a solid carbide thread mill better than an indexable? How does the workpiece material behavior impact thread milling? Understanding your program as well as diagnosing issues that arise are just as important. Luckily, thread milling can be better understood by asking five specific questions.

When would you want to thread mill instead of tap?

There are many instances where you would want to consider using a thread mill instead of a tap. In numerous cases, this comes back to one common issue: taps break. Because the tap is the exact same size as the hole, there is a lot of pressure when you are forcing the threads into the hole—even more so in difficult-to-machine materials. Additionally, a tap's cutting edges are constantly in the cut, thus generating more heat. A thread mill on the other hand has little contact with the material, and the heat generated is much lower—an added benefit in any manufacturing process. Finally, when using a tap, chips are more difficult to form and remove.

All of these things mentioned above lend themselves to tool failure. When the tap breaks off, it often results in a scrapped part, so using a tap works better when it is an inexpensive part being made. If it is a more





expensive part and the tap breaks, you are now faced with the challenge of trying to remove the tap and salvage your part. This is a time consuming operation that impacts your part's quality and manufacturing cost.

Not only would you want to thread mill whenever the part is expensive, but you would also want to thread mill when working with a large hole diameter. Of course, a tap is just as large as the hole, so for a four inch thread diameter, you need a four inch diameter tap. Instead of buying this expensive, large piece of metal or storing

taps for every thread size, you could buy an off-the-shelf thread mill and interpolate the thread into multiple thread sizes including those large diameters. Lastly, thread mills consume significantly less power from your machine in the instance of large diameters.

Other advantages of thread mills include the ability to hold tight tolerances by controlling the tool's cutting path. As the tool shrinks slightly from wear, you can easily compensate this at the machine by using tool diameter offsets.

Nevertheless, there are occasions where tapping may be the better choice over thread milling. For example, you would want to use a tap when machining long lengths of thread. Due to the lack of radial load, there is no concern about the tap's stability or tool deflection. In addition, when speed is preferred over thread quality, taps are again the better choice. In many applications, a tap will have a shorter cycle time than a thread mill. However, this still comes with the risk of breaking the tap and spending your valuable time to get it removed.

When should you use solid carbide thread mills vs. indexable thread mills?

In choosing to thread mill, you have the option of solid carbide or indexable thread mills for your application. This choice often comes down to the needs of the application in terms of quality, repeatability and flexibility.

Solid carbide thread mills

Quality and performance are key advantages of solid carbide thread mills. Solid carbide thread mills run and cut faster every time. Having a constant surface footage between two different diameters will result in a different RPM. Due to their smaller cutter diameter, solid carbide thread mills will run at a higher RPM. In combination with typically having more flutes, this will result in a faster penetration rate (in/min or mm/min) and improved cycle time. These tools typically outperform indexable thread mills in terms of quality because threads are being ground at the same time. This improves the consistency of threads. With a smaller cutter diameter, there is less contact with the workpiece, resulting in less heat generation and deflection as well.

Indexable thread mills

Most users are attracted to indexable thread mills because they provide the ability to change out thread forms frequently. You can take one body and change out inserts, and the machine is up and running with different forms or pitches rather quickly. Ultimately, this makes indexable thread mills better for low production batches as well as job shop type of work with a lot of change over and variation in the manufacturing. This again comes back to the flexibility of the tooling. You have a one-time purchase of the body and then switch over the inserts as needed.

All in all, a thread mill is simply milling a thread form and a pitch and can usually be used for both left and right-hand threads, internal or external, multiple start threads and various tolerances.

How does the material impact a thread milling application?

Material removal in threading is no different than any other manufacturing process like boring or turning. There are always two things to consider:

- How much material is being removed?
- What is the material like to machine?

The first question can be answered by the thread's pitch. While a fine pitch does not require much material to be removed, a course pitch requires a lot of material to be removed. The combination of these two questions will also help you determine whether your material can be removed in one pass or not. Regardless of how many passes you use to remove the material, just like with boring or turning, a finish pass can be used for

improved quality. This is often referred to as a spring pass. If needed, you should refer to the technical section of your manufacturer's catalog or an available thread mill programming software like InstaCode to choose the number of passes that are right for you.

What are the best practices for programming?

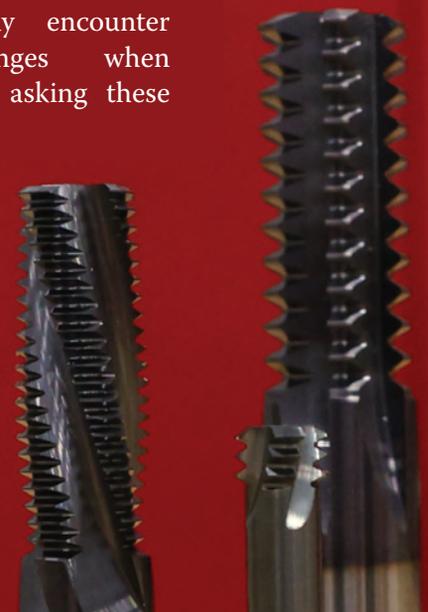
As mentioned above, a thread mill can create a variety of threads like left or right-hand, internal or external by simply manipulating the program/tool path. Writing a program in incremental movements instead of absolute is always preferred. In doing so, you are able to insert your code for the threading portion as a sub-program or sub-routine. This is beneficial when threading multiple holes because it provides a single place for program edits. This also allows you to quickly complete a test run above the part to prove out the program. In addition to writing this in incremental movements, an arc-on and arc-off movement will improve the quality of the thread and extend the life of the thread mill.

How should you diagnose issues when thread milling?

Because thread mills have radial cutting forces, deflection should always be kept in mind. Factors mentioned previously like how much material you are removing and what the material is like to machine can be battled by adjusting the number of passes to remove the material as well as the combination of speed and feed. Additionally, consider the tool holder you are using. Because of the radial forces and potential deflection, it is necessary to use tool holders such as milling chucks, hydraulic chucks or shrink fits that minimize deflection. Ultimately, these tooling solutions are more rigid and, therefore, improve the quality of the thread you are machining.

It is also necessary to understand if the programmed tool path is based off of the center of the thread mill or outer diameter of the thread mill. This changes how wear offsets should be applied in the machine.

While you may encounter additional challenges when machining threads, asking these five questions aids in building the foundation for a successful application.



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Industry News

Emuge-Franken N.A. Promotes Scott Lowe to National Sales Manager

Emuge-Franken N.A. has announced the promotion of Mr. Scott Lowe to national sales manager for the U.S. and Canada. In his new position, Scott is responsible for leading the Emuge-Franken N.A. sales organization to further strengthen support for customers and distributor partners, as well as grow market share. Prior to his promotion, Scott was the Emuge-Franken N.A. national accounts manager for the U.S. and Canada for approximately two years.



“I am excited to take on this new role at Emuge-Franken N.A. at a pivotal time, when in addition to continuing to advance our core tapping and thread milling products, we are aggressively expanding our milling tool portfolio including the manufacture of end mills in the U.S.,” said Mr. Lowe. “By leading a strong, technically proficient sales team that works closely with end users and distributors, I look forward to continuing the legacy of Emuge-Franken’s excellent reputation.”

Prior to joining Emuge in 2019, Lowe worked over 13 years at Kennametal, a supplier of tooling and industrial materials, lastly as sales manager for nearly 6 years and before then as Sr. applications engineer. Prior to Kennametal, Lowe held a territory sales role for nearly five years at cutting tool manufacturer Guhring. In addition, early in his career Lowe completed the prestigious general

electric machinist apprentice program and was a machinist at General Electric for eleven years.

Jergens Partners With Clark Manufacturers Service For Northwestern States Sales And Service

Jergens announces that Clark Manufacturers Service has signed on as a Manufacturers’ Representative for the Jergens Workholding Solutions Group in the states of Washington, Oregon, Idaho and Montana.

The Clark Team, under the direction of Matt Clark, will collaborate with Jergens Distributor Channel Partners in these states to provide their customers with Jergens latest technology standard and custom workholding products.

