

CNC WEST

Volume 40 - Issue 5

THE MAGAZINE FOR WESTERN METAL WORKING MANUFACTURING

TURNING ISSUE

- **SMALL HOLES AND TOUGH SST JOBS, NO PROBLEM AT VANDERHULST ASSOC.**
 - **SC HYDRAULICS - INVESTING IN AUTOMATION FOR INCREASED PRODUCTION**
 - **FIVE THINGS TO KNOW ABOUT CHIP FORMATION IN MACHINING**
 - **BENCHMARK'S PRECISION TECHNOLOGY GROUP FINDING CAPACITY WITH FACTORYWIZ MONITORING**
- ...Plus Much Much More**

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WORKING RANGE	
Spindle Nose	A2-6
Swing Over Bed (in.)	24 in.
Max. Turning Diameter (in.)	16 in.
Max. Turning Length (in.)	21 in.
Hole Through Draw Tube (in.)	2.60 in.
SPINDLE	
Jaw Chuck Size (in.)	8 in.
Spindle Speed (RPM)	4,200 RPM
Front Bearing Diameter (in.)	4.72 in.
Hole Through Spindle (in.)	3 in.
Spindle Motor Peak Output (HP)	20 HP
Torque Rating (ft-lb)	134 ft-lb
Full Output Base Speed (RPM)	788 RPM
X & Z AXIS	
X Axis Travel (in.)	9 in.
Z Axis Travel (in.)	21 in.
X Axis Rapid Rate (in./min.)	1,181 in./min.
Z Axis Rapid Rate (in./min.)	1,181 in./min.
X Axis Servo Motor (HP)	2.4 HP
Z Axis Servo Motor (HP)	4 HP
TURRET	
Indexing Drive	Spindle Motor
Stations	12
Indexing Time Adjacent Tool (sec.)	0.4 sec.
Square Shank Size (in.)	1 x 1 in.
Round Shank Size (in.)	D1.5"
ISO 230-2	
Positioning Accuracy (in.)	0.000197 in.
Repeatability (in.)	0.000157 in.
TAILSTOCK (OPTION)	
Driven	Saddle
Tailstock Base Travel (in.)	20.7 in.
Quill Travel (in.)	4.7 in.
Quill Diameter (in.)	2.95 in.
Quill Center Taper	MT #4
GENERAL	
Coolant Tank (gal.)	53 gal.
Hydraulic Tank (gal.)	10.5 gal.
Length (in.)	148 in.
Width x Height (in.)	75.4 x 72.8 in.
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WORKING RANGE	
Table Size (in.)	13.78 in.
Travel X / Y / Z (in.)	24 / 18.5 / 20 in.
Tilt Travel A Axis (in.)	A: +110° ~ -110°
Rotary Travel C Axis (in.)	360° continued
Spindle Nose to Table Surface (in.)	1.18 – 21.26 in.
Spindle Nose to A Axis Center @ Axis Tilt 90°	1.18 – 21.26 in.
Max. Workpiece Size	Ø15.75 x 11.81 in.
Table Load Capacity (lbs.)	220.46 lbs. / 165.35 lbs.
MAIN SPINDLE	
Spindle & Transmission Type	Big Plus #40, CAT, Coupling
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Spindle Base Speed (RPM)	1,500 RPM
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Max. Spindle Torque (ft-lb)	34.89 ft-lb
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Ballscrew Diameter	1.77 in.
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Chip to Chip Time (sec.)	4 sec.
ISO 230-2	
Positioning Accuracy	0.000197 in.
Repeatability Accuracy	0.000157 in.
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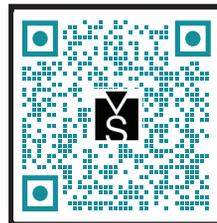
Introducing the Trinity AX2 duo

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CNC West

June/July 2022 • Volume 40 No 5



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Hank Vanderhulst credits automation as a key for his shop's growth.Page 40

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Coming in Aug/Sept 2022

EDM, Waterjet & Grinding Issue: This issue provides readers with profit-making ideas in three major metalworking areas – EDM, Waterjet and Grinding. We'll visit western plants to report on innovative methods and equipment involving wire and sinker EDM, Waterjet and new ideas in grinding. This is also our IMTS Preview Issue

Editorial: July 21, 2022

Ad Space: July 25, 2022

Ad Material: August 3, 2022

CNC WEST

VOL. 40 NO. 5
June/July 2022

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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Happy Reading

You are reading the largest issue of CNC WEST in a year. You may or may not know that most FREE trade magazines determine the size of their magazine by how many ads they have. It is expensive (and with paper cost rising it is getting more expensive) to print a magazine and then to mail it. What does that matter to you the reader? Well, the larger the magazine the more information and feature articles we can offer you. Also, that tells you that more and more companies are choosing CNC WEST as one of their methods to get their product or service in front of western region metalworkers. So when you get finished reading this issue which is jam packed with great information I know I will be thanking all those advertisers and hope you do too.

Our cover story is on a southern California pump manufacturer that is a big believer in automation. SC Hydraulics is a production-based company. They make the same parts repeatedly, so repeatability, and fewer setups is a huge savings. All

the new machines they invest in must be 4 or 5 axis and save on setups and labor costs. Their new Leadwell LTC-25iASMY lathe and Toptek gantry loader saves them four operations. Read all about their operation beginning on page 22.

Another story is about a northern California shop where medical is their bread and butter. Vanderhulst Associates has some of the top names in the medical industry utilizing their abilities to produce parts made from exotic metals with unique features. Being a family-owned company, CNC WEST is a sucker for successful family-owned businesses like this one.

I guess the complete opposite of a family-owned business is Benchmark Precision Technologies. This HUGE chip making company with 24 plants in eight countries including some in northern California and Arizona was kind enough to share some of their secrets with our readers. The article written by Sean Buur talks about how Precision Technologies has deployed FactoryWiz machine monitoring systems on its advanced CNC machining centers throughout the facilities. There are well over 100 machines tied into monitoring, with the goal being to expand into non-machining type equipment like CMMs, welding equipment, clean rooms, and sheet metal.

There are also informative articles about the Starrag Competence Center Aerospace — an initiative to combine the expertise already available within the group in terms of manufacturing turbines and structural components and a recap of the recent Legacy open house at Selway Machine Tool which honored the late Bill Selway and the wonderful open houses that Bill put on over the years. Also a supplied article by Allied Machine & Engineering touched on Five things you need to know about chip formation in machining.

That folks will do it. Enjoy this issue of CNC WEST and if you have a company that will be at IMTS in September please know that our next issue is our IMTS issue and we might have room for your free press release and definitely will have room if you want an ad. Until then I hope you all enjoy your summer

Sincerely,

Shawn Arnold

Shawn Arnold
Publisher

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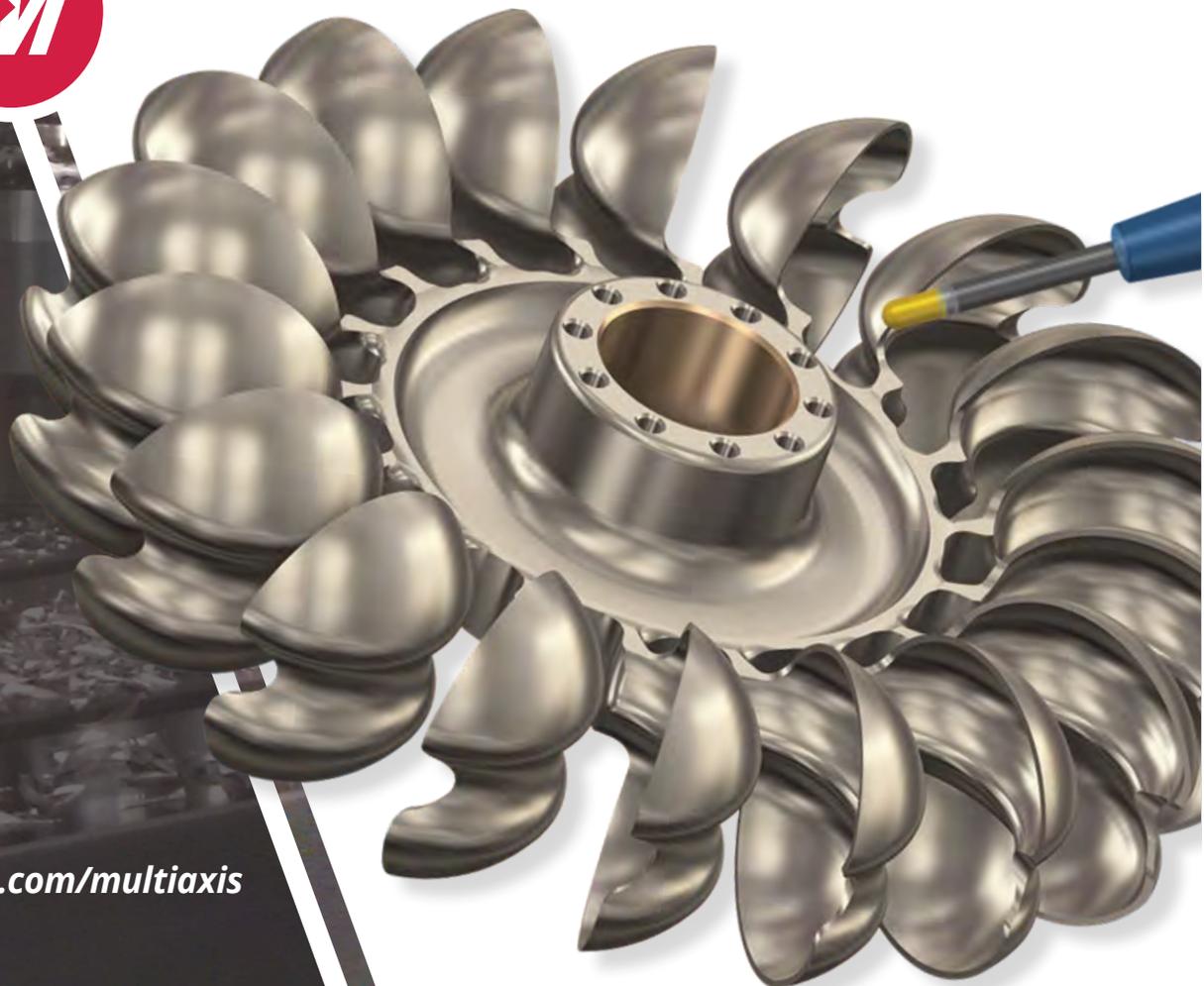


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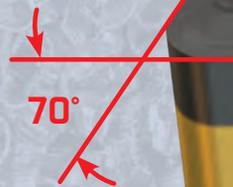
70° Corner Angle Turning

NEOTURN
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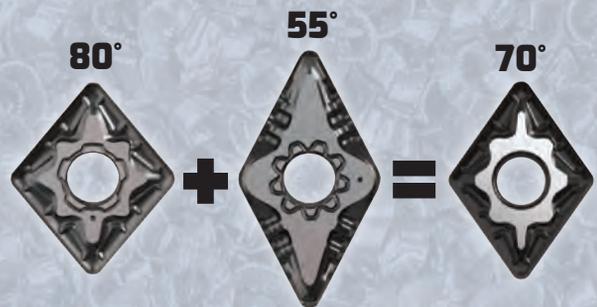
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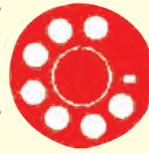
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EXEC HOTLINE



Viavi Solutions Expands Footprint in AZ.

Viavi Solutions, a tech company that shifted its head office from California to Arizona in 2021, is expanding its footprint in Chandler after realizing it needs more space than it originally anticipated.

Viavi Solutions Inc. bought a 104,000-square-foot space with the original intent of housing both its global headquarters and manufacturing operations in the facility.

The company has since decided it needed more space, so the HQ staff will now work out of a newly leased 15,000-square-foot office just a few miles away from the manufacturing site.

All told, these new operations are expected to support 230 jobs.

Viavi makes network testing and optical technologies, with more than 3,600 employees spread over 22 countries.

Japan Coast Guard to Fly GA-ASI Aircraft

General Atomics Aeronautical Systems Inc. will provide unmanned aircraft to Japan's coast guard, the Poway, CA. business announced in April.

Japan will begin monitoring its exclusive economic zone with MQ-9B SeaGuardian remotely piloted aircraft as soon as October. Financial terms of the deal were not disclosed. The General Atomics affiliate had been in discussions with Japan for several years.

Lucid Group Inc. has Deal with Saudi Arabia for the Purchase of up to 100,000 Vehicles Over 10 Years.

Under the deal, the Saudi government committed to buy 50,000 vehicles with an option to buy 50,000 more during the same period from the Newark, California-based company. The first deliveries are required to begin no later than the second quarter of 2023.

The vehicles include the Lucid Air which is currently under production at Lucid's manufacturing plant in Casa Grande in Pinal County south of Phoenix, Arizona. The Saudi government will also buy other future models that

will be assembled in Arizona and at a future manufacturing facility that will be built in Saudi Arabia.

The deal will begin with the annual purchase of between 1,000 and 2,000 vehicles. That will increase in 2025 to between 4,000 and 7,000 vehicles.

Northrop Grumman Gets Link 16 Deal. Work to be Done in San Diego and Woodland Hills

The Department of the Navy awarded Northrop Grumman Corp. a \$10.5 million modification to a previously awarded contract for hardware associated with Link 16 communication electronics. Link 16 refers to a type of tactical data link.

This contract modification adds scope to procure 55 Link 16 A-kits, to include 26 each for AH-1Z Viper attack helicopters and UH-1Y Venom utility helicopters. The kits will go on production aircraft. In addition, the Navy is buying two spares for AH-1Z aircraft and one spare for UH-1Y aircraft, as well as one A-kit test stand for the Navy. Some 38% of the work will be performed in San Diego, with the balance in Woodland Hills. Work is expected to be completed by March 2024.

Edwards Invests in New Arizona Facility to Support North America Semiconductor Growth

Edwards, has announced its investment in a new state-of-the-art manufacturing facility in Chandler, AZ.

The new 200,000-square-foot facility will leverage the latest manufacturing and digital technologies to support the fast-growing North American semiconductor market with services and solutions for the efficient and environmentally sustainable production of chips.

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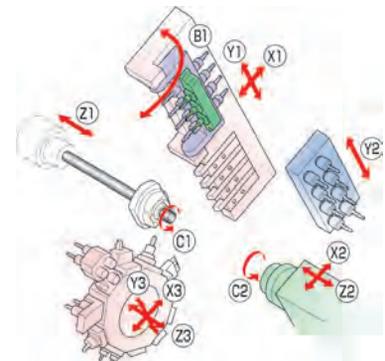
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Chuck Size	Groove Width	Screw Size	Hole Space	Pie Dia	Height	ALUMINUM Part Number	Price SET OF 3
1.5mm x 60° Serrations							
6"	0.472	10mm	0.787	6"	2.00"	RKT-6200A	\$ 87.07
	0.472	10mm	0.787	6"	4.00"	RKT-6400A	\$ 142.54
8"	0.551	12mm	0.984	8"	2.00"	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
15"	0.827	16mm	1.181	15"	4.00"	RKT-12408A	\$ 381.55
	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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Chuck Size	Groove Width	Screw Size	Hole Space	Height	Length	ALUMINUM Part #	Price SET OF 3	STEEL Part #	Price SET OF 3
1.5mm x 60° Serrations									
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
15"	0.827	M16	1.181	4.00	5.50	KT-12408AF	\$ 128.66	KT-12408F	\$ 156.37
	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	2.362	2.50	7.00	K3-21250AF	\$ 166.14	K3-21250F	\$ 207.54
	0.984	M20	2.362	6.00	7.00	K3-21600AF	\$ 412.81	K3-21600F	\$ 540.17

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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

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Chuck Model	Chuck Dia	GRIP-RITE OEM STYLE		XTRA BITE	
		Part Number	Price Per Set	Part Number	Price Per Set
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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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IN STOCK! READY TO SHIP!

100% Made In The USA!



Chuck Size	Groove Width	Tongue Width	Screw Size	Hole Space	Hgt Inch	STEEL SOFT JAWS		ALUMINUM ROUND JAWS		
						Part Number	Set Price	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

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



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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	\$194.24
5"	JBR-05	\$194.24
6"	JBR-06	\$220.91
8"	JBR-08	\$271.55
10"	JBR-10	\$306.55
12"	JBR-12	\$340.79
15"	JBR-15	\$512.05

Fits Kitagawa, Samchully, Strong, TMX, MMK, Howa, SMW, Seoam, Autoblock and other CNC chucks!