The Clark Team joins Jergens with extensive product knowledge and a reputation for premier pre-and-post-sale customer service and support.

Walter Establishes Solid Carbide Drill Manufacturing Facility in the U.S.

Walter USA, LLC has announced that Walter will assume governance of the round tool production unit in Greer, SC through an intra-company transfer within the Sandvik Group to strengthen its manufacturing presence in the U.S.

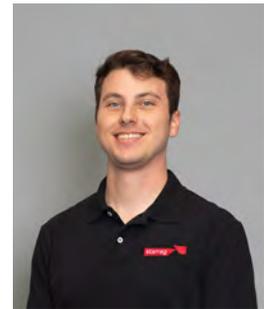
Having a dedicated production facility in the U.S. will enable Walter to provide both better responsiveness to customer demand as well as improve supply chain security. The transfer is expected to be complete during Q2 2022.

The round tool manufacturing facility in Greer, SC already produces Walter Titex brand solid carbide drills for Walter. Solid round tools are a significant part of the product portfolio

for Walter in North America, and the production capacity will be fully committed to Walter’s production during 2022. Both standard and special Walter Titex solid carbide drill products will be manufactured at the location.

Starrag Hires Application Engineer

Matthew West is a focused mechanical engineer who has pursued a career in the aerospace manufacturing industry after completing his undergrad at the University of Dayton. He entered the industry through a technical training program to leverage manufacturing technologies for the production of rotating



jet engine components. Later he served as a manufacturing engineer responsible for lathe CNC lights out program development for multi-axis machining centers to produce blisks and spools for new jet engine platforms.

While completing his masters in mechanical engineering, he transitioned to become an additive manufacturing engineer, leveraging additive and subtractive technologies to produce metal components made from exotic materials to sustain legacy military air craft.

Matthew has extensive experience designing efficient and effective manufacturing processes by leveraging 5-axis machining centers, machine probing, macro programming, and CAD/CAM technology to produce jet engine and airframe components for the commercial and military aviation sectors

“My goal is to understand the needs of our customers and help them

Industry News

utilize Starrag's cutting edge technology to achieve peak performance and efficiency”

Hurco North America Announces New Apprenticeship Program

Hurco North America announced the launch of a new apprenticeship program. The Field Service Apprenticeship (FSA) is a 2-year program that starts with a 12-week industry training that merges hands-on training and repair of CNC machines with classroom materials.

Cory Miller, general manager of Hurco North America, said, “We are fortunate to have a tenured service and support team at Hurco. The knowledge they have amassed is extremely valuable and the FSA program will allow them to transfer that knowledge to the next generation of service engineers with intensive training about the machine tool industry, how they are built, the technology that powers our CNC machines, how to diagnose issues, and service machines.”

While candidates with a degree or working toward one are encouraged to apply, candidates who are mechanically inclined with no industry or engineering experience are also encouraged to apply for the FSA. “We know there are people outside our industry who would excel at a career as a service engineer for machine tools, but might not have been exposed to our industry. We believe the FSA will be important to bridge the skills gap and introduce more people to the machine tool industry, which benefits the industry as a whole,” said Miller.

Field service engineers will provide technical support, training, and service of state-of-the-art CNC machines at customers' facilities across the country. Continuous training on emerging technologies in CNC controls, robot

integration, 5-axis machine and multi-spindle lathe installation, repair, and applications will also be provided long after completion of the apprenticeship.

The FSA program will take place at

Hurco's headquarters in Indianapolis, Indiana. For additional information and to apply, please visit Hurco.com/Apprentice.



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Industry News

TCI Precision Metals Installs Additional Waterjet Machining Center

TCI Precision Metals recently an-

nounced the installation of its second OMAX 80X waterjet machining center. The new machine is the second waterjet added in the last twelve months to keep up with growing demand for

precision Machine-Ready Blanks and other specialty parts.

TCI has standardized on the OMAX 80X for its speed and more accuracy compared to other abrasive jet waterjets in the industry, which will help TCI Precision Metals maintain its excellent customer lead times even the face of growing demand.

“Our recent investments in both sawing and waterjet cutting equipment have paid off big for our customers by helping us shorten lead time and improve on time delivery. Most of our Machine-Ready Blanks orders are for either aluminum or stainless steel alloys. For our aluminum customers we previously installed a new Schelling fm8 plate saw, capable of cutting aluminum and other nonferrous metals up to 6-inches in thickness at speeds up to 100 ft/min. We then added our initial OMAX waterjet machine, and now our second one, capable of cutting stainless steel alloys and other ferrous materials that are up to 8” thick on 15’0” x 7’5” table. This allows us to maintain complete control over managing our customer’s expectations when it comes to special needs and on time delivery,” said Ben Belzer, President of TCI Precision Metals.

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Verisurf Selected by ScanTech for Solution Software

Verisurf Software, Inc. and ScanTech (Hangzhou) Co. Ltd. have formed a solution partnership to provide comprehensive Dimensional Metrology solutions to customers worldwide. Under the agreement, the popular Verisurf Scanning and Reverse Engineering Suite is bundled with each ScanTech 3D scanner sold. The solution bundle provides customers immediate access to high-quality scan data analysis for inspection, as well as surfacing and solid modeling for reverse engineering workflows right out of the box.

“Verisurf is proud to be selected by

Industry News

ScanTech to provide our software with their 3D scanners. Verisurf software is both powerful, easy to use, and built on a CAD platform. This gives customers practical options on how far they want to take a project within Verisurf – from scanned point cloud data to finished intelligent solid model with Model Based Definition (MBD) and Product Manufacturing Information (PMI), or anywhere in between. This is made possible by our commitment to hardware and software compatibility,” said Ernie Husted, president & CEO of Verisurf

“This partnership with Verisurf is an exciting new development for us as it complements our high-quality scanners with powerful software that customers around the world are already using for applications ranging from aerospace to

automotive, medical, and more,” said Oscar Mesa, chief commercial officer of ScanTech.

“In addition to software quality and capabilities, education was a big factor in our selecting Verisurf. Whether you are just getting started with 3D scanning, inspection and reverse engineering or getting your team up to speed on specific workflows and software training, Verisurf has excellent onsite customer training, classroom options, and even a comprehensive distance learning program” added Mesa.

Verisurf and ScanTech application engineers and tech support teams are working side-by-side to demonstrate 3D measurement and reverse engineering solutions and to provide introductory training to both customers and resellers.

New Regional Sales / Technical Sales Specialist for Haimer USA

Forrest Walker joined Haimer USA as regional sales / technical sales specialist in August 2021. In his new role, he supports end-users, distributors and partners of HAIMER in the Great Pacific Northwest with sales and technical support.



In addition, he works with distribution partners and customers to offer quality solutions to increase their productivity. Forrest attended Skagit Valley College and has been in the aerospace machine support industry for the past 10 years.



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Industry News

Methods Machine Tools Hires Senior Director of Channel Sales

Methods Machine Tools, Inc. recently hired Steve Nicponski as Senior Director of Channel Sales.

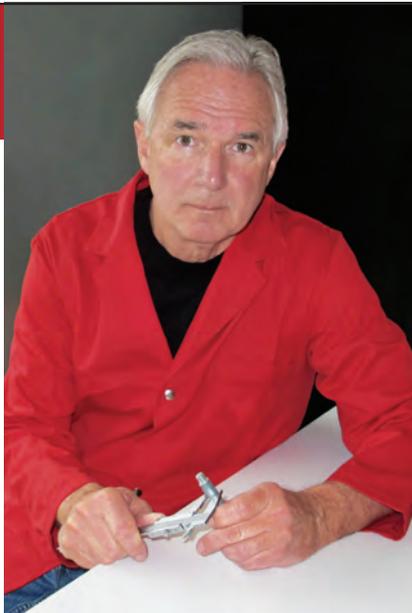
In this position, Nicponski will cultivate relationships with machine tool dealers, educate dealers about Methods Machine Tools products and services and refine the company's dealer sales strategy.