COLLET PADS & TOP JAWS



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

Warner & Swasey Collet Pads
Prices Starting At: **\$78.04** Set
Part # CP-WS3RM02500-G

"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

EDGE TECHNOLOGY

CHUCK STOP SET



- 10 sets of hardened parallel bars
- 0.0002" parallelism accuracy
- Parallel heights: 1/2" to 1-5/8" x 1/8" inc.
- Magnets secure the stop to chuck face
- Centering plug fits ID of the chuck and keeps the Chuck Stop centered
- Included centering plug diameters are 1.4", 2.0", 2.5", 3.0", 3.5", and 4.0"
- The Chuck Stop is 6.0" in diameter
- Designed for 3 jaw chucks only
- For use on 6" diameter chucks and larger

CHUCK STOP SET
Part # EDGE-30000
Mfg's List: \$199.99
\$171.41 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**

TURNMAX

LIVE CENTERS

- Max. radial run-out within 0.015mm
- Large selection of live and dead centers
- German manufactured bearings & seals
- Inspection report included with each center
- Precision ground body hardened 32-40 Hrc
- Sealed to protect against coolant & chips



Standard

Morse Taper	Point Type	Max RPM	WP Wt	Part Number	Price Each
MT 2	Std	6300	330	L-M2S-D44H70A-T*	\$115.00
	Ext	6300	270	L-M2E-D37H70A-T*	\$115.00
MT 3	Std	4500	820	L-M3S-H11H55A-T*	\$120.00
	Std	4500	820	L-M3S-H11H50A-T	\$188.95
MT 4	Std	3500	1300	L-M4S-H17H38A-T	\$212.20
	Ext	5000	820	L-M4E-H17H47A-T*	\$125.00
MT 5	Std	1500	1900	L-M5S-H19H15A-T	\$110.00
MT 6	Std	1000	3300	L-M6S-H33H10A-T	\$350.00

Slim Line

*Slim Line Type Body

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

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



SCROLL CHUCKS
3 JAW SET-TRU CHUCKS

BISON

SAVE 10% OFF
Mfg's List Prices

- Fine adjustment 0.0004" TIR
- Forged steel body
- Fine adjustment
- 3 pinion design
- Scroll precisely balanced
- Two piece* master style*
- Plain back

Size	Thru Hole	Part Number	Mfg's List	Our Price!
6"	1.654"	BI-7866-0600	\$ 1,317.00	\$ 1,185.30
8"	2.165"	BI-7866-0800	\$ 1,441.00	\$ 1,296.90
10"	2.992"	BI-7866-1000	\$ 1,635.00	\$ 1,471.50
12"	4.055"	BI-7866-1200	\$ 2,427.00	\$ 2,184.30
16"	5.354"	BI-7866-1600	\$ 4,925.00	\$ 4,432.50



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CARBIDE TURNING INSERTS



- 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	\$9.14
CNMG432	.031	AH120	TM	Super Alloys	TO-1364	\$9.14
DNMG431	.015	AH120	TN28	Super Alloys	TO-1727	\$12.47
DNMG432	.031	T6130	SM	Stainless	TO-6805431	\$12.47
VNMG331	.015	AH905	HMM	Super Alloys	TO-6859407	\$11.78
VNMG332	.031	AH120	TM	Super Alloys	TO-3194	\$11.78
WNMG431	.015	AH120	TM	Super Alloys	TO-3277	\$9.14
WNMG432	.031	AH120	TM	Super Alloys	TO-3338	\$9.14

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	\$ 8.62
3/16	5/8	3/16	2	MO-EM001107-4	\$ 12.67
1/4	3/4	1/4	2-1/2	MO-EM001137-4	\$ 17.00
5/16	13/16	5/16	2-1/2	MO-EM001153-4	\$ 22.23
3/8	1	3/8	2-1/2	MO-EM001177-4	\$ 24.42
1/2	1	1/2	3	MO-EM001207-4	\$ 43.37
5/8	1-1/4	5/8	3-1/2	MO-EM001226-4	\$ 77.16
3/4	1-1/2	3/4	4	MO-EM001244-4	\$ 111.31

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	\$15.09
1/16	5/8	1-5/8	SRTA-1/16-MO	\$12.41
5/64	11/16	1-11/16	SRTA-5/64-MO	\$12.41
7/64	13/16	1-13/16	SRTA-7/64-MO	\$13.34
1/8	7/8	1-7/8	SRTA-1/8-MO	\$13.35
5/32	1	2-1/16	SRTA-5/32-MO	\$16.55
3/16	1-1/8	2-3/16	SRTA-3/16-MO	\$18.64
1/4	1-3/8	2-1/2	SRTA-1/4-MO	\$26.36

COMBINED DRILL & COUNTERSINKS



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

For STEELS					
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



COOLANT-THRU INDEXABLE DRILLS

Using 80° WCMT/WCMX Inserts

- 2xD, 2.5xD and 4xD indexable drills
- Spiral flutes to improve chip evacuation
- Coolant-thru access located on both shank and side of drill body
- Insert pockets precisely positioned to keep cutting forces low and evenly distributed
- 80° trigon inserts offer 3 cutting edges
- Made in USA



INSERTS AVAILABLE!
Call For Grade Information!

Insert	Prices Starting At:
WCMT 1.211	\$15.40 ea
WCMX 1.81.52	\$9.80 ea
WCMX 21.52	\$9.80 ea
WCMX 2.522	\$9.80 ea

Dia	Shank	LOC	Part Number	Price EA	Uses Insert
0.500	0.625	1.340	UD-0500-2D-063	\$151.80	WCMT 1.211
0.625	0.625	2.815	UD-0625-4D-063	\$218.90	WCMX 1.81.52
0.750	0.750	1.748	UD-0750-2D-075	\$168.30	WCMX 21.52
0.750	0.750	3.698	UD-0750-4D-075	\$242.00	WCMX 21.52
1.000	1.000	2.345	UD-1000-2D-100	\$184.80	WCMX 2.522
1.000	1.000	4.635	UD-1000-4D-100	\$267.30	WCMX 2.522
1.125	1.000	4.760	UD-1125-4D-100	\$267.30	WCMX 2.522

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	\$ 16.66
1/4	3/4	1/4	2-1/2	YG-EMUGMF68905	\$ 28.45
3/8	7/8	3/8	2-1/2	YG-EMUGMF68907	\$ 46.87
1/2	1	1/2	3	YG-EMUGMF68909	\$ 72.02
5/8	1-1/4	5/8	3-1/2	YG-EMUGMF68911	\$ 145.44
3/4	3/4	3/4	3	YG-EMUGMF68048	\$ 188.60
1	1-1/2	1	4	YG-EMUGMF68913	\$ 326.67



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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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



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

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 \$120.00!
KURT DX6
 6" Vise w/ 9" Opening
 Mfg's List: \$779.00
\$659.00 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

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

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

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



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



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Gantry CMM ideal for medium to large volume precision components (Available in AEROS S & AEROS P versions)



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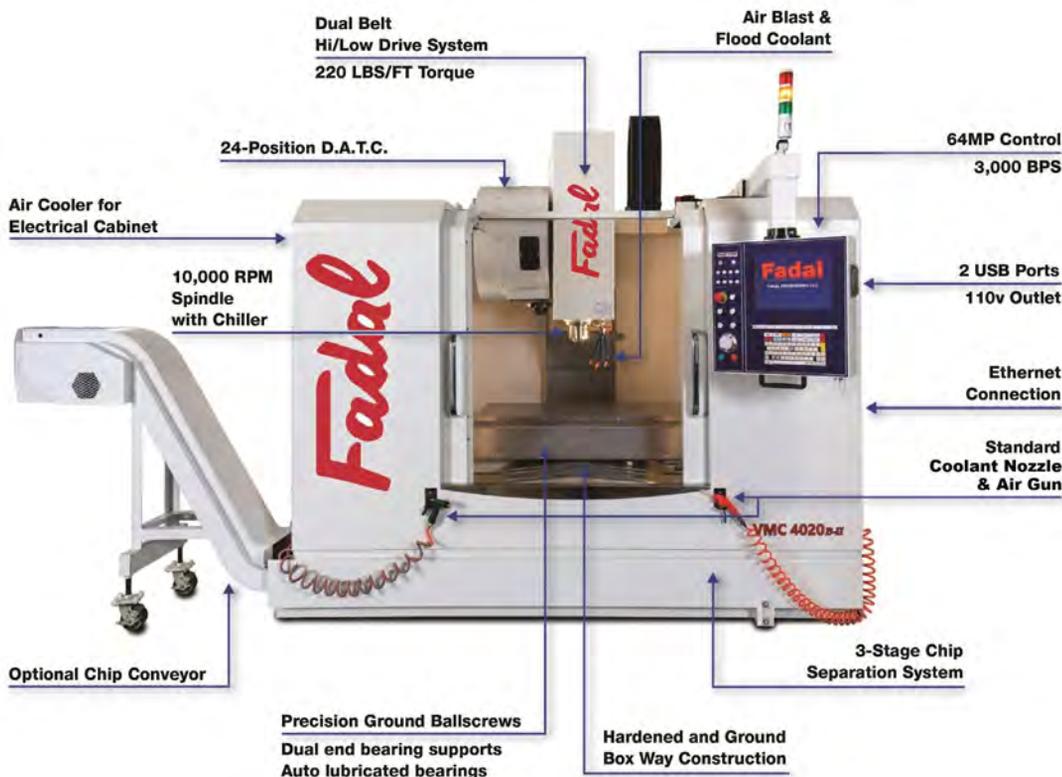
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Our industry-leading **2-YEAR WARRANTY** and service response means you'll never have to find out just how expensive downtime can be. With the most standard features available in our class, **Fadal** is the smart choice for your production growth both today and well into the future.



Fadal Standard "Value Added" Features

- 10,000 RPM monitored liquid cooled spindle
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- 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
- Cooled electrical cabinet

Fadal 64MP Control

- 4 GB Memory
- 3000 BPS processing speed
- High speed software
- Coordinate rotation and scaling
- Custom macros
- Spare M functions
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- 2nd home position
- Color 15" monitor

ALL BACKED BY OUR INDUSTRY-LEADING 2-YEAR WARRANTY

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CINCOM

L20

L20E-3M12B5

NEW Large 15"
Touch Screen
LFV ready and
ATC option available

The L20 XII B5 simultaneous 5-axis control, expanding the machining range of CNC automatic lathes.

Improved performance, along with advances in ease of use and now comes LFV ready.

EASE OF USE

- The flip-up door provides a wide opening, and together with the rear door allows easy access for tool setting.
- The new HMI (Human Machine Interface) allows intuitive operation.

IMPROVED PRODUCTIVITY

- The higher output of the back spindle improves acceleration/deceleration to shorten cycle times.
- The IoT Friendly function in the machine enables configuration of an operation monitoring system using communication standards compliant with OPC-UA and MTConnect.



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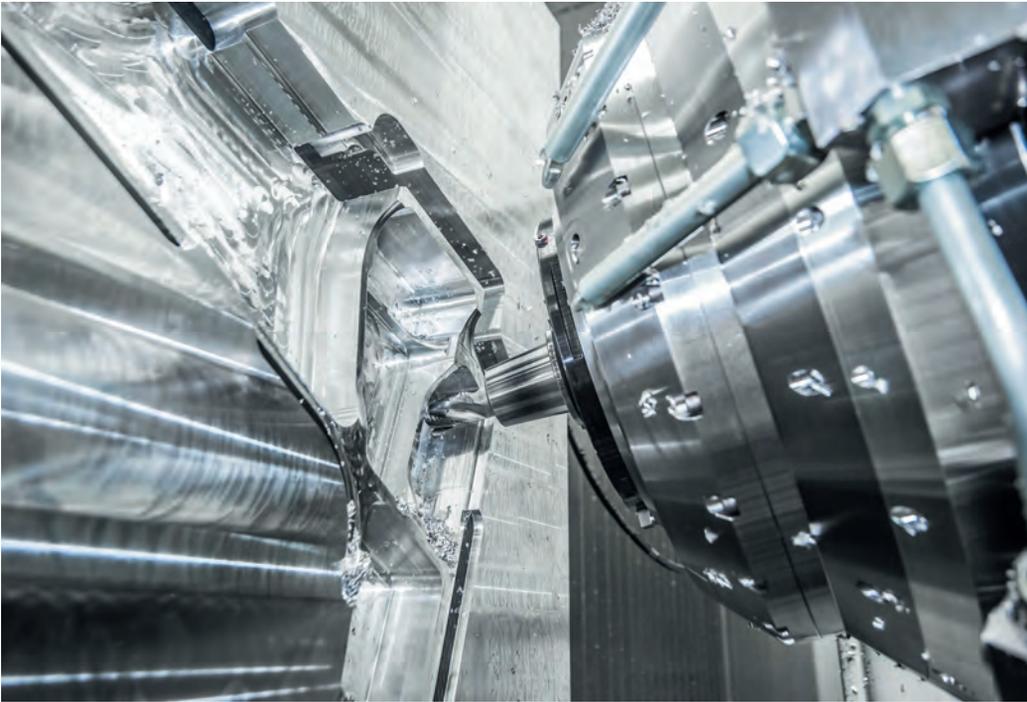
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Starrag Aerospace Manufacturing Expertise — All In One Place



The Starrag site in Rorschacherberg in Switzerland has long been synonymous with highly productive, long-lasting machining solutions in the aircraft industry. This is what made this site the perfect choice for the Starrag Competence Center Aerospace — an initiative to combine the expertise already available within the group in terms of manufacturing turbines and structural components.

The aerospace industry has been one of Starrag's core



markets ever since the company began to build machine tools in the early 20th century — and this is still the case today. Dr Bernhard Bringmann, managing director at the Rorschacherberg site and head of the High-Performance Systems business unit, explains: “Over the years, we have built up a vast and diverse knowledge — not just of our own machines, but of the entire manufacturing process for components that are often used in the aerospace industry”.

The best way to experience this expertise first-hand is at the Center of Production Excel-

lence (CPE) at the application center in Rorschacherberg. This approx. 21,528 sq. ft hall is equipped with state-of-the-art NB, LX and STC five-axis machining centers, which can be used to create a broad variety of flow surfaces and complex structural components. Starrag technologists test and optimize new, sophisticated machine processes at the site, usually in response to customer orders and under production conditions — and all while continuing to gather valuable experience.

“Just as the ‘Aerospace Competence Center’ was given its official name, in CPE we were commissioning an Ecospeed machine featuring a pallet 157” in length to allow us to reproduce our expertise in structural components on this scale”, says Dr Bringmann enthusiastically. The plans go even further: To achieve the best possible synergy effect, future development and production of the Ecospeed series will be relocated from Mönchengladbach to Rorschacherberg. Dr Bringmann provided the following explanation for this decision: “By moving our Ecospeed facilities, we can offer the aerospace industry a huge range of applications from a single source.” This includes manufacturing solutions for blades, vanes, blisks, impellers, casings, gearboxes and housings for turbines.



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SC HYDRAULICS

INVESTING IN AUTOMATION FOR INCREASED PRODUCTION



The Leadwell LTC-25iASM a CNC box way turning center with milling & Y-axis. It is continuously fed via a Toptek gantry style pallet loader.

Founded in 1953 by Bob Vedder and Willie Mohler, SC Hydraulics has always had their own product line of pumps. They design, engineer, manufacture, and assemble high pressure, air-driven liquid pumps, as well as air and gas boosters which are being used in a variety of industries and applications. They are continuously developing new products to meet the demanding requirements that their domestic and international partners require. “Since the company opened, we have been in the pump manufacturing business,” tells Jun Yang, SC’s shop manager. “Our pumps are used by oil and gas, test labs and to pump sea water, so in the worst environments they need to thrive. We run a lot of 316 material and have many outside processes, but first and foremost we must manufacture all our parts inhouse.”

Back in 2014 CNC West Magazine met with SC Hydraulics about their newly installed eight pallet Kitamura HX400G/8APC. The Kitamura was their first big jump into lights out manufacturing, and one that over the last eight years changed the way SC Hydraulics looked at running their parts. “We instantly saw value from our Kitamura,” explains Jun. “The speed, the accuracy, the lights out operation. Everything was just an improvement.” SC Hydraulics set their sights on more automation throughout their manufacturing facility and have spent the last several years adding machines that do just that. “When I came on board 17 years ago my robotics experience was a big part of being hired,” continues Jun. “The good news is that the automation is paying off for us. Every step we make has been good for the company and the bottom line.



The Toptek gantry loader has a 5 pallet system connected to the Leadwell LTC-25iASMY.