"Steve has more than 30 years of experience working with machine tools and dealers," said Methods' President/CEO Mark Wright. "With a proven track record of sustaining growth through a dealership network,

with programs, incentives and other alternatives, Steve has the right background and skillsets to develop our dealer strategy. We believe we can be more successful through our dealers and are working to take our game to the next level and form stronger partnerships."

Before joining Methods, Nicponski was the general manager of the Mountain States region for DMG Mori USA where he created specific territory plans that increased sales and brand awareness. Other duties included conducting machine demonstrations for clients, developing relationships with potential customers and providing technical sales support.

A certified machine tool sales engineer (CMTSE), Nicponski was the vice president of sales at New West Machine Tool Corp. and an area sales manager at Smith Machinery Company, Inc. In these positions, he represented numerous machine tool manufacturers, managed a \$22 million sales operation across five states and ran other business development efforts.



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Haimer USA Offering Tool Holder Solutions —Booth #1235

HAIMER is a first class German tool holder manufacturer. From the basics of face-mill arbors and ER collet chucks, all the way up to high precision collet and shrink fit chucks, HAIMER has the tools necessary to satisfy and exceed customer's machining center needs. Their product line includes



an extensive taper and size offerings from any HSK, CAT, BT, SK, PSC and KM tapers to any inch or metric size available.

Their product portfolio, which also includes shrink machines, balancing machines, 3D sensors, cutting tools, and tool presetting machines, addresses the machining process from spindle to part, giving the customer a complete machining solution.

Sunnen Products Co Honing Machines and More —Booth #1509

Sunnen is a global leader in precision bore creation and finishing systems, including tools, abrasives, cutting fluids and bore gages used in honing, lapping, skiving/roller burnishing and deep hole drilling. At WESTEC 2021 they will display a wide range of machines and accessories, including vertical and horizontal honing machines.



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MIDACO's Automatic Pallet Changer with Robot Mount and Hydraulic Docking
—Booth #1622

Pairing a vertical machining center with MIDACO's automation solutions enables manufacturers to take their new or existing machine to the next level of productivity by saving money and allowing them to quote more competitively. In business since 1969m and located in Elk Grove Village IL, MIDACO manufactures a line of automatic pallet changer systems which adapt to any brand VMC or bridge mill

with pallet sizes from 22" x 15" up to 190" x 72" with a 32,000 lb capacity.

The A4020SD mid-size automatic pallet changer will be one of the models featured in MIDACO's booth #1622. Designed for VMC's with an approximate 40"(x) by 20"(y) travel, this automatic shuttle system comes standard with two (2) aluminum 40" x 19" x 1.5" (1016mm x 482.6mm x 38.1mm) pallets - cast iron pallet option is also available - and can be mounted on either the left or right side of the machine tool. Easily integrated to the machine tool via M-codes, the shuttle is servo driven and automatically switches pallets in approximately



15 seconds depending on the weight of the parts. The A4020SD's standard 1,000 lb. capacity pneumatic receiver is mounted directly onto the machine tool table and ensures a repeatability

Boom Aerospace Relies on Verisurf Software



"When you are designing and building a supersonic commercial aircraft, precision and quality verification of every part is critical."

Todd Wyatt
Metrologist, Boom Aerospace

"Verisurf software works with all our measuring devices and CAD files, and those used by our supply chain. Using Verisurf as a common measurement platform has improved quality and efficiency in inspection, reverse engineering, tool building and assembly guidance at Boom."



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of +/-0.0001". A 2,000 lb. capacity receiver option is also available. All automatic pallet changer systems offer a 3-sided CE light curtain safety guarding option composed of light emitters sensors and mirrors, without any overhead obstructions. Pallet change will not occur if light curtain is breached.

MIDACO's A40SD series automatic pallet changer can be modified to mount a robot/cobot arm directly on the pallet changer control panel for enhanced collaborative automation. Combined with MIDACO's Hydraulic Docking System on the A40SD pallets, fixtures and vises are automatically

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TRAK Machine Tools to Show the New VMCsi —Booth #1401

Southwestern Industries specializes in engineering, manufacturing, and distributing turning and milling equipment for low volume work. Their product lines include TRAK bed and knee mills, lathes, retrofit products and the toolroom machining center - all of which feature the powerful but easy to learn and use ProtoTRAK CNC. We understand that low volume work, including prototypes, tooling, fixtures, molds, and repairs is different from

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production work. Solutions that are good for production environments are not suitable for non-production work.

This year at WESTEC they will be showcasing the all new VMCsi powered by the Siemens SINUMERIK 1 a powerful production ready machining center.

Nikon Metrology Inc Vast Array of Metrology Equipment

—Booth #1111

Nikon Metrology offers a broad

range of metrology solutions for applications ranging from miniature electronics to the largest aircrafts.

Nikon Metrology's innovative measuring and precision instruments contribute to a high performance design-through-manufacturing process that allows manufacturers to deliver premium quality products in a shorter time.

Products in their portfolio include: laser scanners, portable measuring, video & microscope measuring, X-Ray and CT Inspection systems and inspection and imaging software.

5th Axis Workholding Solutions

—Booth #1924

5th Axis manufactures innovative workholding solutions for all 3, 4, and 5 axis cnc machines. They will be showing most of them at Westec. They offer a wide range of workholding including dovetail fixtures, self-centering vises, and indexable dovetail cutters.

5th Axis specializes in helping customers in addressing part density, accuracy, and clearance issues on all horizontal and vertical machines.

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Fastems Flexible Automation for High Mix Low Volume Production —Booth #557

Fastems LLC, manufacturer of pallet and robot based CNC automation equipment and software, will share its knowledge and experience relevant to the aerospace industry in booth 557. Fastems has proven experience in automating the manufacturing of metal and composite wing parts, fuselage parts, engine components and other industry-specific workpieces.

The company's exhibit will highlight its flexible automation solutions for high-mix-variable-batch production – meaning, enabling manufacturers in producing single parts economically and remain profitable in fluctuating markets. “For the aerospace and defense manufacturers, ability to deliver just few pieces of a high-quality part in the right time with full process traceability is a must,” explains Robert Humphreys, International sales manager of Fastems. “This is our core expertise - we have worked with hundreds of suppliers and product owners in the aerospace and defense over the past 40 years.”

Fastems is known for its integration capabilities – the company has ready-made machine tool interfaces for over 200 milling and turning machines, while bringing along also the other processes such as tool automation, finishing and deburring, quality

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inspections and automatic loading of workpieces.

From software side, Fastems systems integrate with CAM, ERP, and resource management systems. The newest version of the automation control software MMS offers a wide variety of data features enabling manufacturers to follow their key performance indicators and make data-based decisions to

continuously improve their production.

CGTech to Demonstrate VERICUT 9.2 —Booth #1337

CGTech will participate in the Knowledge Bar at Westec to present on the topic: Supercharge CNC Program



Optimization by Leveraging Verification Software. The presentation will cover common optimization strategies, the value of optimizing feed rates in NC programs, and how verification software based on comprehensive cutting analysis can produce superior optimization that results in time and money savings.

The latest version of VERICUT brings improvements in speed for both collision detection and overall performance, a new 3D Live interface that simplifies the machine building process and while creating more realistic setups, and enhanced support for cutting tools and tool reporting.

“VERICUT has been designed to meet the needs of all types of shops in all manufacturing industries, from small job shops to larger suppliers, all of which are pushing the limits of CNC technology to be more competitive,” says VERICUT product manager Gene Granata

VERICUT 9.2 provides improvements to optimization, cutting graphs and the ability to import “intelligent” cutting tools with performance data. Users can view combinations of Cutting Conditions and Force Conditions, and compare the original versus optimized values in new Graphs and Tool Use windows. These windows can also be docked in VERICUT’s desktop to enable constant monitoring of machining conditions in real time during simulations, allowing them to spot potential flaws and inefficiencies to adjust strategies before running the programs on their machines.

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**Scotchman Cold Saws,
Ironworkers, Pipe Notchers
and Band Saw
—Booth #851**

The latest Scotchman Industries metal fabrication and sawing systems to be shown at WESTEC 2021 in booth #851.

Come see the Scotchman RG



Digital Quick-Stop, coupled with a Scotchman CPO 350 cold saw, turning a manual machine into a part cutting workhorse with repeatable accuracy. The CPO 350 is an industrial grade circular cold saw with 100° of mitering ability, a dual clamping self-centering

vise, chip drawer and more. This saw has a 2-speed motor and utilizes up to a 14” diameter blade giving it a 4-7/8” OD round capacity which consistently produces burr-free, high-quality cuts.

The RG Digital Quick-Stop measuring system delivers reliable stop position accuracy of ±.008”. Operators can change lengths in a snap by using preset hotkeys and easily adjust measurements on the 7” touchscreen Android tablet.

Also shown will be the Scotchman 5014-ET Ironworker a 50-ton hydraulic ironworker with a 3-station turret. The innovative revolving turret accepts up to three different punch sizes that



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can be changed in seconds. It features 50 tons of hydraulic pressure and can punch a 13/16" hole in a 3/4" plate with ease and comes standard with a 4" angle shear, 14" flat bar shear, and rectangle notcher.

Additional equipment models to be shown include: cold saw model: SUP 500 non-ferrous upcut saw, band saw model: SU-280 G horizontal band saw with 30 degree (right) head swing and electric pipe notcher model: AL1-2U electric driven tube & pipe notcher.

Index Designs 4th and 5th Axis Rotary Tables —Booth #1608

Index Designs is a US manufacturer of CNC 4th and 5th axis rotary tables and servo controllers. When integrated to a typical 3 axis CNC machining center, our rotary tables add a multitude of 4th and/or 5th axis capabilities. Applications range from complex machining of impellers requiring true 5 axis synchronous contouring to simple point to point 4th axis indexing to any angle to allow machining multiple sides of a part. With over a dozen rotary tables to choose from, sizes range from small, 5C collet sized parts

up to 15" diameter platters. Depending upon your machine configuration and application needs, they provide fully integrated solutions. Full 4th rotaries are built with motors compatible with your CNC machine control or for indexing only applications, they offer a single axis programmable control box that can be interfaced to a spare M-function for fully automatic operation. Index Designs affiliate, Calmotion LLC, an engineering and manufacturing company dedicated to improving the productivity of CNC machine tools will also have their products on display.



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Lyndex-Nikken Inc Machine Tool Accessories —Booth #1723

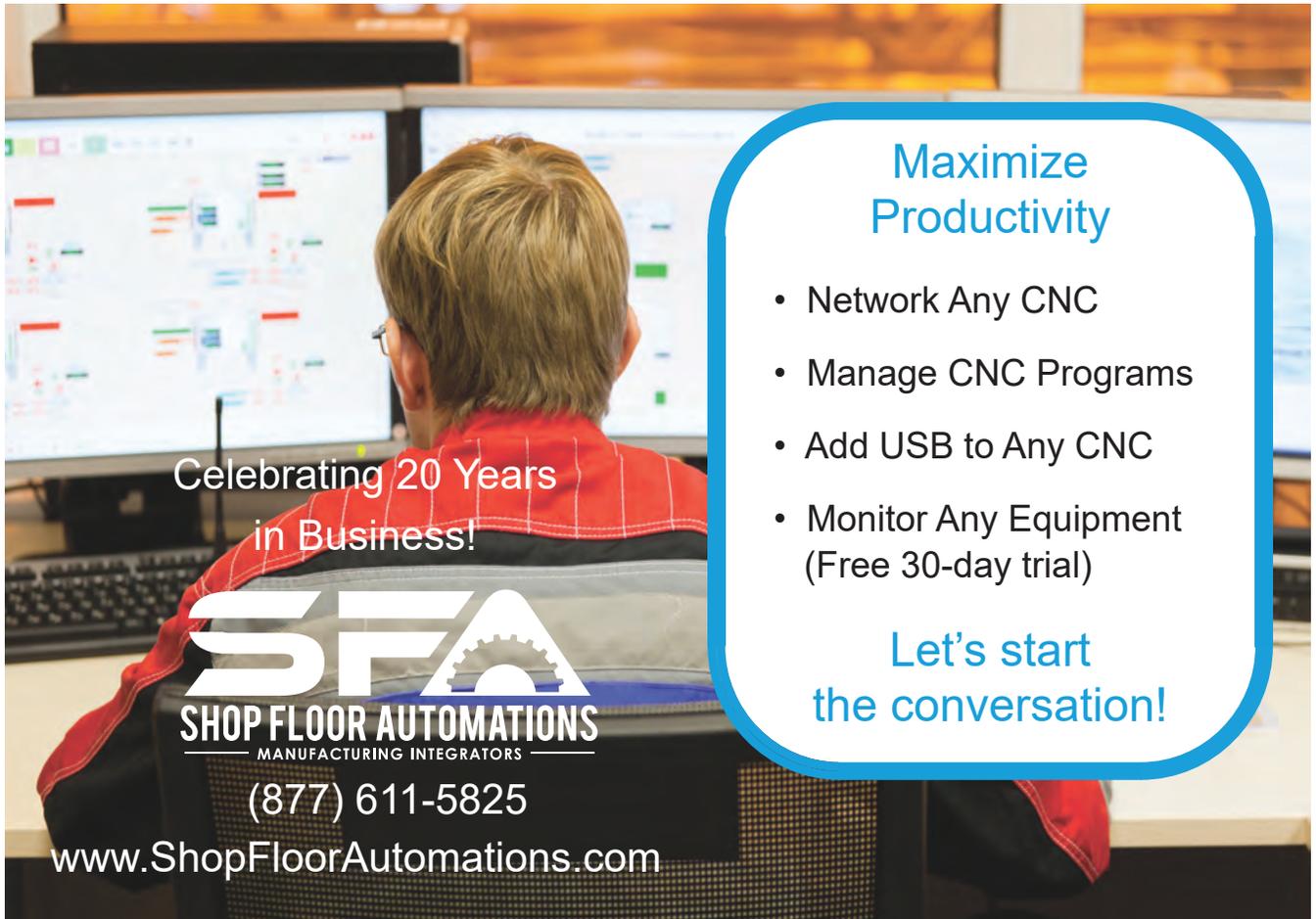
Backed by over a half century of experience, Lyndex-Nikken's complete line of superior tool holders, rotary tables and machine tool accessories sets a high standard for high quality and high technology. Featuring advanced designs and rigid components, their products are built from the ground up for long-lasting precision and productivity.

Jergens Inc to Highlight Workholding Products —Booth #1908

Jergens Inc is a global manufacturing leader of CNC machining custom workholding products. They offer vises, clamps & fixturing systems and tooling components. Find out about their innovative engineered solutions like the patented Ball Lock® Mounting System, Quick-Loc™, and Fixture-Pro® 5-axis workholding.

Helmel Engineering Products Inc CMM's —Booth #927

Hemel Engineering Products has been engaged in the design, manufacture, sales and service of Coordinate Measuring Machines (CMMs) and related software since 1973. Sizes range from benchtop models to large 40" Z-axis machines offered in both manual and DCC(motorized). All systems include Hemel's proprietary Geomet software available in several levels. Hemel also features manual and DCC Shaft Measuring Machines.



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Factory Wiz Software Benefits to Be Shown —Booth #1716

FactoryWiz is a machine and equipment monitoring, data collection, and analysis software designed to take data directly from your equipment and present that data in easy to read dashboards and interpreted into many different reports to give you and your team an accurate picture of the efficiency of your shop floor. Additional standard features such as a built in DNC system, text/email alerts, automatic report generation, maintenance reminders as well as idle (machine stopped) reason tracking round out our platform into

an essential tool to allow you to better understand and then to improve the efficiency of your shop floor.

With over 35 years of machine connectivity experience, FactoryWiz prides itself on having one of the largest machine connection libraries in the industry as well as our ability to connect to new, old, and even manual equipment.