SC Hydraulics is only investing in new machining centers that offer multi axis automation to reduce setups and labor costs. The Kitamura (far left) was the first advanced machining center installed back in 2014. Since then they have added multiple systems from Okuma (middle) and Ganesh (right.)



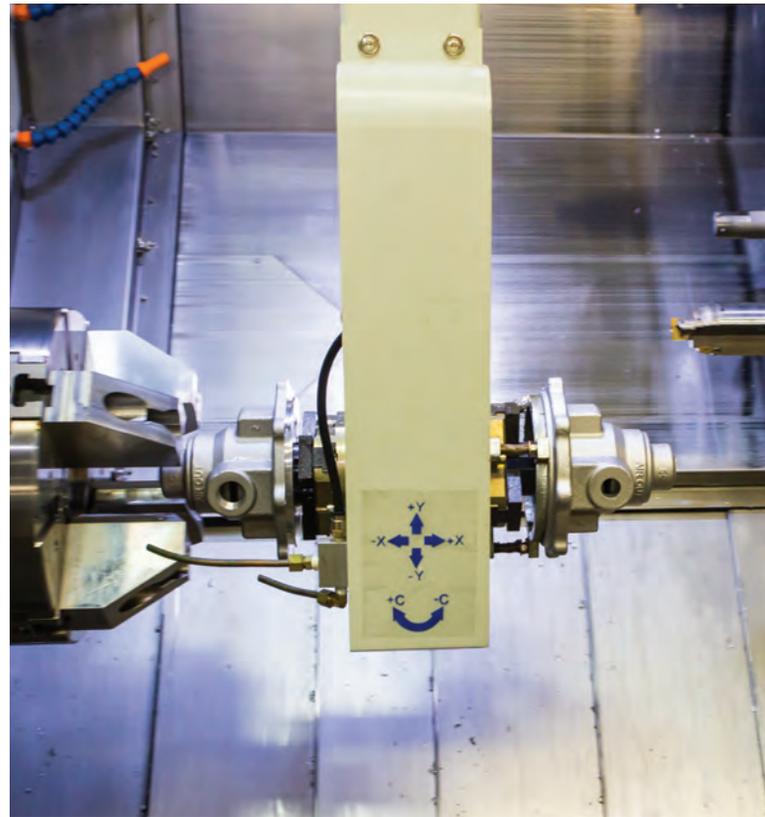
Left - Pallets are quickly and easily loaded and unloaded. Everything else is fully automated. Right - Once loaded the pallet system and gantry loader get to work transferring parts to the main spindle for machining and back to the pallet pool once the operation is complete.

We are a production-based company. We make the same parts repeatedly, so repeatability, and fewer setups is a huge savings. After the Kitamura we began buying bar fed advanced turning centers like the Okuma LB3000 EXII and Ganesh Cyclone 32CS. We load raw material and out comes a finished part in a single setup, and mostly unattended. All the new machines we invest in must be 4 or 5 axis and save on setups and labor costs. The Leadwell LTC-25iASMY lathe and Toptek gantry loader saves us 4 operations.”

SC’s pumps are different sizes, made from different materials, and all have different pressure ratings depending on their usage. SC has hundreds of part numbers that require thousands of pieces to be made. The 65,000sq.ft. Brea, Ca. production center is filled with machining centers of different brands and capabilities, but their newest addition is something you don’t see every day. “Automation is the first thing we think of when buying a new machine,” tells Jun. “If it doesn’t reduce setups or require less human interaction, we are not going to buy it. I have a pair of cast aluminum parts that we were running two shifts on a traditional lathe, netting around 50 parts a day. We couldn’t keep up with the demand and began looking for an automated solution. We had a space limit between machines and didn’t want a robot in the aisles feeding parts. I explained to Karl Izumi of So Cal Machine Tools we needed something more automatic like the Kitamura, but in a lathe. He suggested the Leadwell LTC-25iASMY and a Toptek gantry loader.”

The Leadwell LTC-25iASMY is a CNC box way turning

center with milling & Y-axis. Features include: BMT65 Live Tooling Turret w/ Y-axis travels of 4”, 12” Chuck w/ 4.0” bar capacity, main spindle tool setting, Fanuc OiTF Control w/ 10.4” color LCD display, through the spindle cooling, 24 position index - 12 tool station bi-directional servo driven turret, 40HP 3,500 RPM main spindle and a 20HP 4,000 RPM sub spindle, parts catcher and conveyer system. Attached to the advanced turning center is the Toptek gantry loader GR-10 pallet station. “The Leadwell lathe is great, but the gantry pallet system makes this setup amazing,” details Jun. “The key is no downtime, saving us setup times and on labor cost.” The automation is simple and effective. There is no robot in the middle of shop floor hanging out. It is all behind and above the machining center. The pallet system is loaded and unloaded by hand, but the demands of the loader are minimal. They only need to place the material in the correct position on the jig. It is super simple, and the parts self-align enough for the gantry loader to reach down and pick them up. The part that needs machining is selected and travels above the machine before being lowered down into the main chuck. At the same time the gantry loader is removing a finished part and bringing it back to the pallet pool. It has a two-position head unit to pick up and put down the parts. Prior to having this automated machining center SC Hydraulics were loading by hand with a person standing at the machine for two shifts. The two parts they bought it to manufacture are 7” diameter aluminum castings. “Since we bought the



Left - The gantry style loader is positioned above the Leadwell lathe and loads and unloads parts from the top. Right - The robotic arm comes down to retrieve machined parts and replace them with castings that need to be processed. It is a simple to program automated solution that allows unattended lights out manufacturing.

Leadwell it runs more parts in a single 8-hour shift than we could before on two shifts,” touts Jun. “The parts are better too. We don’t have micron tight tolerances, but we deal in tenths all day long. They have to be precise, and the machine has to run. We’ve been up and running for about a year now and it hasn’t needed any service or repairs.”

Jun and everyone at SC Hydraulics are very pleased with the production numbers coming off the Leadwell. Every time a company invests in new technology it is a risk. Will the system live up to the hype promised by the salespeople? Will it produce the parts as intended? The pandemic has been to say the least problematic for most everyone on the planet, but with a lot of Asia shut down there was no practical way for Jun and his team to actually see the system working prior to purchase. “This is the first unit in California and maybe even in the United States with this combination,” explains Jun. “Which was too bad because we were not able to go see one running. Covid restrictions made it difficult to do much of anything, so we trusted Karl and watched a lot of YouTube videos. It sounds strange, but the machine and gantry are from Asia and there are a lot of videos showing it in action over there. It was a large investment, but we took the chance and have been happy with it for over a year. Once delivered and installed it has run flawlessly. We get great support from So Cal Machine Tools and trust them to help us purchase a sophisticated machine tool sight unseen. We couldn’t be more pleased with that decision.”



Since joining the team 17 years ago Jun Yang, SC’s shop manager has championed automation throughout the shop for reduced setups and increased production.

Abrasive Process Solutions Program for Unique Challenges



Saint-Gobain Abrasives has introduced its new Norton Abrasive Process Solutions (APS) Program, which was established to help customers determine the optimal grinding or finishing solution for the application at hand, ranging from simple to complex, off-hand or automated, and for metal fabrication, production grinding and virtually any abrasives operation.

The APS Program has access to 30 different machines and a new state-of-the-art APS Robotic Automation Cell, which is at the core of the new APS Program located at the Higgins Grinding Technology Center in Northborough, MA. The APS team provides abrasive process development, optimization, automation and in-house testing. APS services encompass the testing and optimization of new abrasives, improving quality and/or throughput and trying entirely new and customized processes.

The APS Program is positioned to be an extension of the customer, where tests can be conducted so that customers do not have to re-assign limited in-house resources and pause their own production.

"At a time when North American manufacturers need to deliver high-quality products faster while stressed with labor shortages, we are thrilled to announce the new APS Program, which can relieve some of their burden," said Tony Landes, APS Lead, Norton Saint-Gobain Abrasives. "The APS Program is uniquely set up to deliver a comprehensive array of services, including a quick response and short turn-

around. The APS team can provide the broadest array of grinding and finishing process development solutions for any type of abrasive."

The APS Automation Cell is capable of delivering abrasive-to-part and part-to-abrasive applications, wet/dry processing and uses a full range of abrasives such as coated, nonwoven, thin wheel, bonded and super abrasives. Equipped with a verified turn-key solution, manufacturers can then contact an automation system integrator to implement the solution. This avoids costly trial and error at the integrator level.

About the Robotic Technology

The automation cell features an industrial robot with a 210 kg load capacity that allows the APS team

to perform processes using nearly any size part or tool. The force sensor-capable robot performs in a multi capacity role, meaning it is fitted with an end-of-arm gripper to allow for part-to-media processing, as well as tool changers that use traditional hand tools to perform abrasive-to-part processing.

An integrated robotic-centered process development system includes a programmable pivot table, 6" deep coolant pans, abrasive tools, toolholders and radial compliant devices. Spindle motors and compliance slides as well as two heavy-duty grinding heads that have a 15 HP and 40 HP motor, are also in the mix. A programmable pivot head with dual belt and wheel is also offered.

Belts, cut-off wheels and grinding wheels, for example, can all be accommodated on the stacked head for part-to-media applications that require heavy pressure, such as casting cut-off and gate grinding. A side-by-side spindle head can use two belts and up to four radial wheels, which can produce high surface finishes by buffing or using filament brushes.

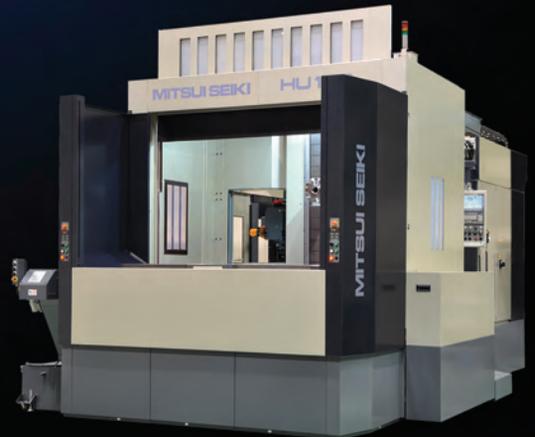
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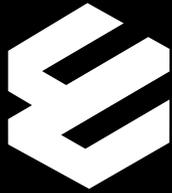


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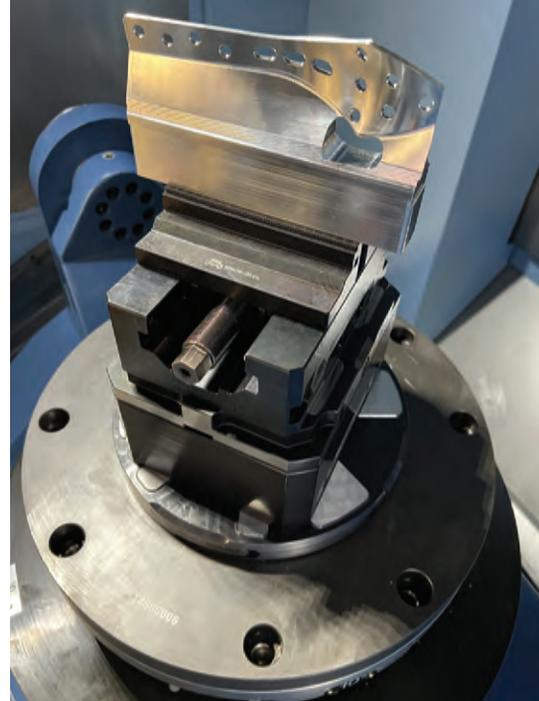


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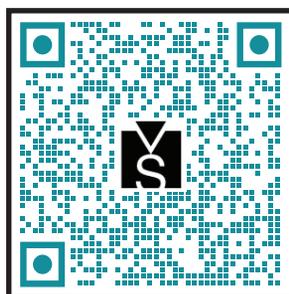
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LEGACY

A SELWAY MACHINE TOOL COMPANY SPECIAL EVENT

Legacy can be defined as something that is a part of your history that remains with you from an earlier time. Selway Machine Tool Company, one of the largest CNC machine tool distributorships in the nation, honored their 60 year heritage & former president Bill Selway, hosting "Legacy, A West Coast Manufacturing Expo & Tribute". Showcasing the latest in CNC, Automation, Workholding, Accessories, Tooling, 3D Printers & Software.

The roar of the #41 Haas Tooling NASCAR engine echoed throughout Selway Machine Tool Company's 60,000 square foot showroom in Union City, California last April 21st-22nd. The sound carried past 12 CNC machine demos, several 3D printers, multiple robots, and dozens of software/workholding/accessory/tooling vendor tables. Wall shaking vibrations from the revving 725 hp engine payed tribute to the unforgettable events Bill Selway & the Selway Brothers used to host under the same roof. And for two days, hundreds of Northern California manufacturers came together as a community to celebrate the life of Bills Selway, and to see the latest technologies offered from Selway Machine Tool Company's comprehensive multi-brand portfolio.

Showcasing the latest manufacturing technologies to their local customers, as well as throwing a good party, has been part of the Selway philosophy since the 1980's. During those years actual beach boardwalks (including a sandy beach), western saloons, batting cages, spaceships, bands, & NFL/NBA Cheerleaders would share the showroom floor with knee mills, saws, grinders, & CNC machines. Iconic imagery & memorabilia of these past events filled the building as the overall theme of the show.

This year, the Selway team carried on the tradition of mixing the right amount of entertainment into the expo. Harnessing their over 30 year partnership with Haas Automation, they booked the #41 Haas Tooling NASCAR, parked it in the Haas Factory Outlet section of their showroom, and revved the engine to the delight of the attendees. "The Legacy event pays tribute to the 'over the top shows' my father (Bill Selway) & uncles used to throw in the 80's", said Zack Selway, VP of Marketing at Selway Machine Tool Co.. "So alongside filling the building with the best manufacturing equipment available, we needed something spectacular that our customers would enjoy and talk about."

But, the talk from the show was not just about race cars or the LinkedIn live stream filming with Tony Gunn from MTD CNC. Customers from all over California, Northern Nevada, and Oregon were talking about, and were impressed by, the amount of technology showcased under one roof.

As one of the top Haas Factory Outlets in the world it is fitting that four Haas CNC's are the first things you saw upon entering Selway's Northern California showroom. The ever popular VF-2SS was making Autodesk designed bottle openers, a VF-6SS with rotary table demonstrated quick change over workholding, the compact UMC-500 made easy work of a complex 5-Axis part, while an ST-25Y with Auto Parts Loader cycled unmanned. Never before 'seen in person' machines like Toyoda's massive 5-Axis Horizontal Machining Center the FH630SXi 5-Axis, Enshu's built for high production HMC the GE460H, and the robot gantry loaded dual spindle/dual turret Fuji CSD 300 II captured local customers imagination with new ways to make their parts. Crowds gathered around Matsuura's new edition to their fabled 5-Axis palletized machining centers, the MAM72-52V. Meanwhile the Eurotech Rapido dual spindle/dual turret & Hwacheon's HiTECH 230BL YSMC boxway turn/mill's were busy machining high tolerance brass & aluminum giveaway items. Tolerances that could be checked by the Mitutoyo AV9108 CMM.

Selway Machine Tool Co has been selling CNC Automation since the early 90's with the Matsuura MAM Series. 'Realizing that to support their customers at every level of automation they partnered with companies like Fastems & Universal Robots and even developed their own palletized delivery system that could be connected to existing CNC machines with Trinity Robotics Automation. Trinity's AX2 Duo, an automated pallet system for 2 vertical machining centers, ran unattended the entire show, while a welding and two pick and place cobots by Universal Robots articulated across the aisle.

Because machines don't make parts right out of the box, Selway's SWAT team filled the back bay of the showroom with over 20 Software, Workholding, Accessory, & Tooling vendors. This area was bustling every day with attendees eager to get their hands on the newest products that could improve their processes. "We had more real conversations & opportunity's in the 2 days of the Legacy event than the whole week at WESTEC", said one workholding vendor as others nodded in agreement.