CNC WEST To Be at Westec —Booth #2056

CNC WEST has been the leading

source for bringing together buyers and sellers of metalworking equipment in the west since 1977. CNC WEST is the ONLY Western regional magazine that covers all of the west and all the articles are Western based. Stop by to say hi, sign up for a subscription or talk about having us do a story on your shop.

Mastercam 2022 on Display —Booth #1303

Visitors to booth # 1303 will see a Nakamura-Tome NTY3-100 on display showcasing Mastercam 2022, with features and enhancements that streamline

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Mastercam users and shops.

The 3D High Speed Dynamic OptiRough toolpath is now available for all Mill and Router product levels. This allows users to machine very large cut depths with a bidirectional cutting strategy to remove the maximum amount of material with the minimum number of stepdowns. Dynamic OptiRough allows you to create a single toolpath to machine a part, instead of creating multiple 2D operations to achieve the same goal. The toolpath is collision aware of the part, and for complex machining, the toolpath can also be aware of the tool holder.

Mastercam 2022 adds new techniques and strategies such as the Unified Multiaxis toolpath which allows you to select multiple pieces of input geometry to generate the toolpath pattern. Multi-pass on Deburr toolpaths supports flat chamfered and rounded edges which gives the user added flexibility, allowing the Deburr toolpath to create a quality surface finish on larger chamfered or radiused edges.

Mastercam 2022 introduces powerful mesh creation and editing capabilities that deliver a new class of modeling tools, including the ability to reconstruct models from scanned data. And the Overflow UV function allows

your entire process, from job setup to job completion.

Many of the advancements in Mastercam 2022 are directly driven by

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you to replace multiple surfaces with inconsistent flows with a single surface for flowline toolpaths. You can also simplify surfaces for general modeling. Overflow UV generates a single unified surface with a desired UV flow on a connected set of surfaces.

A suite of system-wide enhancements helps automate tasks and speed your workflow. New automatic region chaining uses a “smart” approach to auto-select logical chained areas. Holemaking from imported solids is faster as Mastercam will now automatically extract appropriate information and pre-populate your programming options. Even tool imports have been made more intelligent as Mastercam will infer more tool properties from an incoming tool CAD model.

Wide Array of Products in ACER Booth

—Booth #931

ACER is a builder of machining centers, milling machines, surface grinders, engine lathes, and CNC teaching lathes from Taiwan.

They also are the one stop supplier for all types of machinery accessories and repair parts, specializing in hydraulic, electrical, pneumatic, coolant, and automation, etc.

US Shop Tools to Display Wide Variety of Tooling

—Booth #1845

US Shop Tools is a national dis-

tributor of chuck Jaws, CNC & manual chucks, collet pads, lathe tooling, mill tooling, ER, DA & TG collets, V-flange toolholders, cutting tools, measuring & inspection tools, abrasives, vises, coolant, safety equipment, MRO & shop supplies.

Either they will have the product in the booth or you can see it their catalog at the show

Grinders From Machine Control Technologies Inc —Booth #1808

Machine Control Technologies, Inc. manufactures a full line of advanced CNC tool and cutter grinding machines for manufacturing and sharp-



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ening of carbide, high speed steel, PCD, CBN, rotary cutting tools, and indexing inserts. They have been doing this for over 32 years.

They manufacture the entire machine from enclosure, mechanical machine parts, controller electronic hardware, software, and tool grinding programs all under one roof. That means Machine Control Technologies has the flexibility to customize their machines to satisfy customers' needs.

FANUC America Corp
—Booth #1317

Fanuc is a global leader in CNC systems, robotics and factory automation. From small shops to large assembly operations, companies rely on them to improve productivity, increase quality and maximize profits.

Fanuc is committed to "Service First", which offers customers parts and support for the life of their Fanuc products. They have an extensive line of standard, Delta, SCARA and Collaborative robot models that work in a variety of applications including assembly, material removal, material handling (machine tending, picking, packing and palletizing), painting, dispensing and welding.

Fanuc robots are also equipped with intelligence, including simulation packages, application software, integrated vision and industrial IoT solutions.

Marubeni Citizen Cincom Inc
—Booth #1701

Marubeni Citizen Cincom is the national distributor for Citizen Cincom Swiss style lathes and Miyano multi axis turning centers. MCC's Fountain Valley, CA facility provides direct sales and technical support for manufactures

in Southern CA. for the Cincom and Miyano products.

The MCC technical center designs engineered accessories for the Cincom and Miyano machines. The new Laser System L2000 which can be fitted to the Cincom and Miyano machines and the Cool Blaster High Pressure Coolant Systems are examples of these performance enhancing products.

Zeiss Industrial Quality Solutions
—Booth #1601

Zeiss Industrial Quality Solutions is

a leading manufacturer of multidimensional metrology solutions. These include coordinate measuring machines, optical and multisensor systems, microscopy systems for industrial quality assurance as well as metrology software. Innovative technologies such as 3D X-ray metrology for quality inspection round off the portfolio.

In addition, ZEISS Industrial Quality Solutions offers a broad global spectrum of customer services with ZEISS Quality Excellence Centers close to its customers. The company has a location in Lake Forrest, CA for easy western region access.



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New Products

GL Series Horizontal Turning Center —Romi

The machines are available in four models with maximum cutting diameters ranging from 11" to 19.3" and Z-travel ranging from 23.6" to 47.2".

Each is constructed with durable roller ways on all axes to produce high rigidity. A built-in spindle motor with a chiller incorporated and direct drive servo motors are designed to provide high response speed, accuracy, less vibration and lower maintenance requirements.

The GL Series comes standard with active thermal compensation to maintain consistent accuracy even as the machine temperature increases

over the course of extended use. The tailstock is programmable and servo-driven.

Position, speed and force are determined directly via the FANUC controller that reduces set-up time.

Each model comes with a 12-station turret with a choice of fixed tools with a Romi disk, driven tools with a VDI or BMT disk, driven tools with Y-axis or dual spindle with driven tools and Y-axis.

The CNC control features a FANUC Oi-TF with 15" LCD touchscreen and FANUC 32iB with 19" LCD touchscreen for dual spindle version machines and is the newest generation of FANUC's Series iHMI. It is designed to produce faster, more accurate performance for turning applications with separate areas on the main screen for

planning, machining, improvements and utilities. Functions are accessible with just two clicks. It comes standard with an ethernet interface, as well as a compact flash card and USB ports.

5-Axis HMC with Z-Type Fifth Axis —Makino

Makino has announced the 5-axis a800Z, the newest addition to its family of high capability horizontal machining centers (HMCs). This versatile machine builds on the nx-series 4-axis HMCs, adding a factory built and fully integrated Z-type fifth axis.

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New Products

of the a800Z minimizes the force path lengths both through the spindle as well as through the workpiece, efficiently transferring both cutting loads and reactive forces into the machine's three point leveled bed, maximizing both metal removal rates and perishable tool life due to high system rigidity," said a company spokesperson.

The a800Z accommodates workpieces up to O39.4" x 31.5" high, with payload weights up to 2,200 lbs. The X- and Y-strokes are 50.4" and 47.2" with the Z- stroke ranging from 44.1" to 52.2", depending on the rotary axes positioning.

Both rotary tables are of the direct drive type, with unlimited 360° movement on the B-axis and 180° on the

slant-style C-axis unit. This allows a full range of workpiece positioning ranging from the pallet top sitting horizontal to the spindle centerline to parallel to the spindle centerline, or anywhere in between these two extremes.

All axes on the a800Z have closed loop active temperature control standard, providing dimensional control that is inherent to this design as well as extended component life in demanding production environments. It offers rapid rates for all linear axes of 2,362 IPM and a B-axis rotation rapid rate of 18,000 degrees per minute.

The a800Z's standard 10,000 RPM high power spindle offers output capabilities of 74 HP peak power and 532

ft-lbs. peak torque. for wide ranging material applications. The standard tool changer magazine holds 60 tools in a fast-access ring style arrangement, with a variety of larger magazines to be offered for additional storage capacity.