From the amount of customers & vendors that showed up for the event, it is plain to see that the true Selway Legacy is in their relationships. This industry can be demanding & stressful, but if we can learn anything from the Legacy

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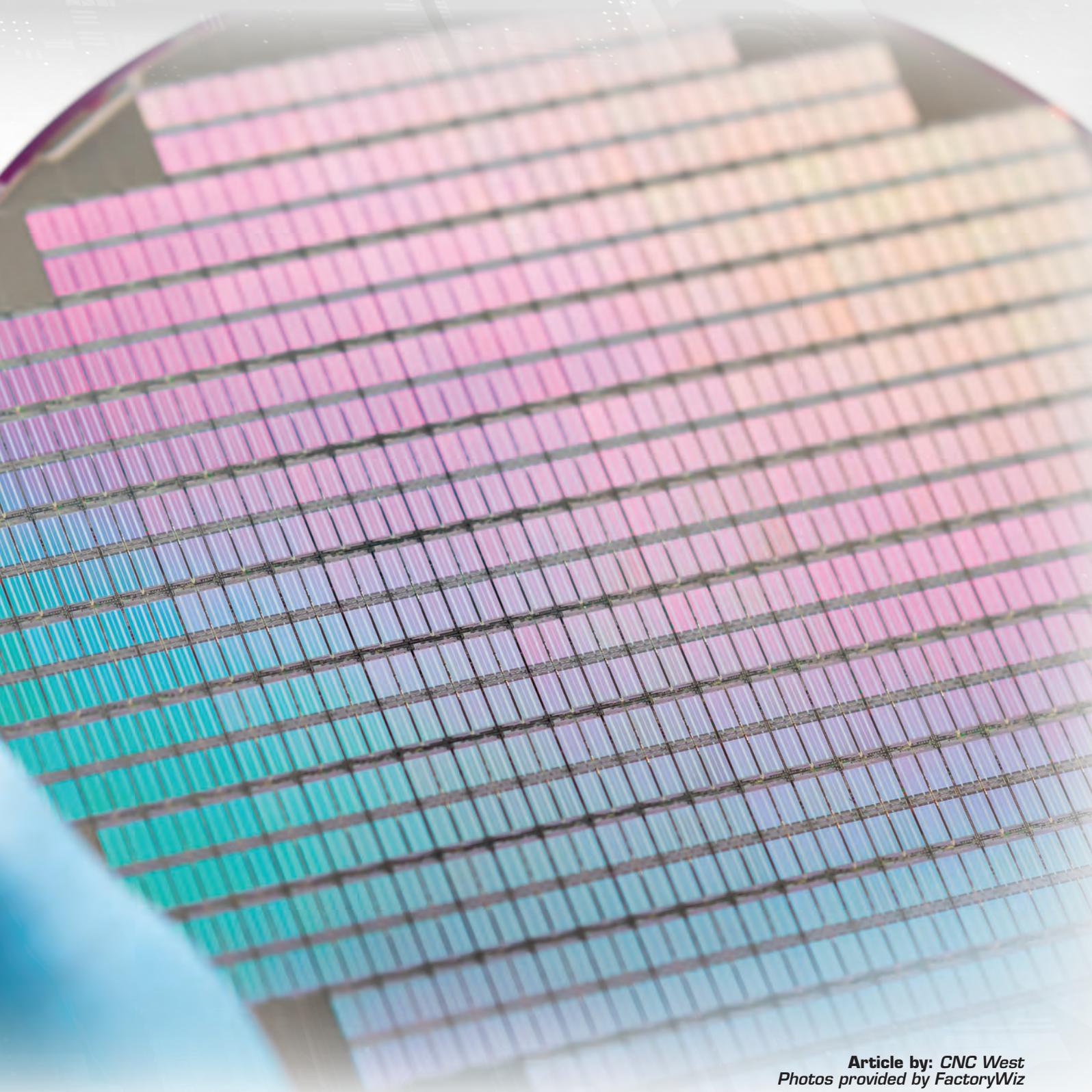
The worldwide chip shortage has garnered a lot of attention over the past few years. The COVID-19 pandemic and now Russian's invasion of Ukraine is hurting supply chains even more than before. At home, it has become a crisis of national security with the U.S. relying too heavily on foreign powers to manufacture the lifeblood of the tech industry. According to the Congressional Research Service (CRS), the United States' share of global semiconductor fabrication capacity has diminished from roughly 40% in 1990 to around 12% in 2020. East Asia is home to nearly 80% of the world's chip fabrication. America's largest tech companies including Google, Apple, and Amazon, rely on Taiwan for a staggering amount of their chip production.

According to *Whitehouse.gov* "The President is urging Congress to pass legislation to strengthen U.S. research and development and manufacturing for critical supply chains, including semiconductors. The Senate passed the U.S. Innovation and Competition Act (USICA) in June and the Administration is working with the House and Senate to finalize this legislation. It includes full funding for the CHIPS for America Act, which will provide \$52 billion to catalyze more private-sector investments and continued American technological leadership." Companies like Benchmark are finding ways to increase their capacity in order to keep up with the rising demand of machines needed to build the chips.

Founded in 1979, the Tempe, Arizona-based company is a leading global partner for outsource design engineering and manufacturing of complex products. With 24 facilities in eight countries, they employ nearly 11,000 people. Benchmark's Precision Technologies (PT) business unit is one of

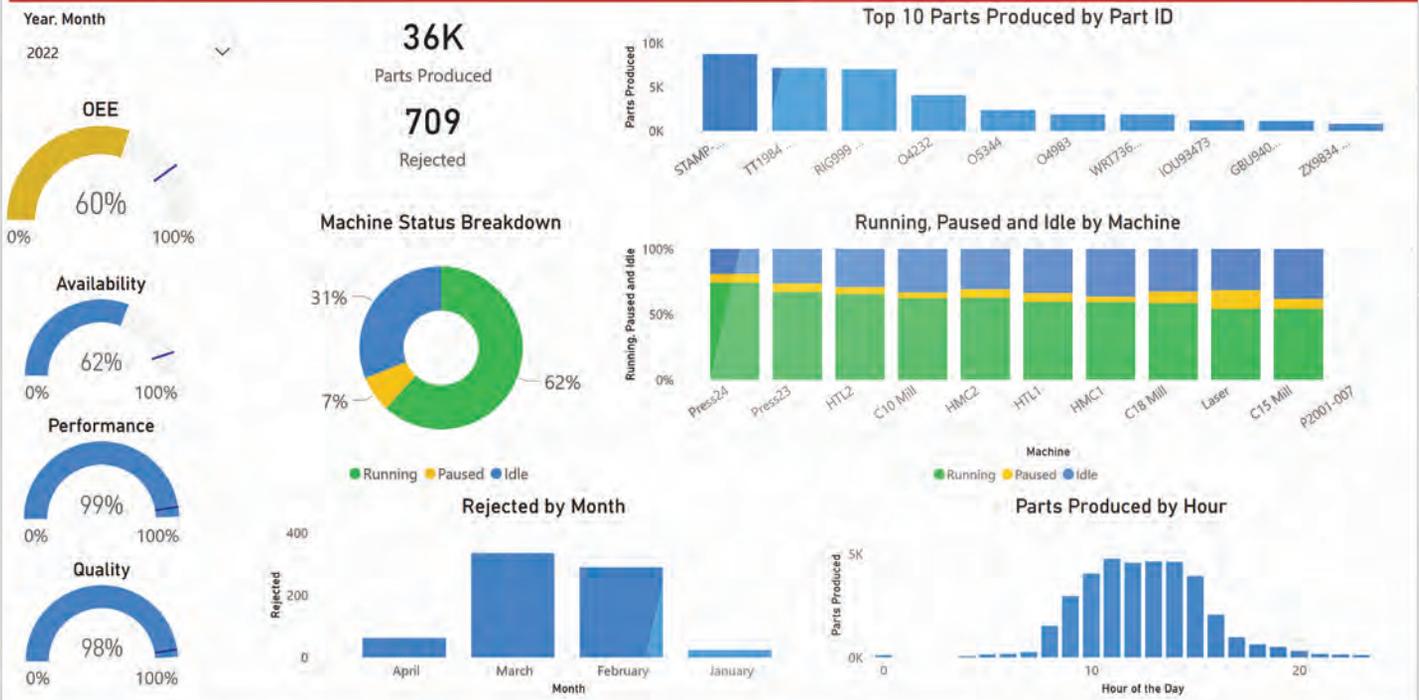
the business units experiencing rapid growth. They make up a significant part of the company, with sites in Tempe, Arizona, Concord and, Fremont, California and Penang, Malaysia. One of its primary markets is semiconductor capital equipment. This includes, but not limited to front end wafer fabrication equipment, backend wafer fabrication equipment, and test and measurement equipment.

“As part of the PT group, we support various markets across our sites,” tells Patrick Kealey, senior director, Global OpEx, Precision Technologies at Benchmark. “We don’t have our own product lines and are 100% contract manufacturing and “build to print”. Recently, we’ve been riding the semiconductor wave and are entering a new era of tremendous growth. The “CHIPS” bill is pushing out a \$52



Article by: CNC West
Photos provided by FactoryWiz

FactoryWiz - Power BI



Through the large TV dashboards you can see how individual machines are performing in real time. You can see by the charts that there are a variety of metrics available to view. The dashboard is fully customizable. In the case of Benchmark's Precision Technology group each facility focuses on their own matrix before having a weekly meeting with upper management to compare and contrast the group as a whole. Seeing how the sister sites compare is a great motivator, but more importantly it is a way to ask how they can improve processes.

billion investment into the industry, with new sites being built by Intel, TSMC and others. At Precision Technologies we provide the key metal machined components and complex assemblies that support the wafer fabrication capital equipment for our customers. There is a significant amount of investment coming into this market, and we are preparing for that in a variety of ways."

PT has deployed FactoryWiz machine monitoring systems on its advanced CNC machining centers throughout the facilities. There are well over 100 machines

tied into monitoring, with the goal being to expand into non-machining type equipment like CMMs, welding equipment, clean rooms, and sheet metal.

"Concord was the first of our sites to get the FactoryWiz monitoring system about five years ago," explains Kealey. "At that time we were able to see the monitoring in a visual fashion. The semiconductor market was just coming off a ramp in demand (2017/2018) and there was open capacity in our factories. As the newer ramp in semiconductor demand took off over the last two years we started to use the FactoryWiz process for collecting data and taking action to proactively manage the "up-time" of the machines."

"The key to success with this project is to involve and empower the operator by giving them these tools," continues PT technologies quality system manager, Reza Bayat. "With these tools they become part of the solution instead of simply pointing out there is a problem. These tools help the operation team identify problems and develop solutions to improve OE."

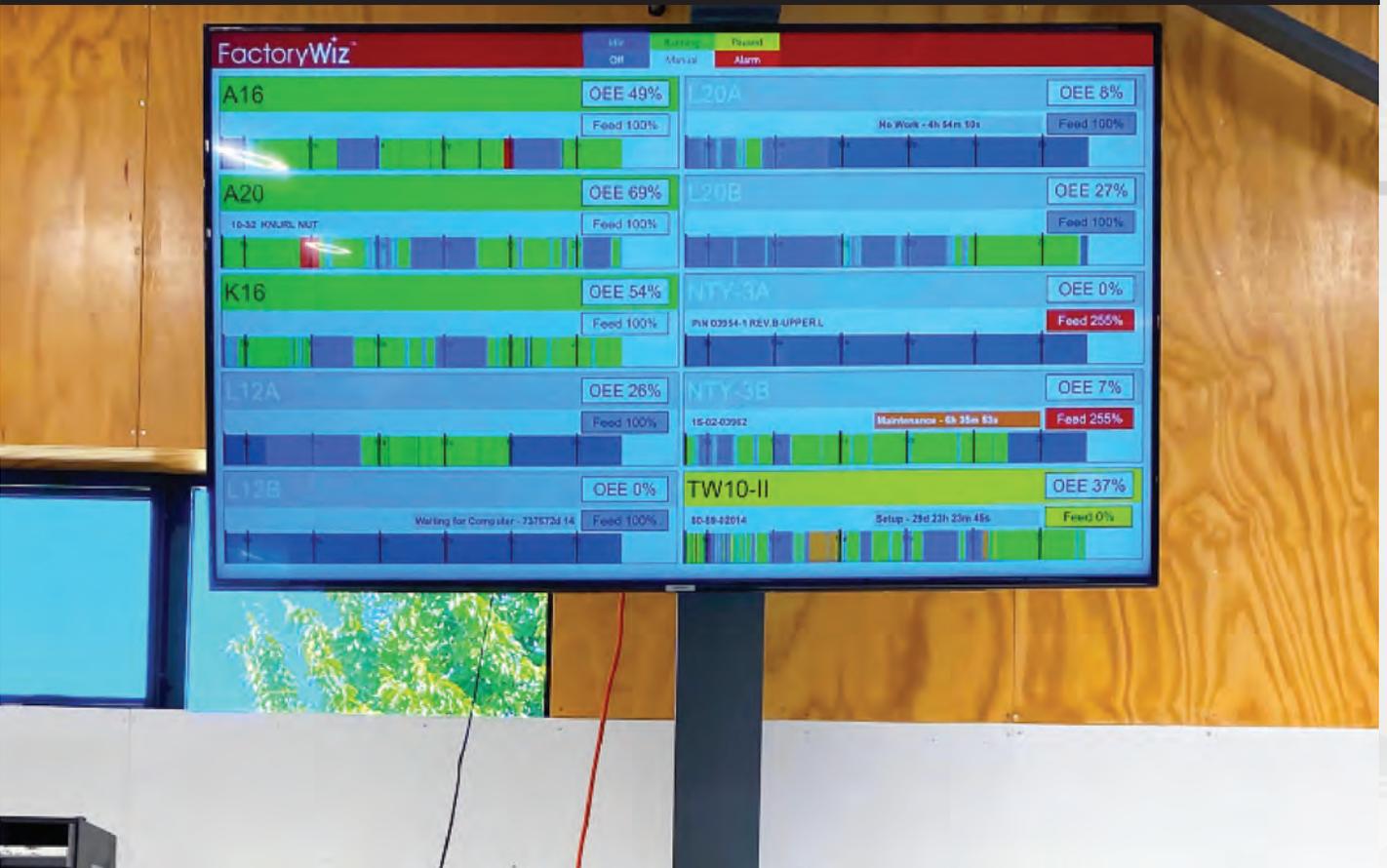
"It is historically the easiest to point the finger at the operator," adds Domenic Lanzillotta of FactoryWiz. "It is always on them, even when it's something out of their control. It's always best to involve operators early in the adoption process because they are in the trenches, and often the person with the most insight as to where the bottlenecks are."

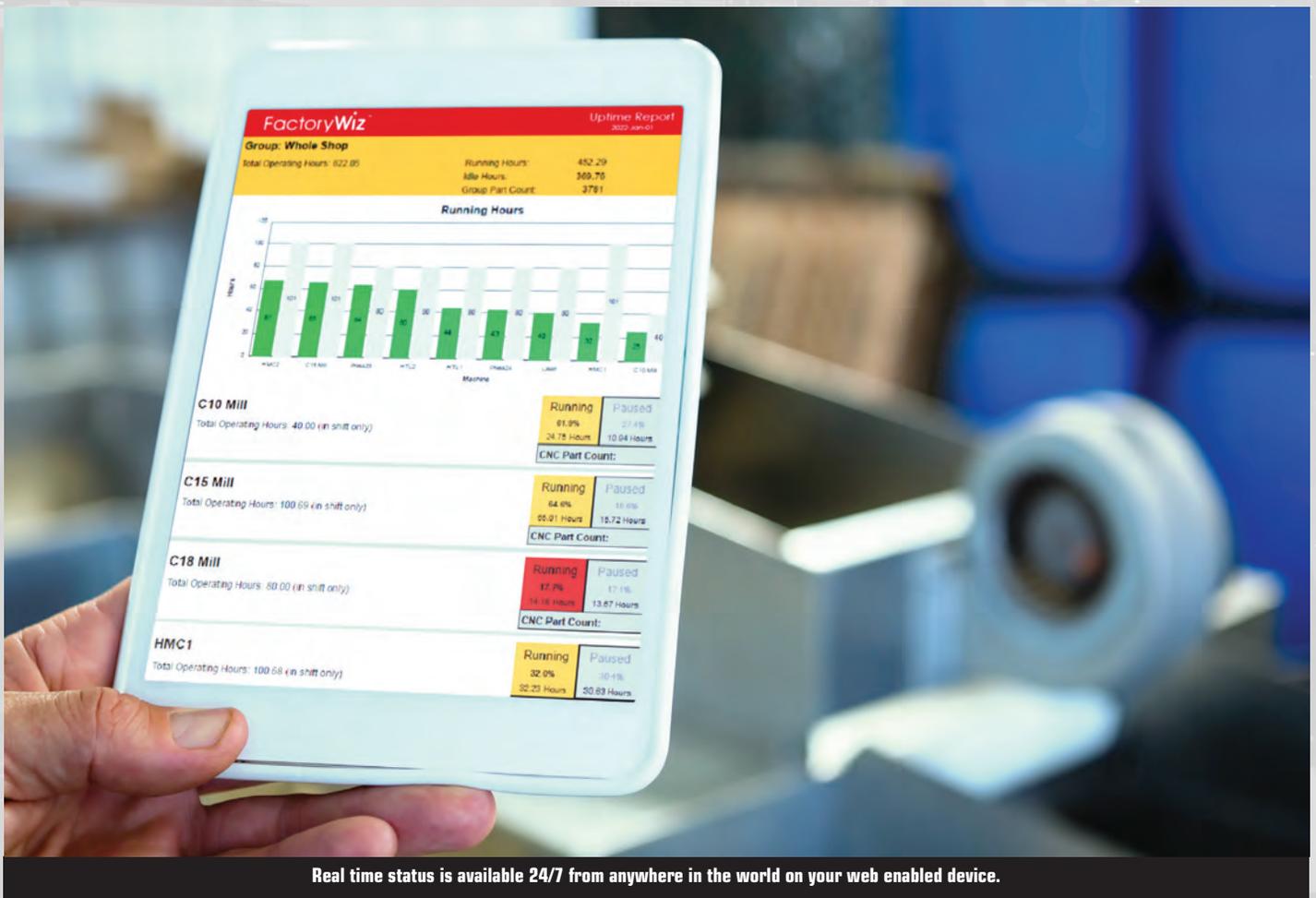


FactoryWiz success comes from empowering the operator and making them part of the productivity solution.



Each machine has an operator terminal as well as shop wide large TV dashboard displays. Everyone being able to see production status is a great way to quickly assess the overall operations. It is also a great way to create a friendly rivalry between operators that can lead to an increase in production numbers.





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For the PT group, it is about identifying process challenges. How can they optimize setup changeover activities? Why is the machine idle and what mitigating actions can be deployed to maintain higher utilization? It could be a lot of factors like poor timing of exchanges, waiting on materials, a restroom break or waiting on first article.

“Now, we can track that data and there are escalations associated with it,” explains Patrick. “If a machine is down for a certain amount of time, a message is sent directly to the supervisor. If it is down longer, it is escalated to a manager and so forth. The information is on the shop floor at machine terminals, on giant TV screens, and sends notifications up the chain of command. FactoryWiz alerts us. It alerts us not in the sense that the operator is doing something wrong, but that help is needed. We are finding better ways to analyze the data and we are finding added capacity because of it.”

“What I find so exciting about listening to Patrick and Reza is how they use the system,” adds John Lucier of FactoryWiz. “So many people use FactoryWiz for the high production capability, asking ‘can I shave seconds off?’ When you get users like Benchmark’s PT crew, who really know continuous improvement, you see that a high mix / low volume operation can benefit as well. Instead of the cycle time being the most important data point, processes

like how soon I can get the next part running becomes more important. You are looking at different data, but it is still data. More and more shops are beginning to see the value in data collection and not just on reduced cycle times for high quantity production runs.”

“The most successful implementations we see comes from customers when there is an internal champion,” touts Domenic. “That can be anywhere from the top down. A supervisor, a manager, or someone like Reza in the operations team. You need that one spark to make it spread like fire. It’s like a gym membership. If you get it and don’t go, not getting fit isn’t because of the gym. You collect all this data, but someone needs to interpret it and plan a course of action. Benchmark gets it. They are a power user now, but a year ago that gym membership wasn’t being used to the fullest. They have taken this tool and are utilizing it and improving on how they use it every day. They are sharing from operators, to managers, to supervisors. The data is unbiased, and it doesn’t lie. Trust the data and work on actionable items to improve. As they grow and learn, they are pushing us to develop new features and services. It is amazing how far they’ve come in such a short time frame. A year ago, they were a customer, but now they are one of the top few companies in the nation using FactoryWiz to this extent, and we love it.”

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SMALL HOLES AND TOUGH SST JOBS NO PROBLEM AT VANDERHULST ASSOC. INC.



Hank Vanderhulst, president and CEO of Vanderhulst Associates, Inc.

Hank Vanderhulst senior immigrated from Holland to California's Silicon Valley prior to it being known by that name. He worked in Stanford's machine shop before opening a two-man operation with a partner he met on the job at the university. Microprocessors were not yet a thing, so the business grew off the burgeoning local medical industry. "My dad bought out his partner when they only had three machines and opened Vanderhulst Associates in 1972," tells Hank Vanderhulst junior, president and CEO of Santa Clara, Ca. based Vanderhulst Associates, Inc. "The company has come a long way in 50 years, but our core competency still lies in hard to machine parts for medical equipment manufacturers and suppliers."

Hank started his career as a child standing on a box drilling parts for his dad, but his sister took another path

before becoming an owner at Vanderhulst Associates Inc. "My sister Sandy Thompson and I purchased the company from our parents twenty years ago when they were set to retire," explains Hank. "They built a strong, thriving business that we were excited to continue and grow". Sandy is a CPA and went to Santa Clara university for accounting/business and started managing the finances when our parents were considering retirement. At that point we knew she was going to be here forever like me, it's the perfect pairing owning the business together. She handles all the office and day to day, and I manage the manufacturing with the help of an awesome staff. Sandy's daughter and husband both work here, and my wife worked with us for a while. It's still a family business, and that's important to us when our name is on the door."

Medical is their bread and butter at Vanderhulst, with top names in the industry utilizing their abilities to produce parts made from exotic metals with unique features. A leading supplier of mass spectrometers relies on Vanderhulst to produce multiple internal UHV parts as well as key larger components. "Our Makino A71 is dedicated to producing a single part of the mass spectrometer," details Hank. "Makino makes a great machine, and it takes every bit of its capabilities to produce these Forged 304 stainless parts. The part itself begins as a 162 pound block of 304 and after 22 hours is machined down to only 17lbs. It is an extremely difficult part to machine and is the heart of the mass spectrometer. This part runs nonstop every day."

The facility itself is jam packed with machining centers of all types. Brands like Ganesh, Kiwa, DMG Mori, Makino, Brother, YCM, and Miyano are tightly spaced in rows and cells. Everything from standard verticals to pallet pool



The majority of jobs at Vanderhulst don't run lights out. They have a team of 26 working on 30+ CNC machines shop-wide. Brands like Ganesh, Brother, Miyano and YCM are lined up in rows and cells throughout the shop.

MP35N stainless part with .005 dia holes with .006 wide by .015 deep slots.
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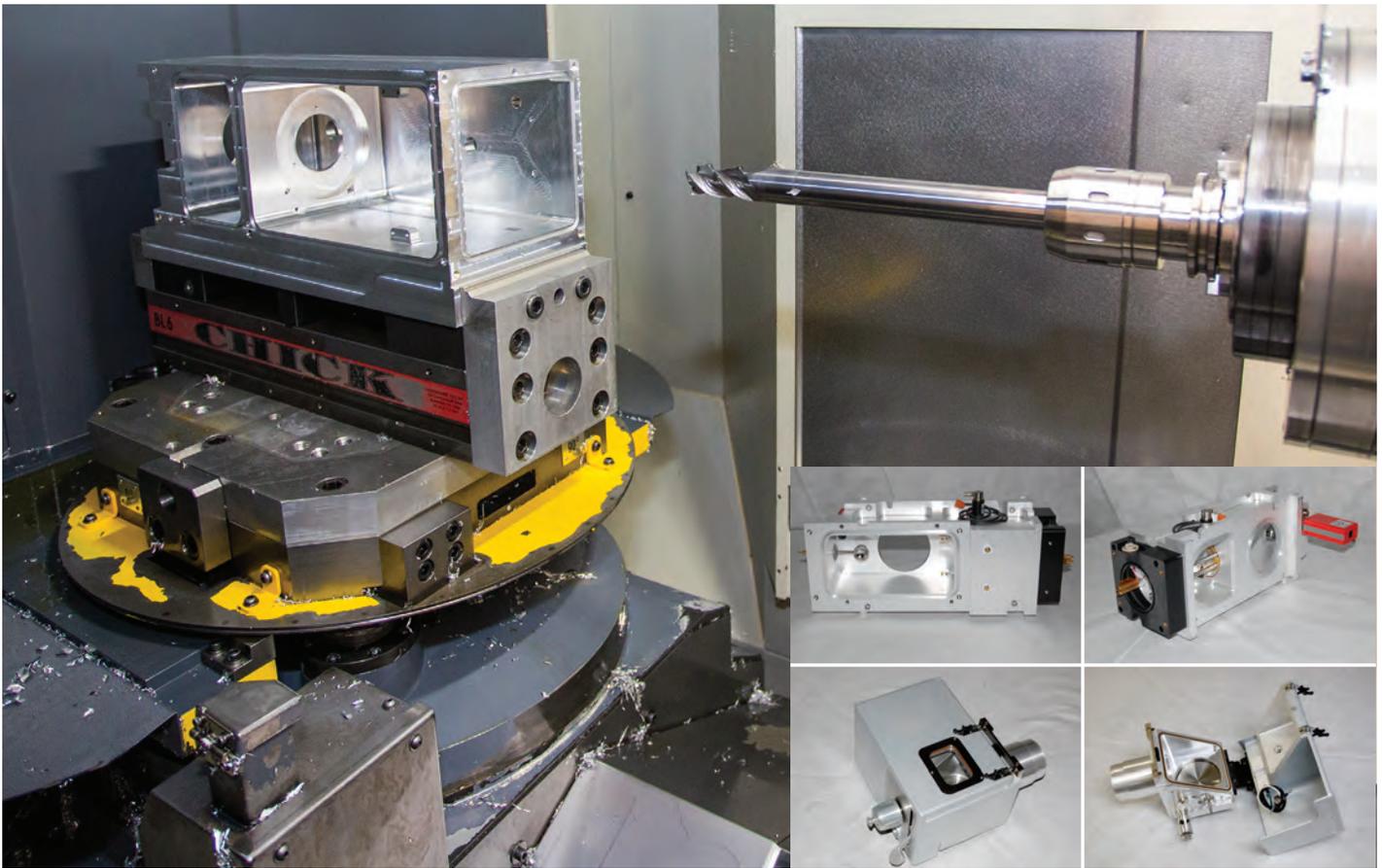


horizontals has its place. “Since 1984 we’ve been in this building,” continues Hank. “Dad bought the building and we spaced it out how we wanted, but it looks nothing like how it started out when we moved here. When we first moved in you could throw a football down the sides. More and more jobs led to more machines, more machines lead

to more people. We have 30+ CNC machining centers with 26 employees. We have a few machines like the KH 4500 Kiwas, the Makino A71, and the DMG Mori NH400DHC that run overnight and over the weekend with a single guy who comes in reload and change out the tooling. Most of what we do requires us to be on site and included in the



Vanderhulst began investing in horizontal machining centers close to 20 years ago. Along with the DMG Mori NH400DHC and Makino A71 they also have a handful of Kiwa KH 4500 with six pallet changers. The Makino is dedicated to a single 304 part that requires 22 hours of machining.



UHV (ultra high vacuum) sub assemblies are machined from aluminum, and stainless before being assembled in their clean room.

process from start to finish.” Because of the needed hands-on approach each new machinery purchase must be added value over the machine it replaces. Hank has more than 15 standard vertical mills, but five of the YCMs are equipped with a 5 axis positioning table. “We have a dedicated group of verticals that service 1 customer,” details Hank. “They produce pump parts and need 5 axis positioning that can deliver on speed and quality.”

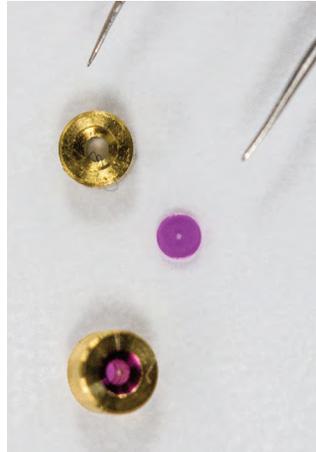
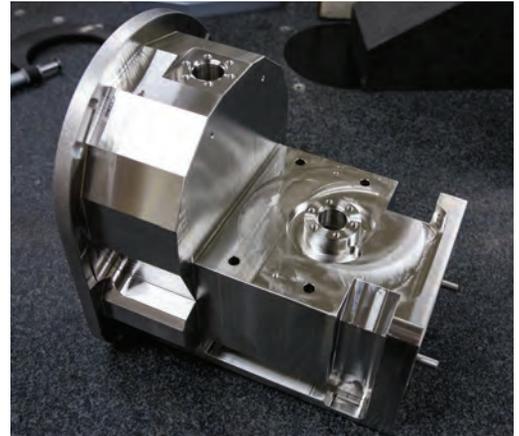
It sounds bad when you say Covid had some upside, but as an essential business in the medial industry Vanderhulst Associates. Inc. were on the receiving end of increased workflow. To support that added demand meant replacing a

few aging machines with new ones. “We’ve been customers of Expand Machinery for about ten years now” tells Hank. “Harvinder Singh is great to deal with and has taken good care of us through the years. He really backs his products and makes sure you are 100% satisfied that it does the job as promised. We like buying used machines from Expand Machinery because it is like buying new without the price point. I know everything has been tested and anything that isn’t perfect has been replaced. I’m not getting a used “I hope it works”, but a machine “I know it works.” I’ve purchased new and used Ganesh mills from him, and in the last five years financed them through his wife at Valley Financial. It is a one stop shopping experience. I tell him what I need, he sends some paperwork, and the machine is delivered and installed.”

Vanderhulst Associates. Inc. dedicated a couple of their milling centers to internal parts of covid testing machines. One such item was a 304 puck that was piece of the conveyor system on the machine putting together testing kits. They ran six different versions of the puck, producing upwards of 6,000 units. “We purchased a Ganesh Gen Mill T500 to do those parts specifically and added a larger Ganesh Gen Mill 4024 to replace a different machine. Many of the stock features on the Ganesh cost extra with different brands. The T500 for example has a 30-tool changer, chip conveyer, through the spindle coolant, all standard. My guys love the Mitsubishi controls, and how accurate it is at high-speed



The Ganesh GenMill 4024 is the newest addition to the shop. The Ganesh product line offer many standard features that cost extra on other brands.



Top left & Top Middle - Five years ago Vanderhulst purchased Universal Microsystems, a company that sells gas flow restrictors. Vanderhulst manufacture everything on-site along with testing and assembly inside their clean room. Bottom Left - Similar pump heads made from different types of materials. Their multi angle fluid ports are machined in a single operation. Bottom Middle - Vanderhulst machine brass inserts with .010 thick sapphire swaged into them. Right - This monster of a part begins as a 162 pound block of 304 and after 22 hours on the Makino is machined down to only 17lbs. Forged 304 SST UHV 1x10⁻¹¹ Torr.

machining thanks to the generous look ahead. It does a better job on accuracy when you are trying to run it as fast as you can, and we run most jobs as quick as we can.”

Vanderhulst Associates. Inc. are in a unique position for an operation of their size. They have their own product line of gas flow restrictors. Companies like Lam Research, Applied Materials and Novellus Systems all procured through a dedicated dealer network. Hank purchased Universal Microsystems 5 years ago and sales have doubled. By producing, assembling and testing the products inhouse they are able to make a decent margin. An added benefit is more exposure to the machining aspects at Vanderhulst Associates. Inc. “Companies go to the flowrestrictor.com, and that draws them into the shop.” Adds Hank. “They see our quality firsthand, and it earns us business. We just produced a job for Lam with a one-day turnaround because they knew us from Universal Microsystems. The larger companies in the area were quoting them a 12-14 week delivery time, and we did it in a day. They were happy, and happy customers keep the spindles turning.”

The future is going to be an exciting place for Hank, Sandy and the awesome team at Vanderhulst Associates. Inc. “We are making a name for ourselves doing jobs other won’t or can’t,” concludes Hank. “Working with difficult and exotic materials is not something everyone likes doing.

75 percent of what we machine is stainless, titanium, peak, or MP35n. We are working more and more with MP35n material. It is 10x the price of 304, and it’s tricky. We picked up quite bit of work because we were willing to experiment in drilling these tiny .0035 port holes on multiple angles. I like doing niche work that others can’t. You come through the doors here at Vanderhulst Associates. Inc. for prototype or production and we will deliver above and beyond.”



Vanderhulst Assoc. Inc. are ISO9100 certified. Their quality lab includes multiple Mitutoyo CMMs with Renishaw heads as well as a vision system.

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BREAKING IT DOWN CHIP BY CHIP

FIVE THINGS TO KNOW ABOUT CHIP FORMATION IN MACHINING

Provided by *Allied Machine & Engineering*



Whether examining how tool selection is impacting chips, how coolant plays a role in chip evacuation or looking at the size and shape of chips, chip formation says a lot about the application being run. Knowing what different chip details indicate allows machinists to better manage chip formation, make adjustments and prevent tool failure. Because when it comes down to it, better chip formation means a more successful application.