The standard automatic pallet changer on the a800Z increases machine utilization, allowing workholding fixture tending on one pallet while the other pallet's workpiece is being machined.

The a800Z comes standard with a FANUC based Pro-6 CNC control.

Convert your old manual Hardinge Chucker or Toolroom Lathe to CNC with "The Spinster CNC kit" featuring the Acu-rite TURNPWR



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All programs begin with the tool. Parameters are entered in the middle column and are graphically supported in the right column for each field.

Cycle Select
Select a cycle to be created. In this case, a shoulder turn cycle. Once the data has been entered into the form press the USE hard key.

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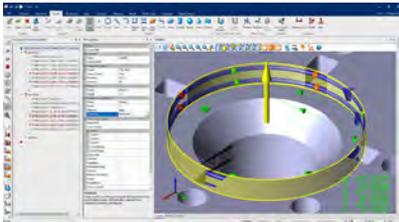
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New Products



Camio 2021 CMM Software Released —LK Metrology

LK Metrology has announced the release of the latest version of its measurement, programming, analysis and reporting CMM software. Now called CAMIO 2021, the software has been significantly improved in numerous key areas, helping to increase inspection productivity, improve the quality

of data collected and gain better insight into the components being measured.

CAMIO 2021 Geometry Validation automatically detects which surfaces of the CAD model should be used to measure the feature. It ensures that all measurements are taken on suitable surfaces automatically and at the same time provides the programmer with the option to modify the default settings and selections. While the feature is being programmed, the CAD simulation highlights the geometry used for the validation and previews the measurement sequence. This combines with the Teach Path view to provide a full visual and numerical evaluation of the programming sequence prior to executing the touch points or scanning sequence. Other improvements

have been made to the programming workflow by extending the advanced picking function to touch points and scan paths on a CAD model and to indicate the selection of existing measured features.

New for CAMIO 2021, probe self-centering allows the center point of a V-groove to be automatically located and measured using a scanning probe. This replicates hard gauging and measurement using gauge-balls. Probe self-centering responds to the continuous deflections of an analogue probe in real time to locate the mid-point between two surfaces.

CAMIO 2021 Orientation Tolerancing automatically determines the appropriate relationship to a secondary datum based on the nominal feature

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New Products

definitions. Any manually specified relationship is ignored, except in cases where a relationship cannot be determined automatically. Tolerance zone shape and relationship to the secondary datum outputs have also been added.

For CAD users, the CAMIO 2021 exchange file versions have been updated to the latest release of Spatial's InterOp. The interoperability software allows users to import, interact with, share and export 3D data easily across CMM platforms and manufacturing sites. The Select Components dialogue box has been extended to reserve stalls in the ACR3 change rack for any CMM laser scanner, including all those from Nikon Metrology. Lastly, the NMAPI interface that enables deployment of Nikon Metrology laser scanners on a CMM has been updated to version 4.6.

CAMIO 2021 also supports Metrology Gate, Industry 4.0 software.

Mastercam 2022 Delivers Powerful Toolpaths and Techniques —CNC Software

CNC Software, Inc., developer of Mastercam announces the release of Mastercam 2022 turning solutions. From accepting and programming any CAD file to Dynamic Motion™ roughing and precision finishing, Mastercam 2022 gives you a variety of options to turn all your parts exactly as you need them. Mastercam 2022 features new Mill-Turn support, enhancements to 3D Turning Tools, Stock Diameter, and much more.

With Mastercam 2022, you can now define reusable holder assemblies. Create collections of adapters, extensions, and holders, and store them as an assembly. You can create reusable assemblies of modular components. These assemblies can be stored in a library and used for the creation of full 3D Lathe Tool assemblies.

When defining stock dimensions in Job Setup, a new button lets you specify the outer or inner diameter by selecting an arc or radial face. After selecting the button, you are returned to the graphics window where you can select an arc or radial face. You can also select an edge. Mastercam automatically reads the proper diameter value from the selected geometry.

Mastercam 2022 introduces steady rest support for Mill-Turn which al-

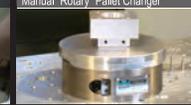


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Shawn Arnold
Publisher
October 1, 2021

New Products

allows you to precisely position and simulate steady rests throughout your machining process, adding part support capability to turning, milling, and part-handling operations. This includes new component types, enhanced component libraries, dedicated operations for each type of steady rest, part handling strategies, and simulation features.

The subprogram support that has been in other Mastercam products has also been added to Mill-Turn. Create subprograms for depth cuts and hole making operations such as drilling. Spindle Move operations in Mill-Turn now let you specify the destination as an Incremental distance. Enter a positive value to move the spindle towards its home position, or a negative value to move the spindle away from its home position.

Mastercam's Swiss Solution benefits from the improvements and updates to Mastercam Lathe. Expanded options and more efficient programming are combined with Mastercam Mill to provide fast, easy Swiss programming.

Powerful 5-Axis Machine in a Compact Package —Okuma

Okuma America Corporation offers the GENOS M460V-5AX. "The GENOS M460V-5X is a powerful and affordable 5-axis vertical machining center (VMC) with a compact design," said a company spokesperson.

The GENOS M460V-5AX is equipped with high-precision ball screws and oversized linear guideways, which provide smooth and accurate movement for the X, Y and Z axes and allow for better control of the machining process.

The rotary axes are powered by precision hypoid gears for additional speed and accuracy. It comes with a 15K spindle, which experiences less vibration and produces 199 Nm of torque.



The 5-axis VMC's heavy cast iron machine bed provides increased thermal stability, rigidity, accuracy and dynamic machining. Okuma's Thermal-Friendly Concept technology increases accuracy by compensating for ambient temperatures around the machine as well as the heat generated during machining.

Okuma's 5-axis auto tuning technology makes 5-axis machining more user friendly. It maintains precise machining and easily fine tunes the machine by measuring geometric errors and making automatic adjustments as needed.

GF Machining Solutions Spotlights Milling and EDM Within Additive Part Processing at MD&M

To provide medical manufacturers the key subtractive operations needed within additive manufacturing part production, GF Machining Solutions showcased its Mikron MILL E 500 U high-efficiency 5-axis milling machine and the CUT AM 500 horizontal wire EDM at the recently held MD&M West 2021 show in Anaheim, California. Both machines work seamlessly alongside GF Machining Solutions' additive manufacturing systems for

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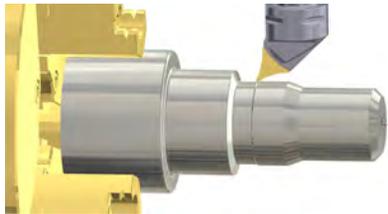
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CAMWorks 2021Plus with Sandvik Coromant PrimeTurning™

—HCL CAMWorks®

HCL Technologies (HCL), announced the release of HCL CAMWorks 2021Plus, with support for Sandvik Coromant PrimeTurning™, multiple technology databases and new tutorial task panes.

HCL CAMWorks 2021Plus is one of the first integrated CAM systems to support Sandvik Coromant's PrimeTurning™, which uses CoroTurn® Prime Type-A and Type-B tools in conjunction with unique Toolpaths.

PrimeTurning™ offers the flexibility for turning operations in all directions. The shape of the CoroTurn® Prime tool inserts, combined with toolpaths that turn in the opposite direction than a conventional turning process, makes it possible to achieve a much smaller entry angle and better chip control. A company spokesman stated this allows the machine to achieve a higher feed rate, while still maintaining the same close tolerances

and quality finishing. The direction of the toolpaths provides the ability to machine right up against a 90-degree shoulder on parts.

HCL CAMWorks 2021Plus offers the ability to save and use multiple technology databases, or TechDBs, to capture preferred machine settings, tools, and operation details in a customized TechDB. These preferences can then be re-used by simply accessing the TechDB. With CAMWorks 2021Plus, this has been extended to provide users the ability to save and manage multiple TechDBs from within the application.