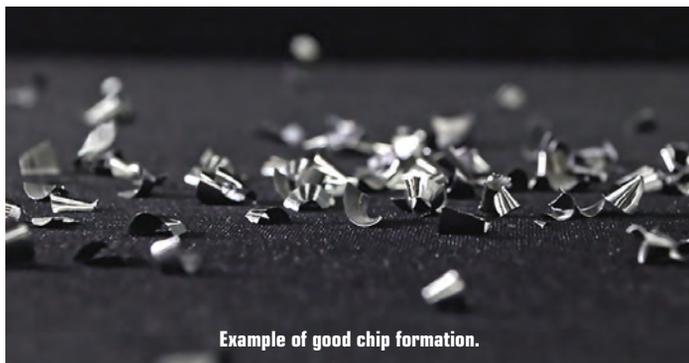
SHAPE & SIZE

When looking at chip formation, a key indicator of a good chip is the shape. The preferred outcome for any application is chips shaped as sixes and nines or a single conical shape. These small, manageable chips are essential for efficient, predictable drilling. Nevertheless, it is important to be aware of what chips in other shapes and sizes can indicate. For example, a straight, flat chip is a result of elasticity. If the chip is a continuous ribbon, then there are likely many adjustments that need to be made in order to achieve ideal chips.

The size of the chips impacts evacuation as well. There are two major factors that impact the size of chips in drilling tools: chip breakers, also known as chip splitters, and lip geometry. With chip breakers, the width of the chip is thinned to allow for easier evacuation; the wider the chip the easier it is to get it to roll onto itself and break. Lip geometry acts as a mechanical chip breaker to fracture a chip by curling the chip on top of itself or by impacting the chip forming with the backside of the lip radius. Although harder materials will curl a chip on top of itself to create chip fracture, gummier materials often skip over the lip radius and only fracture after impacting the back of the lip radius. Still, the purpose of the combined chip breakers and positive lip geometry is to break off the chip so that it is narrow enough to easily evacuate.

Chip fracturing can also occur naturally due to the velocity differential between the outside and inside of a chip, which creates a cone-shaped chip that curls on itself and fractures. Because larger diameter inserts have a higher velocity differential than smaller diameter inserts, it is easier to fracture chips i.e., the larger the chip breaker

spacing the more chip fracturing that will occur. Smaller diameter inserts are limited to the velocity differential available due to the restriction on the chip width required to easily evacuate chips through the holder gullet.



THICKNESS

The thickness of the chip varies with the feed rate; heavier feed rates form thicker chips while lighter feed rates form thinner chips. The thickness of the chip formed decides how the chip will fracture, but this is also dependent on the material being machined. At the same time, changing the speed impacts the chip thickness; the higher the speed of the tool, the more heat generated in the cut, which makes the material more elastic. So a balance between speeds and feeds is necessary. With many materials, a thicker chip means there is a greater chance of exceeding the elastic limit of the materials, which increases the likelihood of chip fracture; on the other hand, thinner chips are more elastic and, thus, farther away from the elastic limit necessary to fracture the chip.

Soft, gummy materials like soft carbon steels, 300 series stainless steel or pure titanium have a high elastic limit—so much so that increasing chip thickness has a negative effect on chip formation. Materials like these require specific lip geometries to potentially create an acceptable chip. Nevertheless, it is key to look at the chip deformation ratio of materials to better understand chip thickness. Chip deformation ratio can be defined as the ratio of deformed chip thickness over the undeformed chip thickness (feed rate). For most steels, this ratio is typically 2-3:1; however, it can be as high as 5-10:1 for those soft, gummy materials. Ultimately, though, this measurement is an indicator of chip form and elasticity in the material being cut, and the higher the deformation, the more difficult chip formation will be.

COOLANT

When it comes to coolant, through-tool coolant when paired with the right drill geometry is critical for the best chip formation and evacuation. Additionally, changing coolant type, pressure and volume influence the thermal shocking of chips. This can change the properties of the

chips and make them more or less likely to break into manageable segments. For example, coolants can decrease material elasticity due to the strain hardening that occurs as coolant quickly cools hot, elastic chips. The cooling of elastic, continuous chip formation embrittles chips to the point of fracture by reducing their elastic limit.

For chip evacuation, coolant pressure and volume are important. To evacuate a set volume of chips, a set amount of kinetic energy is provided by the coolant volume. Drilling can occur uninterrupted from the top of the hole to the bottom as long as enough coolant volume is available, which will be evident during the application with a steady load meter reading while drilling. With an insufficient coolant volume, an unsteady load meter will be detected when drilling into the hole. Although this does not mean that drilling with insufficient coolant is not possible, it does demonstrate that the drill must be altered to fit the environment.

Pressure on the other hand is the force behind the coolant that provides a fixed volume of coolant through a given diameter. As coolant pressure is increased through a fixed coolant orifice diameter, the coolant volume will increase. When drilling small diameters, high coolant pressure is needed in order to provide sufficient coolant volume, but as drill diameters increase, high coolant volume becomes more necessary than high coolant pressure. In high-production drilling—especially deep hole drilling—through the tool coolant is critical because it provides an upward force on the chip to aid in flushing the chips through the drill flutes and out of the hole. Although flood coolant can be used alternatively to through-tool coolant in short drilling applications under two times diameter, in deeper holes flood does not promote good heat transfer and can also push chips back into the hole, which can cause chip packing.

Through-tool coolant is also important when factoring in heat because it provides coolant right to the cutting edge where it is needed to cool the tool. When machining, 60% of the heat generated in the plastic deformation of the material remains with the chip formed while the other 40% remains with the tool and workpiece. This portion that stays with the tool must be evacuated by coolant in order to have sufficient tool life. Clearly, when more coolant pressure and volume can go through the tool, the cooler the tool will run. This then means that there will be greater tool life and that the tool can potentially be run faster.

TOOL SELECTION

Chip formation can also indicate whether the best tool is being used. If the chip formation is not meeting the standard, a change to tool geometry may be needed in order to improve the situation. Clearly, the geometry of a cutting tool has a significant impact on the chip formed.

Specifically, increases in rake angles can improve chip formation, yet this does come at a cost because the greater the rake angle the weaker the cutting edge.

Rake angle also highly influences the value of the shear plane angle, which is the angle formed by the pure plastic deformation of the workpiece material. Here, the material starts deforming or chip forming in front of the cutting edge. For both material properties and running parameters, the angle varies; however, it should always be a goal to make the shear plane angle more vertical because the steeper the shear plane the better chip formation.

Chip thickness comes into play here as well. The more elastic a material is the steeper the shear plane angle will be, resulting in a thinner chip. Conversely, the harder the material is the flatter the shear plane angle will be, which means a thicker chip is formed. All in all, more rake angle means more shear angle, which means better chips, but balance is key here as well. A really sharp cutting edge will make great chips but will fail and break due to a smaller cutting edge cross section and weaker cutting edge, so find balance in the rake angle—one that is aggressive but not overly so.

CHANGES IN CHIP FORMATION

A final thing to look for when examining chips is any changes in chip formation. If chip formation is altered during an application, it could be caused by a myriad of elements: wear on the tool, built up edge on the tool (BUE) or changes in the environment like coolant or material changes. In new applications, it may be best to drill shallow

test holes and take a look at the chips to make sure they are small and segmented. Being conservative in the beginning with speeds and feeds could also aid in better understanding chip formation and what adjustments need to be made.

Awareness of any changes in chip formation is key, though. Poor chip formation can cause major problems in drilling applications. Long, continuous chips are difficult to evacuate and can become packed in the drill flutes, damaging the drill or even causing drill failure. These long chips could also become wrapped around the drill body and again cause tool failure. Lastly, poor chip formation impacts the hole quality. If chips are dragging or packing in the flutes, there will be poor hole finish. Noticing any changes in chip formation is important not only for tool life and hole quality but also for the overall success of the application.

Knowing more about the chips formed in any metal cutting application enables machinists to better control the outcome and success of drilling operations. While it is necessary to examine chip size, shape and thickness, it is just as important to know how coolant, tool selection and changes in chip formation tie into the application as well. So take a look at the chips being created and break it down chip by chip because both proper chip formation and chip evacuation are required for successful high-production drilling.



Built up edge (BUE) on inserts.

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Industry News



NTK Appoints MC Sales & Marketing in Western U.S.A. Territory Update

NTK Cutting Tools announced that beginning on May 1st, M.C. Sales expanded their NTK representative responsibilities to California and Nevada.

The team has been servicing the cutting tool industry for almost 20 years with the goal of providing exceptional service in a fast-paced environment. NTK and MC Sales is looking forward to continuing the great relationships with our current customers while making inroads in the manufacturing industry throughout the western United States. The team is dedicated to delivering the knowledge and technical support to ensure manufacturing success using the highest quality tooling solutions.

BIG DAISHOWA's Michael Herman Promoted to Vice President Sales

BIG DAISHOWA Inc. announces Michael Herman has been promoted to vice president sales. In this role Herman oversees the BIG DAISHOWA sales team and supports the company's distribution network and machine tool builders throughout North America.

"Mike's dedication and extensive knowledge of the industry has been an invaluable asset in growing the company. The role of vice president

sales is an expansion of the work Mike has already accomplished," says BIG DAISHOWA president/COO, Jack Burley.

"In this role, I look forward to continue supporting manufacturing and sharing my knowledge to help companies not only reach, but surpass their productivity goals," says Herman.

Herman brings 40 years of experience to this role, including 10 years at BIG DAISHOWA Inc. (formerly BIG KAISER Precision Tooling Inc.). During his tenure at the company, Mike has continued to build and develop relationships with the sales team, distribution and business partners, with a personal commitment of promoting a higher performance guarantee.



Fives Giddings & Lewis Names General Manager

Fives Giddings & Lewis has named Helene Nimmer general manager.

Nimmer returns to Fives Giddings & Lewis following more than five years as vice president of sales and marketing working in the aluminum extrusion industry. Prior to this position, she worked at Fives Giddings & Lewis in many roles from 1997 to 2016, including two years in



Essen, Germany, for ThyssenKrupp Technologies AG as a liaison to G&L and a participant in its Management Training Program.

In the General Manager role, Nimmer will apply her industry knowledge and lead the team to accomplish its goals and objectives for the business in areas such as engineering, supply chain, planning, sales, project management and others.

Gosiger Named Exclusive U. S. Distributor for Jingdiao High-Speed and Graphite Machining Centers

Jingdiao high speed, precision machining centers are now exclusively available from and supported by eight nationwide facilities including two in the western region of Dayton, Ohio based distributor, Gosiger Inc.

With more than 100,000 machines in service worldwide, Jingdiao is a major supplier of 3- and 5-axis high precision machining centers focused on small, complex components. Time and labor-saving features include integrated online measurement and intelligent modification technology coupled with SurfMill CAD/CAM software to eliminate interruption of the machining process for offline parts inspection. To ensure clean, precise production of graphite electrodes and glass molds, Jingdiao graphite machining centers have a unique dust-proof, positive air pressure design.

Gosiger will provide installation, training, maintenance, replacement parts and technical support for Jingdiao machines, as it does for all products it represents.

Industry News

Tool Alliance Celebrates 50 Years

U.S. cutting tool manufacturer Tool Alliance is celebrating 50 years in business. The company provides high quality solid carbide and indexable carbide cutting tools.

Tool Alliance makes extensive use of CNC grinding machines from various manufacturers, but has chosen to standardize the machines' control systems on NUM's Flexium CNC platform and NUMROTO software, primarily for reasons of performance and production efficiency. Tool Alliance is one of the largest licensees of NUMROTO in the United States.

Founded in 1972 and still privately held, Tool Alliance operates a number of company-owned factories. Its principal manufacturing facilities are located in Huntington Beach, CA, in Fort Myers, FL.

The company's cutting tool products and services include brand names such as Ultra-Tool, RoundTool Laboratories, Tungsten ToolWorks, Routco and Mil-Tec. All five brands are sold worldwide and are supported by shared research, design, engineering, manufacturing, marketing and sales facilities.

The owner and President of Tool Alliance, Dave Povich, is no stranger to the cutting tool industry. A past president of the United States Cutting Tool Institute (USCTI), he has worked for the company since 1987. According to Povich, "NUM is our CNC technology partner, which creates a win-win situation for both companies. We benefit from having a direct technical input to NUMROTO software development, while NUM gains valuable feedback on the design and production of the very latest cutting tools."

Weiler Abrasives Donates \$25,000 to Workshops for Warriors

Weiler Abrasives announced its continued support of the mission of

Workshops for Warriors with a donation of \$25,000.

The nonprofit school trains and certifies veterans, wounded warriors and transitioning service members in CNC, welding, computer-aided draft-



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Industry News

ing (CAD) and other technical trades, as well as helping to place them in advanced manufacturing careers. This year, Workshops for Warriors will celebrate its 1,000th graduate and currently has graduates working in every state in the nation.

“Weiler Abrasives has long believed in the importance of the Workshops for Warriors mission,” said Nate Schmid, director of global marketing, Weiler Abrasives Group. “We are pleased to be able to provide support to help veterans gain valuable skills, establish themselves in the technical trades and earn a consistent livelihood.”

In addition to financial support, Weiler Abrasives has supplied in-kind donations of abrasive and safety products to Workshops for Warriors

since 2014.

“Weiler Abrasives has been a steadfast supporter of our organization. Its financial support and industry-leading products and commitment to veterans have helped to make our program a huge success,” said Lyle Palm, Dean of Welding and Facilities Head at Workshops for Warriors.

National Machine Products Announces DUPUY Partnership

National Machine Products has announced that it is the North American distributor of DUPUY tailor made vacuum systems for sump cleaning and chip extraction.

National Machine Products offers

various DUPUY solutions, including OILVAC 100, OILVAC 130 and OILVAC 200T.

“National is thrilled to bring DUPUY tailor-made industrial vacuum systems to the U.S. market,” said Bob Tracy, vice president and general manager, National Machine Products. “National is committed to sourcing and offering top-of-the-line solutions that increase efficiency manufacturers across the country.

DUPUY has been designing and manufacturing vacuuming solutions for the suction and separation of oil and metal shavings since 1964. From design to delivery, DUPUY manufactures customizable vacuums designed to optimize the efficiency of production systems.



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Industry News

ZOLLER Interface Implemented in CAMWorks

HCL Technologies (HCL) has announced the implementation of ZOLLER TMS Tool Management Solutions Interface in HCL CAMWorks software. The ZOLLER Interface supplies customers with advanced tool database management options and an overview of available tools and eliminates the need to maintain multiple tool databases.

With the ZOLLER Interface in CAMWorks, tool data is standardized and the exchange of data between the two software systems is automated. Customers only need to enter the information for their cutting tools into

the central ZOLLER tool database once and the tools are imported automatically into CAMWorks. All of the tool parameters are captured, including contour line for holder and cutter, specific tool type and technology data, such as feeds and speeds. The interface also allows users to define tools in the ZOLLER TMS Tool Management Solutions software with the same tool types and parameters that are being used in CAMWorks.

Once a part model is programmed, the ZOLLER Interface generates a set-up sheet that includes a list of tools used for the part. The set-up sheet assists with tools assembly, measurement and sending measured values to the machine for cutting the parts.

Ultimaker 3-D Printing Chooses Selway

Selway announced it has partnered with Ultimaker - Professional 3D Printing Made Accessible. Discover the Ultimaker 3D printers that will streamline your workflow and deliver the quality results you need. Their product line includes the Ultimaker S5 and S3, Ultimaker 3 series, Ultimaker 2+ series and Ultimaker Original+.



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Industry News

North South Machinery Expands To Include New Machining Division Anchored By Partnership With Toyota

North South Machinery has announced the expansion of their operations to include their newly formed 'Machining Division'. "You know us for our EDM and Fabrication products and services", says CEO Jim Swartzbaugh, "And today we are introducing our new Machining Division, where we will offer our customers some of the industry's best milling and turning products. The new Machining Division will be headed up by machine tool veteran Bob Nugent, who we are proud to announce will serve as group president."

With the announcement of North South's expanded Machining Division, the news that a partnership with Toyota JTEKT will be anchoring this expansion has brought elevated excitement to group. The Japanese owned line of machine tools are well known in the manufacturing world for their durability and precision – from their milling and turning centers to their grinding machines. Adding to this excitement is the evolving partnership with Universal Robots



and their collaborative robot platforms, ushering in a new era of automation to the manufacturing industry.

Nugent had this to say about the recent move, "The team that has been assembled here, and the partnership with well-known brand like Toyota really has us all extremely excited about the potential here. Not to mention our continued growth with several other high end brands like Starrag and OPS Ingersoll, and the incredible automation solutions they bring to the party... we've got very high goals for what we feel we can bring to the market, and our loyal customers in particular."

Toyota machines opened for business in 1941 with a grinding machine, specifically manufactured to support a major Japanese automotive company. Decades later, Toyota expanded their

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Industry News

lineup to horizontal machining centers, and later incorporated automation systems, vertical machining centers and turning lathes, and bridge and boring mills.

Doosan Machine Tools Changes its Name to DN Solutions

Doosan Machine Tools (CEO: Kim Jae-Seop) announced on May 25, 2022 that it will change its name to DN Solutions and be reborn as a total manufacturing solutions provider.

DN Solutions, the new name of Doosan Machine Tools, signifies a new start after the merger with DN Automotive which became its new parent company in January this year.

The D in DN alludes to the 45 years of history of trust built by Daewoo and Doosan, the predecessors of DN Solutions, along with DTR Automotive, the predecessor of DN Automotive. N represents Now & New, the will of the DN Group to open new paths by constantly taking on new challenges now rather than being complacent about past achievements. It also means that it will begin a new and bigger era.

DN Solutions is committed to being reborn as a true global manufacturer under the new name by strengthening distinctive competitive advantages over current growth engines, and proactively building a presence in the areas of future growth through aggressive investment in expanding manufacturing capabilities and sustainable management for social responsibility. It will closely work together with DN Automotive, its controlling shareholder, in identifying new growth engines to become a solutions provider for the global manufacturing industry.

DN Automotive, the controlling shareholder of DN Solutions, is an automotive parts manufacturer founded in 1971 that produces tires, batteries, and VMS (Vibration Management Systems

“This name change was intended to signify our commitment to becoming a global manufacturer. DN Solutions and DN Automotive create a synergistic effect by working together to find

new growth engines and maximize manufacturing capabilities,” said Kim Jae-Seop, CEO of DN Solutions.



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Industry News

Allied Machine Launches “Allied’s Interactive Experience”

Allied Machine and Engineering announces the launch of their online digital platform, Allied’s Interactive Experience, where users can virtually visit the Allied Machine facilities as well as meet various members of the Allied team. When entering the interactive experience, users can explore various locations and zones to learn more about how Allied Machine and Engineering provides world-class holemaking and hole finishing solutions.

Not only will users be able to access digital resources like literature, videos and online tools and training, but they will also be able to visit the training and engineering departments, explore tooling solutions, meet the customer

service and marketing teams and even get a glimpse of Allied Machine’s state-of-the-art logistical and machining equipment. Navigating through Allied’s Interactive Experience allows end users, distributors and anyone else interested in Allied Machine to see the real people in real positions who make a difference for the company and provide best-in-class customer service.

Although in-person interactions have been more limited as of late, Allied Machine maintains the priority of building relationships with customers as if they are able to visit in person. This platform provides the unique opportunity to get to know Allied Machine as a global company and as a tooling solution provider in addition to allowing users to learn more about associates from various departments

Access Allied’s Interactive Experience and learn more about the hole-

making experts here: <https://experience.alliedmachine.com>

Precinmac Acquires Petersen Inc.

Precinmac, a diversified manufacturer of high-precision machined components and assemblies, has acquired Petersen Inc., a provider of high-quality industrial products and services.

Founded in 1961 with locations in Ogden, UT, and Pocatello, ID, Petersen Inc. serves the aerospace, defense and more industries with a diversified range of specialized fabrication, precision machining and advanced manufacturing services. Over time, Petersen Inc. has grown to provide warehouse/distribution (3PL), field installations and design engineering services.



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New Products

EDG-1000NC Double Disc Grinder —Supertec Machinery

According to Supertec double disc grinding has proven to be a very effective grinding solution when the need for grinding two opposing sides is required. The company says that grinding two sides simultaneously has many advantages over a standard surface grinder.

Some examples and features of double disc grinding include: multi-batch grinding improves cycle times with a greater number of parts being ground on the table.



Supertec also reports faster stock removal when grinding two sides simultaneously and that it will maximize parallelism of the opposing sides when grinding between wheels.

Other advantages that they report are better part finishes with the random orbiting circular grinding patterns,

Improved flatness tolerances when grinding two sides simultaneously and easy to automate double disc grinders for high production part applications.

See the EDG-1000NC double disc grinder on display and under power in the Supertec Machinery booth #236922 in the grinding pavilion at IMTS North Hall.

Waterjet Designed for Ease of Use —Omax

Hypertherm's Omax Corporation has introduced the OptiMax, a new generation of waterjet designed to quickly turn prints into parts. Omax says this waterjet is designed for manufacturers in need of a versatile,

easy-to-use cutting system. It comes equipped with OMAX's software for optimized cutting capability and power, along with improved automation to maximize uptime.

Also standard is the IntelliVisor

console that provides key metrics to optimize operations as well as complete system monitoring. An EnduroMax pump automatically sets the correct pressure and minimizes fluctuations.

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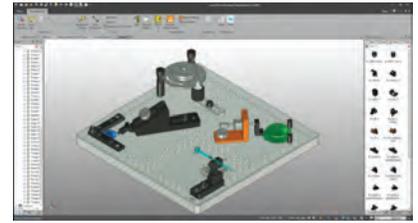
New Products

New Version of Fixture-Builder 3D-Modelling Software —Renishaw

Renishaw announces the release of FixtureBuilder 8.0, the latest version

of its 3D fixture modelling software. FixtureBuilder allows users to design metrology fixturing set-ups without having to go near their co-ordinate measuring machines (CMM) and other inspection devices.

The software can be used with a



CAD model of the part to be inspected, which is imported into FixtureBuilder, so that the fixture can be built around it. The entire fixturing set-up, along with the part, can then be exported into inspection programming software.

In FixtureBuilder 8.0, users can now model fixtures that use the innovative Renishaw QuickLoad™ rail system. The QuickLoad rail system is used on CMMs and provides a secure work holding position when used in conjunction with QuickLoad base plates, which locate to the rail on either side using quick release magnets and location pins.

Metrology tables, M12 fixtures, ¼-20 fixtures and many other new fixturing components have also been added to FixtureBuilder v8.0,

An improved mechanism mode in FixtureBuilder 8.0, provides real life movement and collision detection with increased precision.

Exporting the fixture model into inspection software has become faster and easier in the latest version of FixtureBuilder, making the inspection programming process more streamlined.

In addition to supporting Parasolid, STEP, ACIS, STL, IGES and many other file formats, FixtureBuilder 8.0 has been upgraded to allow users to import and export the latest versions of these 3D CAD file formats.

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New Products



Expanded Hydraulic Chuck Offering for Swiss Lathes

—BIG DAISHOWA

BIG DAISHOWA has expanded its hydraulic chuck lineup for Swiss lathes to include inch-size standard type chucks, as well as F Type and R

Type chucks.

Standard type hydraulic chucks with tool-side clamping are available in inch sizes with the clamping range of $\phi 1/8''$, $3/16''$ and $1/4''$.

The F type's single wrench enables easy cutting tool changes on the tool post. The easy-access rear clamping design is suited for front tool post. Clamping from the opposite side of the cutting tool and optimum-length design improves overall ease of use. The F type is available in a clamping range of $\phi 3$ mm to 10 mm, and coolant delivery is possible with an Rc(PT) $1/8''$ screw.

The R type eliminates interference at the upper or lower tool post positions with its block design and tightening at an offset position in the tool side. The

R Type is available in a clamping range of $\phi 3$ mm to 10 mm, and its oil hole drills can be used for coolant delivery when mounted on the upper section.

These hydraulic chucks use a simple hex wrench that requires only two to three turns for clamping and unclamping. Tightening is complete when the clamping screw hits the bottom; controlling tightening torque is not needed. Once a hydraulic chuck is centered, the runout will not vary, even if a cutting tool is changed repeatedly. Runout of fewer than three microns at four times diameter can be achieved. Hydraulic chucks have a standard pipe thread for coolant-through connection and are available for most Citizen and Star machines with $3/4''$ or 22 mm straight shank.

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New Products

Next Generation in Versatile End Milling —WIDIA

WIDIA has launched the WCE solid end milling platform, offering affordable performance and reliability for small to medium machine shops, according to the company. The initial release of the WCE platform features WCE4, a four-flute geometry that combines advanced, high-performance features with a new versatile grade.

Two key features of the tool are its asymmetrical index and variable helix. “The combination of the two reduces vibrations and enables heavy cuts, while the new grade, WU20PE, enables versatility on steel, stainless steel and cast-iron applications,” said a company spokesperson. “These design

features, coupled with the four-flute geometry, deliver an end mill with reliable performance and application versatility—even in demanding operations such as full slots and heavy cuts.”

The WCE platform includes four-flute, square-end and ball nose end mills with both straight and Weldon shanks and is available in metric and inch dimensions. The WCE5 five-flute geometry will be released later in 2022.



CNC and conventional machines.

The 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 nonferrous materials. Inserts are available in sizes .004” to .15” in .001” increments and coated

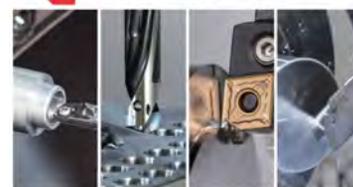
Square Angled Toolholders —THINBIT

THINBIT, manufactured by Kaiser Tool Company Inc., has expanded its offering of square angled toolholders. These toolholders are designed for

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New Aluminum Machining Solutions

—Niagara Cutter

Niagara Cutter, a Seco Tools company, has introduced the new and improved A245/345 product families. These tooling solutions have been redesigned to reduce power consumption and improve chip evacuation in aluminum machining applications.

Jay Ball, North American solid



milling product manager, said, “The newly upgraded Niagara Cutter A245/A345 product family solves the power consumption issue that most aluminum manufacturers encounter. By combining an engineered flute shape and polished K-land-providing an optimal combination of helix angle and rake angle-this product family reduces power consumption by a minimum of 20%.”

This product family upgrade also has the latest in engineered PVD coatings, called Aluminum Non-Ferrous (ANF). “This is a truly unique coating,” Ball said. “It reduces friction and built-up material on the cutting edge, which improves workpiece surface finish and increases tool life, removing surface finish quality issues when milling aluminum.”

Productivity in High Feed Milling Applications

—ISCAR

NEOFEED is ISCAR’s most recent

product line introduction for high feed, rough milling applications. This new design combines the productivity of a high feed design with the cost effectiveness of square double-sided inserts

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with eight cutting edges per insert.

The cutters are available in two design configurations that differ in cutting edge approach angle: high feed with 12° cutting edge angle; moderate feed with 22.5° cutting edge angle. These two distinct designs (high feed, moderate feed) allow for tools to be better matched to the application/variables at hand, such as machine tool and workpiece geometry.

Another key characteristic of the NEOFEED design is a dovetail pocket that helps ensure rigid and reliable insert clamping, while alleviating cutting forces on the insert screw and providing the capability to withstand against the heavy loads consistent with high feed milling applications.



NanoFeed™, Hi-Feed Performance for Small Parts —Ingersoll

Ingersoll's new NanoFeed technology provides exceptional hi-feed milling performance for machining of miniature components and smaller part features. NanoFeed is a 20° hi-feed indexable insert design that will replace smaller diameter solid carbide

end mills in many applications and offer great economy!

Inserts have been designed with pressed-in coolant channels, directing coolant or air directly to the cutting edge for maximizing tool life. Inserts also have backdraft side clearance for straight-wall milling capability. Available in diameters

Grip Pallet System Addition to Adhesive Workholding Lineup —Blue Photon

Blue Photon has expanded its product line by adding five Grip Pallets and three new inserts for 52 mm and 96 mm quick change receiver systems. The add-on allows for holding more applications using existing fixturing systems in machining centers.

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Blue Photon 150 mm, 225 mm and 300 mm square pallets offer quick change and adhesive workholding of complex and hard-to-hold parts. These new pallets can hold parts securely, providing increased machining access on five to six surfaces while using standardized fixturing systems already in place.

These patented grippers are inserted into new external inserts, designed specifically for the Grip Pallets. The external inserts are available for use

with small, medium, and large grippers. The new inserts allow for simple installation of the grippers at the required height for maximum holding power. The 150 mm square pallet is available in aluminum and steel with a 52 mm pattern for a quick change receiver that will hold up to nine grippers. The 225 mm square pallet is available in aluminum and steel with a 96 mm pattern for a quick change receiver that will hold up to 21 grippers. The 300 mm square pallet is available in aluminum with a 96 mm pattern that will hold up to 33 grippers. Each Grip Pallet includes two handles with multiple color choices and four spacers with a 25.4 mm standoff.

The adhesive workholding process involves applying proprietary Blue-Grip workholding adhesive to the grippers and curing through the grippers from the backside of the Grip pallet

with ultraviolet light for 60 seconds.

Part removal is quick and easy with a ¼ turn twist of the gripper or hot water soak. Residual adhesive is simply removed by using a handheld steamer or a hot water soak and a light peeling action.

New 2023 Release Debut —Verisurf Software

Verisurf Software, Inc demonstrated Verisurf 2023 at Control, Stuttgart, Germany, May 3 -6. Verisurf 2023 continues to refine metrology workflows with added features designed to reduce time and improve the efficiency of automated quality inspection and reporting, scanning, reverse engineering, and tool building.

Verisurf software is built on a CAD platform and is committed to Model-Based Definition (MBD). Verisurf

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2023 takes this a step further with automatic conversion of 3D CAD annotations into MBD and intelligent Geometric Dimensioning & Tolerancing (GD&T). This new automatic feature will further reduce the time needed to set up inspection plans, reduce input errors, and increase process control.

“Working closely with our customers we balance the ongoing development of Verisurf software between enhanced productivity and repeatable process control; our focus on automation satisfies both,” said Nick Merrell, executive vice president of Verisurf.



Versatile New Drilling Grade

—Walter

Walter has introduced the PVD drilling WNN15 grade for indexable insert drills. The low-adhesion grade WNN15 is now included in the range for Walter indexable insert drills. This grade is primarily designed for drilling in tough ISO N materials such as wrought aluminum alloys or cast aluminum alloys.

The WNN15 grade delivers outstanding process reliability and long tool life, even at extremely high cutting speeds. This means that it makes indexable insert drilling more cost-effective than comparable PCD tools with immediate effect. The indexable insert drills offer the advantage of multiple indexing which means that the tool can be used again immediately. Worn indexable inserts can be replaced quickly and easily,

The Walter drilling grade WNN15 features a hard substrate on the indexable inserts, which promotes high cutting-edge stability. The PVD coating created using the HiPIMS process creates a particularly smooth, dense surface – leading to a rake face surface that performs better than polished carbide surface. Chip removal is smooth and there is hardly any build-up on the cutting edge. Due to its high wear resistance, drilling processes using the Walter grade WNN15 are extremely reliable. The WNN15 drilling grades are now available for most of the indexable insert drills in Walter portfolio.

New Quick Change Collet Chuck

—SMW Autoblok

SMW Autoblok has introduced the hybrid COMOT-AZ quick change collet chuck featuring industry standard diameter capacities of 42 mm, 65 mm and 100 mm to accommodate a large variety of workpiece sizes.

Suitable for bar and tubular stock machining that requires multiple changeovers daily, COMOT-AZ can be used in three ways: for OD machining using standard collets; for greater accuracy utilizing high precision collets with COMOT-AZ/PA; or transform COMOT-AZ quickly into an expanding mandrel for ID clamping using the EMX series.

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ables users to change from a standard collet to a high precision collet for holding workpieces from 3 mm to 100 mm with accuracy and repeatability. The EMX Series extension mandrel is also available for internal workpiece fixturing.

For automated loading, COMOT-AZ provides air sensing to ensure that the part is seated properly before the machine cycle starts. Other advantages

include radial fine adjustment and a case-hardened body and internal parts for high resistance and longer life.

You Ji VMT Series Vertical Mill/Turn Center —Absolute Machine Tools

Absolute Machine Tools has added the You Ji VMT Vertical Mill/Turn Center Series to its extensive line of large Vertical Turning Lathes by You Ji. Combining vertical and horizontal 5-face milling with vertical turning capabilities, the You Ji VMT provides 5-sided or 4+1-axis milling and turning of medium-sized workpieces in a single setup. Standard turning diameter



and maximum turning height are 39.4". It has 30-hp double-wound Fanuc P Series main spindle motor. It's powered by a 2-speed ZF planetary gearbox spindle drive. The 20-hp 50 taper mill-

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ing spindle produces high torque.