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New Products

Largest, Longest Mill Holders Yet With Smart Damper Vibration Control —BIG KAISER

BIG KAISER has expanded its lineup of Smart Damper-equipped, arbor-style face mill holders. This new holder is the largest and longest milling tool BIG KAISER has offered yet. It supports face mills with diameters of 3", 4", 80mm or 100mm with an arbor pilot diameter of either 1" or 27mm.

The Model SDF57 assembly has an outside diameter of 2.83" and allows users of 3" face mills to access up to 19.68" of reach, the longest tool assembly in the industry using standard components. Face milling components used in construction equipment, aerospace and oil/gas industries will



see the most opportunity for this new tool holder with vibration dampening, where long reaches are common.

Smart Damper enables quiet, vibration-free milling, even in long-projection assemblies. The integral design of Smart Damper shortens the distance from the damping mechanism to the cutting edge. This produces higher

damping effects to the tool assembly, minimizing chatter or vibration for better surface finishes and improved metal removal rates.

The new Smart Damper face mill holder is available for BBT50, BCV50 and HSK-A100 shank styles.

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New Products



Expanded Range Of Dovetail Vises —Jergens

Jergens adds new modular dovetail vises and adapter bases to its line of Fixture Pro® workholding for more quick-change applications using this unique style of clamping. Dovetail

vises offer secure clamping with minimal material and are ideal for parts with multiple operations and larger metal removal. With the ability to utilize quick-change, users can spend more time in the cut and less time in part changeover.

Two of the three new vises are engineered to use with Jergens Quick-Loc™ pallet system and include industry standard patterns 52mm and 96mm. With a single drive screw, Quick-Loc™ provides fast and repeatable fixture changes for small tooling platforms. A square aluminum adapter base provides the connection to either of the two patterns. The third vise features a Quick Locating System (QLS) mount, for column-mounting possibili-

ties, and a corresponding round adapter base for this type of workholding.

Construction of these vises includes hardened steel jaws, a ten-degree dovetail angle and a stop pin to prevent lateral movement of the part. The Quick-Loc™ vises include pull studs and the QLS version comes with 12mm (QLS) bushings. Jergens also offers its 5DC3 standard dovetail cutter to custom-mate the part with the vise pattern.



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New Products



CNC Collet Chucks —Zagar

Zagar 22c CNC collet chucks are offered along with standard collets that are modified to mate exactly with unique die cast part configurations. These parts can be held securely on either ID or OD surfaces, providing increased machining access.

One CNC collet chuck holds each modified collet. Working together

with a draw-bar spindle and coupling with the back of the collet chuck, the clamp mechanism is actuated inside to securely locate and hold the part in a single step. Zagar reports the setup helps to ensure machining performance while providing very low runout as well as quick changeover to keep machine uptime high.

CNC collet chucks and collets are an alternative to pneumatic or hydraulic workholding devices and are well-suited for high production runs.

“Through design and engineering, we can help customers with virtually any special need”, says Brian Zagar, vice president of sales for Zagar Inc. “And oftentimes the solution is simpler

than you’d expect, with measurable reduction in man hours and increases in machine utilization”, Zagar continued.

Brass Pie Jaws Hold Delicate Materials Securely —Dillion Manufacturing

Dillon Manufacturing presents brass pie jaws which firmly grip delicate workpieces without marring or distortion. Maximum contact area



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New Products

from the full grip jaws provides a solid gripping surface which yields more friction for drive with reduced part distortion, while the brass provides a softer surface without marring or marking of the workpiece surface.

Standard parts available to 32-inches in diameter with custom designs available with special heights, diameters, and configurations, including a matching serration location which is exactly perpendicular to the slots. Ideal for components fabricated from brass, aluminum, bronze, and other softer, malleable alloys.

Dillon full-grip chuck jaws are made in the USA. The company reports that they are ideal for high-speed

machining, as well as precision boring, tapping, drilling, and finishing across virtually all industrial markets. In addition to brass, Dillon Full Grip Pie Jaws are available in 6061 aluminum, 1018 steel and cast iron.

Expanded Line of TiNox-Cut End Mills —Emuge Franken

Emuge Corp. announced the expansion of its Emuge-Franken TiNox-Cut End Mills line, designed for high-performance machining of demanding materials such as Inconel/ nickel alloys, titanium and stainless steel.

5-Flute TiNox-Cut N: This new coolant fed series features 5 flutes for high feed rates, a raised land that increases chip clearance, and is ALCR-coated. It is a high-performance tool designed for roughing and finishing.

TiNox-Cut NF features a fine chip breaker design that reduces chip size while reducing cutting forces. The tool features a proprietary TiN/ TiAlN coating in both coolant fed and solid designs and is ideal for semi-finishing difficult materials such as nickel alloys.

TiNox-Cut Base is a material specific style tool with a proprietary TiN/ TiAlN coating for roughing and finishing.

TiNox-Cut Trochoidal is ideal for



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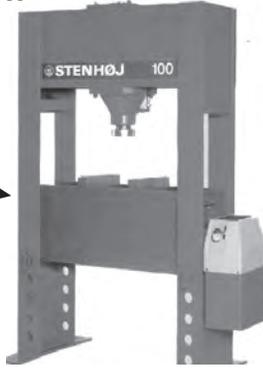
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New Products

high metal removal rates, this tool series features a newly developed geometry, a proprietary TiN/ TiALN coating and a chip breaker edge, which the company reports that when combined, reduces stress and vibration when machining difficult materials such as titanium and stainless steel. All tools are coolant fed.

EMUGE-Franken reports that their TiNox-Cut End Mills are made from premium ultra-fine micro grain solid carbide with a maximized transverse rupture strength for high impact applications. Advanced PVD-applied multi-layered coatings withstand excessive heat and provide superb wear resistance.

TiNox-Cut N, NF and Trochoidal End Mills are available in axial internal coolant-through capability. TiNox-Cut

Trochoidal tools are available in both square-end and corner radius configurations. Weldon flat shank construction is available in both TiNox-Cut NF and TiNox-Cut Trochoidal tools, and is compatible with Emuge FPC milling chucks featuring an anti-pullout pin lock system.

Claw Jaws Offer High Grip with Flexibility —Dillon Manufacturing

Dillon Manufacturing's Claw Jaws have an optimized contour that provides a secure grip on the workpiece, while the jaws' weight, center of gravity and cutting forces combine to minimize jaw clamping force loss.

Designed to bite into the workpiece,

they provide increased holding power during turning operations.

Manufactured from 8620 steel for durability and long service life, the product range is suited for I.D., O.D. and bar clamping applications.

The Dillon Claw Jaw system is available for most chuck brands.

Optional rest buttons allow setting up of different clamping depths.

Sealed Chuck with Open Center —SMW Autoblok

SMW Autoblok offers the BP chuck, standard fully sealed power chuck with a large through hole engineered for increased lifespan, throughput and durability.

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“Ideal for CNC lathe applications, BP’s large through hole provides tremendous flexibility for virtually any application where a standard chuck is used, including O.D. and I.D. clamping, bar stock clamping and shaft clamping,” said a company spokesperson. “Easily convert BP to a collet chuck using collet pads for small diameter parts.”

The spokesperson continued, “A true workhorse, BP maintains high productivity even in harsh environments of dry machining, abrasive powders, high pressure or corrosive coolants and more.”

Being fully proofline sealed from outside contaminants allows BP to maintain a consistent grip force for

increased repeatability at high speed, versus non-sealed chucks that can lose more than 50% grip force if not maintained properly, according to the company. Other advantages include a case-hardened body and internal parts for high resistance and longer life.

Available in 210 mm, 260 mm and 320 mm, BP series chucks accept all industry top jaws. The BP-D utilizes master jaws with inch serration while the BP-M operates with metric serration (suitable for Japanese jaws). The American standard, tongue and groove master jaws are available on the BP-C.

Strong, Low Profile Clamp —Mitee-Bite

Mitee-Bite Products offers the Pitbull Wear Plate. This shim provides a hard barrier between Pitbull Clamp and fixture, preventing distortion of back wall when using aluminum or mild steel fixtures.



“This simple solution keeps fixtures light and maintains full clamp travel

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New Products

and holding forces at maximum pressure,” said a company spokesperson.

“Refurbish old fixtures or add to existing aluminum fixtures to maximize machining capabilities.”

Square Angled Toolholders—Thinbit®

Thinbit®, manufactured by Kaiser Tool Company Inc., expands offering of Square Angled Toolholders. These toolholders are designed for CNC and conventional machines.

The new Square Angled Toolholders position the insert at 30°, 45° or 60° angles for reliefs, undercuts and angled OD and face grooves. Square shank sizes are available in 3/8”, 1/2”,



5/8”, 3/4” and 1”.

The Square Angled Toolholders are for use with THINBIT® inserts in grades for ferrous and non-ferrous materials. Inserts are available in sizes .004” to .150” in .001” increments coated with TiN, TiAlN, TiCN, diamond film or uncoated. See pages 2-9 & 2-10 in the THINBIT® catalog.

Modifications can be provided on any of their tooling.

New DX8 CrossOver® Vise —Kurt

Kurt Manufacturing announces the new DX8 CrossOver® vise, bringing their benchmark DX-series vise design to an 8-inch platform. Featuring a premium one-piece body design with a cast stationary jaw now standard on all Kurt single-station vises. The new Kurt DX8 CrossOver® combines the best features of the Kurt D810 and Kurt 3800V vises into a single vise.

New stationary-jaw Kurt DX8, DX6 and DX4 vises were designed using Finite Element Analysis. The DX8 CrossOver® vise features the same bed height and keyway to the stationary jaw face as the D810. The DX8 also features a redesigned nut with less weight, a new brush seal

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New Products



design, and a larger stronger bearing pack for more durability.

The new design eliminates fasteners on the top of the stationary jaw and reduces the chance of body twist during or after assembly. The jaw design also minimizes chip and cutting fluid blowback with no counter bored holes on the top of the jaw to pool fluid and chips. The pull-type design now matches the quality and safety of Kurt's highest precision 3600V and 3800V vises.

The DX8 CrossOver® vise design retains the lifting handle on the back side of the stationary jaw for easy vise positioning and features Kurt's proprietary AngLock® spherical segment to create all-directional alignment and reduce jaw lift and improve performance.

Machine Vision Software Enhancements —Vision Gauge Online

Methods Machine Tools, Inc. has announced software enhancements to VisionGauge OnLine, its machine vision software for automated inspection, verification and data collection.

One of the main upgrades improves the speed and usability of the VisionGauge digital optical comparator 700 series. The digital optical comparator 700 Series is a 5-axis measurement/

inspection system that obtains accurate measurements and displays them as crisp, high-resolution images.

The upgrade gives users two options to supply the measurement system with hole coordinate data directly from a laser, EDM drill or machine tool.

Once transferred from the machine to the Digital Optical Comparator 700 Series, users can display the data using a computer-aided manufacturing

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...Hotline Continued From Page 8

NASA Selects Three Western Companies Out of Five U.S. Companies to Mature Artemis Lander Concepts

NASA has selected five U.S. companies to help the agency enable a steady pace of crewed trips to the lunar surface under the agency's Artemis program. These companies will make advancements toward sustainable human landing system concepts, conduct risk-reduction activities, and provide feedback on NASA's requirements to cultivate industry capabilities for crewed lunar landing missions.

The awards under the Next Space Technologies for Exploration Partnerships (Next-STEP-2) Appendix N broad agency announcement are firm fixed-price, milestone-based contracts. The total combined value for the awards is \$146 million, and the work will be conducted over the next 15 months. The three western companies that received awards and their award values are: Blue Origin Federation of Kent, Washington, \$25.6 million, Lockheed Martin of Littleton, Colorado, \$35.2 million and SpaceX of Hawthorne, California, \$9.4 million.

The selected companies will develop lander design concepts, evaluating their performance, design, construction standards, mission assurance requirements, interfaces, safety, crew health accommodations, and medical capabilities. The companies will also mitigate lunar lander risks by conducting critical component tests and advancing the maturity of key technologies.

The work from these companies will ultimately help shape the strategy and requirements for a future NASA's solicitation to provide regular astronaut transportation from lunar orbit to the surface of the Moon.

Aptera Looks Ahead to Manufacturing Phase

Aptera Motors Corp., the Sorrento Valley, CA. company that hopes to mass-produce a three-wheeled electric vehicle that can be powered by the sun, announced a new hire recently. The business brought Pablo Ucar on board as vice president of production and procurement.

At one point Ucar held an executive role at EV maker Faraday Future. In his new role, he will decide how to best produce Aptera's unique vehicle in volume.

The business has more than 11,000 pre-orders for its EV.

Chris Anthony, co-CEO of the company, said in a recent interview that Aptera is on the hunt for 80,000 to 120,000 square feet of industrial space that it can turn into a factory. At the moment, demand is high for industrial real estate in San Diego.

The executives face a variety of challenges, including the state of global supply chains, which are still recovering from the effects of COVID-19.

Lightweight composite materials and an aerodynamic design increase the three-wheeler's efficiency and range.

Kratos to Supply, Support Target Drones

The U.S. Air Force awarded Kratos Defense & Security Solutions Inc. a \$338.1 million contract for subscale aerial targets. Specifically, the deal covers production of BQM-167A target drones from Lots 17-21 as well as out-of-warranty repairs and contractor logistics support. Work will be performed in Sacramento and is expected to be completed by Dec. 31, 2027. This award is the result of a sole-source acquisition, and fiscal 2021 procurement funds in the amount of \$30.5 million were obligated at the time of award.

Lockheed Martin Grows in Palmdale, CA

Defense contractor Lockheed Martin has completed construction of a high-tech manufacturing facility in Palmdale, home to its Skunk Works operations.

The 215,000-square-foot factory will incorporate digital tools, robotics, artificial intelligence and augmented reality to reduce the need for hard tooling.

Investment in the factory began in 2018. The aerospace giant said it has expanded its California workforce by more than 1,500 since then, and the new Palmdale factory includes office and break spaces to accommodate more than 450 employees. It's one of four manufacturing facilities the aerospace firm is opening in the U.S. this year.

Company officials declined to provide details on what kind of aircraft will be made there or how many units might be produced in a given year.

"Classified work will be done in the facility," Lockheed Martin spokeswoman Melissa Dalton said via email. "While I can't share any details about what specifically we'll be working on there, it will follow in the Skunk Works tradition of innovative solutions to urgent national needs."

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Northrop Grumman Lands \$13 Billion Deal for New Nuclear Missiles

Northrop Grumman in Chatsworth, CA. has been awarded a \$13.3 billion engineering and manufacturing development contract for the U.S. military's next-generation intercontinental ballistic missile system, the Air Force announced in September.

The Ground-Based Strategic Deterrent, or GBSD, program aims to replace the aging Minuteman III nuclear-armed ICBMs that first became operational back in 1970. The legacy platforms have already undergone significant life-extension efforts in the intervening years.

The EMD phase of the program is expected to last eight-and-a-half years and include weapon system design, qualification, test and evaluation and nuclear certification. Upon successful completion, the Northrop Grumman team will begin producing and delivering a fully integrated weapon system, the company said in a press release.

The GBSD program is projected to be worth up to \$85 billion. The Air Force hopes to have the next-generation weapon online in the late-2020s.

Northrop Awarded \$422M MDA Contract to Provide Missile Boost Vehicles

Northrop Grumman's space systems business will deliver at least six missile boost vehicles to the Missile Defense Agency under a potential 10-year, \$421.6 million indefinite-delivery/indefinite-quantity contract.

The Department of Defense said MDA is also procuring spare BV components for the anti-ballistic missile component of the U.S. Ground-Based Midcourse Defense system, as well as software and hardware repair, upgrade and maintenance support.

The contract has a base value of \$233.9 million and two option periods that, if exercised, will bring it to its ceiling amount and extend the expected completion date to August 2031.

Northrop Grumman Space Systems will conduct work in Chandler, Arizona; and Magna, Utah.

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