The vertical column and base are made from heavily ribbed Meehanite castings that minimize thermal distortion and dampen vibration. Smooth operation is virtually guaranteed complements of enclosed X-, Y- and Z-axis box guideways featuring hand-scraped mating surfaces, Turcite-B coatings and forced lubrication. The VMT's simple design eliminates belts and gears in all three axes instead relying on servo motors to drive large 2"-diameter Class-3 precision ballscrews during operation. A fixed turning spindle and 3-axis moving column provide optimal chip removal and simplified operation.

The You Ji VMT-1000+Y features a large 29.5" Y-axis travel," and a standard 24 tool arm-type ATC with 55 lb. tool weight capacity.

New and Improved Quick Change Tool System for CNC Swiss Machines-GenSwiss

GenSwiss has introduced the new 'GenQuick' branded quick change ER system for CNC Swiss machines and precision machining equipment.

"Even prior to a post-COVID job market, it was very difficult to find qualified operators capable of setting up and running CNC equipment to the level of precision that is necessary to meet most production requirements," said Scott Laprade, GenSwiss tech and applications supervisor.

"The newly redesigned GenQuick tooling system helps new users as well as seasoned veterans achieve faster setups and tool changes through the use of tool holder adaptors and quick-change modules that can be preset



and are based on the ER standard tool holding system."

Base tool holder shanks are available from GenSwiss in diameters to suit most Swiss machine model's ID working tool positions. They also work in conjunction with the GenQuick adaptors to make changing of drills, boring bars, and other round shank tools easier for the machine operator. Additionally, tooling for each working shift can be pre-set using GenQuick adaptors and modules.



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New Products

GenQuick adaptors are available in ER16 to ER11 for drilling operations and in ER16 and ER20 for boring operations. All adaptors for boring operations have a locating pin for self-orienting the radial and axial positing of boring bars.



a symmetric design and W1211 for profiling angles of up to 50° for a more robust support. The positive WL25 indexable inserts with three cutting edges are available in four insert types, depending on the requirements of the application: neutral, left-hand, right-hand and full-radius versions, and all fit into the same tool.

New Copy Turn Addition —Walter

Walter has introduced the W1211/W1210 copy turning system for boring bars. These boring bars and indexable inserts with Walter Lock (WL) positive engagement successfully combat the high forces in variable directions that occur when internal profiling applications with V-style (ISO-V, 35° diamond shaped) inserts according to the company.

The oblong shape of a conven-

tional V-style insert leads to a very long pocket in the boring bar to hold the V-Shaped insert. Cutting forces are encountered far away from the actual support that the insert pocket provides to withstand the cutting forces.

Walter offers two versions of these boring bars with diameters of 0.984, 1.260, and 1.575-in. W1210 for profiling angles of up to 72.5° with

PlantMonitor to Aid Digital Manufacturing —HEIDENHAIN

HEIDENHAIN's new PlantMonitor is a digital solution to aid the manufacturing shop floor. Now available for companies interested in simultaneously monitoring and analyzing production data at multiple sites utilizing machine tools where at least one is equipped

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<p>ER-25 COLLETS <i>Precision</i> Starting At:</p> <p>\$34⁰⁰ each</p> <p><small>ULTRA PRECISION Starting At: \$55.00 ea</small></p>	<p>ER-32 COLLETS <i>Precision</i> Starting At:</p> <p>\$36⁰⁰ each</p> <p><small>ULTRA PRECISION Starting At: \$56.00 ea</small></p>	<p>ER-40 COLLETS <i>Precision</i> Starting At:</p> <p>\$37⁰⁰ each</p> <p><small>ULTRA PRECISION Starting At: \$58.00 ea</small></p>

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New Products



with a HEIDENHAIN TNC control/ StateMonitor software combination per site, this new PlantMonitor can aggregate the data onto one screen for review. Machine tools using even non-HEIDENHAIN controls can be included and monitored.

By connecting multiple StateMonitors within the new PlantMonitor software umbrella, a company's entire

production environment will become transparent to users, enabling them to react appropriately to problems and changes.

On a single PlantMonitor screen, network data is displayed by groups via a customizable dashboard. The monitoring function displays machine data in real time. The machine status bar, utilization rate, and availability for every machine connected to PlantMonitor can be shown in a clear format on the single page and, if needed, as a tile added to the dashboard. Other highlights of the new PlantMonitor system include the new Production and MTBF (Mean Time between failures) calculations, as well as the ability to

set reference values for productivity.

Currently PlantMonitor is available as a rental license with a minimum duration of six months.

New Smart Technology Automated Metalworking Fluid Control System —Centric International

Centric International reports, with the introduction of Will-Fill Automated Fluid Control System, you can automatically fill, refill, analyze and adjust the condition of your cutting fluid from anywhere. This system analyzes and controls (7) critical parameters:




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And because every process and shop floor is different, Will-Fill lets you establish your own predefined settings and thresholds. The system maintains those settings whether you are running a 24-hour lights out operation, traveling or enjoying time away from work, ensuring your machine is always running at optimal conditions.

On your facility floor, your machine is connected to the electrical grid for power, and it is connected to an air supply for compressed air. Yet you still must manually check, fill, and adjust your cutting fluid. With Will-Fill your machine is always connected to

incoming water and oil to maintain and supply the perfect mix of cutting fluid automatically. Plus, Will-Fill works .

Once installed and connected via Wi-Fi or LAN, you will have full access to your fluid monitoring system via a dashboard which continually updates, allowing you to remotely monitor the current conditions of your fluids. In addition, you can receive emails and alerts that can be pre-set to advise you in real-time when your thresholds are exceeded and the system is taking corrective action.

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New Products

Low Maintenance, Quick-Change Jaw Chuck Upgraded

—Schunk

Schunk's Rota THW3 quick-change jaw chuck is designed for short set-up times and low maintenance. The lathe chuck with the patented sealing system reportedly accelerates the jaw change on CNC lathes, pick-up lathes and turning-milling centers, while at the same time providing jaw change repeatability up to <math><0.02\text{ mm}</math>. This means that jaw sets that have been turned out once can be used repeatedly, even with demanding tolerances.

The jaw stroke of the straight toothed base jaws is 6.7 mm to 10.5

mm, depending on the size. A ring piston with a direct power transmission is said to ensure a high degree of efficiency, and in the smallest size, 200, the chuck already achieves a clamping force of 64 kN; from size 400 it is 240 kN. Its hardened and stiff base body ensures that precise and reliable machining can be carried out even under maximum stress. The jaw features a large chuck bore from 52 mm (size 200) to 165 mm (size 630), protective rifles that can be exchanged from the front and the possibility of internal and external tension. There is also the option of supplementing the chuck with an adjustable stop.

The Rota THW3 chuck has also been enhanced with large tool storage,

multi spindles and modular machine controls.

IBS Quality and Verisurf Software Portable Cobot Inspection System

—IBS Quality and Verisurf

IBS Quality GmbH recently launched the new PAM-System (Portable Automated Measurement System), a portable cobot-based 3D scanning and measurement solution, at Control, Stuttgart, Germany. The launch is in collaboration with Verisurf Software.

The PAM-System is a portable scanning, measurement, and inspection solution that uses cobots (collab-

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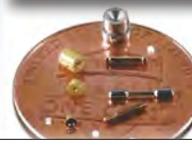
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CNC Swiss Micro Machining
Shown above: Micro machined parts with table salt

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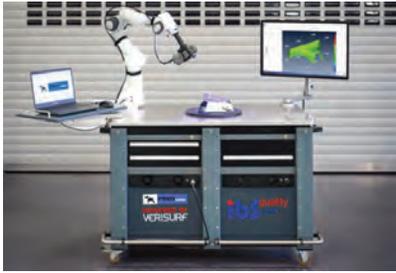
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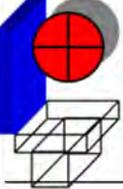
orative robots) to augment repetitive user routines while adding flexibility, dexterity, and accuracy. All hardware (including fixtures for sensor attachments to the robot), software, installation, service, and support are included with the comprehensive system. The entire solution is self-contained on a specially designed inspection cart that can be easily rolled from the quality

lab to the shop floor. The PAM-System can be used for first article inspection, volume production inspection, reverse engineering, and prototyping.

“We have designed the best of today’s robotic, scanning, measurement, and inspection automation technologies into a single mobile solution; one that meets the practical needs of job shops and OEM manufacturers adapting to the realities of Industry 4.0,” said Philipp Schmid, IBS Quality GmbH.

The PAM-System includes robotics automation from 11 Dynamics, 3D measurement, inspection, and reporting integration with Verisurf Software, and a choice of leading 3D laser scanner brands or other scanner technologies.

The integrated Verisurf 3D Scanning and Inspection application is built on a CAD platform and is rooted in Model-Based Definition (MBD). Inspection plans are easily created by importing any CAD model, using drawings, a golden part, or key features. Inspection plans can be used across the manufacturing enterprise on any CMM, providing repeatable process control. “The Verisurf workflow enhances productivity and enables repeatable process control, which is a key tenant of QA; the automated PAM-System supports both,” said Nick Merrell, executive vice president of Verisurf.



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New Products

Hommel + Keller Quick® Knurling and Marking Tools —Platinum Tooling

Platinum Tooling, the importer and master distributor of live tools, angle heads, marking tools, Swiss tools and multi-spindle tools manufactured by various global suppliers, is now the North American importer of the QUICK® knurling and marking tools from Hommel & Keller. The announcement was made by Platinum Tooling president, Preben Hansen.

Hommel & Keller manufactures the QUICK® line with a combination of function and innovation. Quality,

precision and stability are the key principals used to make QUICK® tools successful.

The QUICK® product spectrum offers innovative solutions for diverse knurling technology applications. For

both form knurling and cut knurling, QUICK® fulfills the most stringent quality standards and masters difficult tasks. Knurling tools are available for use on a wide range of workpiece diameters, including small tools for Swiss type lathes from Ø 1.5 mm.



QUICK® marking tools make it possible to mark workpieces in seconds on a variety of surfaces and part geometries. Through single marking segments, the marking text can be individually customized. Tools are available in two diameters for interchangeable lettering, as well as custom logos.

New Line of Ductile Iron Toolholders —Parlec

Parlec, a member of Techniks Tool Group, has released a line of BMT65 toolholders made from ductile iron. According to Parlec, ductile iron has 6.6 times the vibration damping properties of alloy

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New Products



steels, which enhances cutting tool performance and extends tool life. In addition, Parlec reports the higher graphite content of ductile iron reduces friction and prevents premature wear of the tool holder.

Parlec says BMT65 tool holders fit on many BMT65 lathe turrets, including Haas, Doosan, Hwacheon, Hyundai

and others. Parlec BMT65 tool holders are available in inner-diameter styles for 1", 1-1/2" 25 mm, and 40 mm tool diameters for single-sided holders and in 1-1/4" for double-sided holders. Outer-diameter style holders are available in 1" and 25 mm for both single and double-sided setups.

Horizontal Turning Center Features Thermal Compensation

—Romi

Romi's new GL 250 horizontal turning center features thermal compensation with sensors to maintain stable, dimensional results. According to Romi, the use of sensors provides

accurate, real-time compensation as opposed to compensation based on pre-defined algorithms. They say the result is more accurate machining over extended periods of time when the machine temperature increases.

The GL 250 has a maximum cutting diameter ranging from 11" and a z-travel of 23.6". The new machine is designed for medium- to high-production environments and features high power, torque and feed force, in addition to rigidity and precision attributed to the monoblock base.

It is constructed with durable roller ways on all axes. A built-in spindle motor with a chiller incorporated and direct drive servo-motors reportedly facilitates high response speed, accuracy, less vibration and lower mainte-

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New Products

nance requirements.

The GL 250 also features a tailstock that is programmable and servo-driven. Position, speed and force are determined directly via the Fanuc controller. It includes a 12-station turret with a choice of fixed tools with a Romi disk, driven tools with a VDI (Verein Deutscher Ingenieure) or BMT (base-mounted turret) 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.

Touch Probe Offers High Speeds and 3D Accuracy —Heidenhain

Heidenhain's TS 760 touch probe offers 3D accuracy to within 1 μm and homogeneous switching behavior over 360 degrees. The company says the probe's 1 m/min feed rate is four times faster than other products offering repeatability equal to or within 0.25 μm at two standard deviations.

The touch probe's low, ≈ 0.2 N of trigger force and ≈ 1.5 N of axial force limit form and surface damage to fragile parts. Users can also clean

the probing point with an integrated flusher feature that uses compressed air and cooling lubricant of up to 60 bars. Functionally, the probe is fully compatible with the TS 740 and provides the same additional data as the TS 460.

An SE 661 transceiver with an EnDat communication signal sends collected data over radio or infrared channels to Heidenhain's contouring TNC or other major CNC controls.

New iWire Lets Shops Adapt to Changing EDM Cutting Conditions

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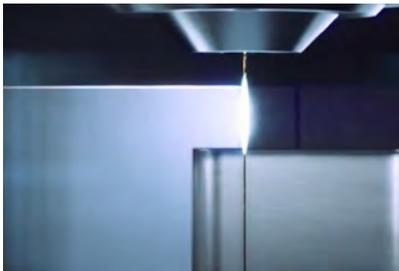
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New Products



Solutions, the new iWire function from GF Machining Solutions automatically identifies and adapts wire speed to changing erosion height conditions during the wire EDM process. This capability eliminates wire breakage while reducing overall wire consumption per job, in some instances by as much as 29%.

Featured on new GF Machining Solutions' CUT P Pro Series wire EDMs, the iWire function works in tandem with the company's Intelligent Spark Protection System (ISPS), both of which are part of the company's Uniqua control.

What started with GF Machining Solutions Spark Track technology four years ago has advanced to the company's ISPS and now iWire technologies. Building on its amassed technological knowledge from decades of experience in EDM, the company can not only recognize exactly where the sparks of a wire EDM are happening during the process, it can also measure and identify the position of each spark along the length of an EDM's wire.

Knowing the exact location of a spark allows iWire to automatically adapt the wire spool speed accordingly. The company reports that such capability reduces the chances of wire breakage during unattended operations when EDMing parts with steps and other features that vary the erosion height – the length of the actual surface areas where the wire is eroding/cutting.

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Boeing Awarded Contract for Eight AH-6 Helicopters for Thailand

Boeing has been awarded a \$103.7 million contract by the U.S. Department of Defense as part of a foreign military sale for eight AH-6 light attack reconnaissance helicopters to Thailand. The contract also includes spares, training devices, support equipment, and technical publications for the Royal Thai Army.

The deal paves the way for the Royal Thai Army to replace its fleet of aging AH-1F Cobras as part of the country's defense modernization efforts. The aircraft will be produced in Mesa, Arizona, with deliveries planned through 2024.

Endera Expands Pomona R&D Facility

Zero-emission commercial vehicle manufacturer Endera has expanded its R&D facility in Pomona. The 9,000-square-foot facility will be the innovation hub for the San Diego-based company as it develops its next line of EV power trains for shuttle and school buses, said Endera President Todd Harman.

"It's our first true innovation center in Southern California," Harman said. "Primarily, we had been doing R&D in a couple of smaller locations and this allowed us to consolidate all of our innovation under one roof."

To meet the demand, Endera is "rapidly hiring" engineers to add to the 30 employees at the Pomona facility. "By building out our R&D footprint and facility space in Pomona

General Atomics Signs Pact for Depot Level Repairs

The U.S. Navy recently awarded San Diego-based General Atomics a \$10.5 million contract that will support aircraft handling equipment for the new, Gerald R. Ford-class aircraft carriers.

General Atomics produces the Advanced Arresting Gear for the Ford-class carriers, including ships to be named John F. Kennedy, Enterprise and Doris Miller. GA's system – which absorbs the momentum of a landing aircraft and slows it to a stop – is a departure from the traditional equipment used on the Nimitz-class aircraft carriers commonly seen on San Diego Bay.

The Navy's \$10.5 million task order, provides for the stand-up of an Advanced Arresting Gear system depot facility for depot level repairs, to include shipboard (on-equipment) repairs and overhaul, and turn in depot level repairable units (off-equipment) repairs, and other repairable components over the lifecycle of the system.

Some 77% of the work will be performed in San Diego while.

Hundreds of Jobs Expected as Northrop Grumman Expands its Arizona Satellite-Manufacturing Plant

Northrop Grumman in early May marked the completion of its expanded satellite factory in Gilbert to help meet growing demand for spacecraft.

The expansion adds 120,000 square feet to the prior 135,000-square-foot facility near McQueen and Elliot roads. Roughly 850 people now work at the factory and hundreds more will join them over an unspecified timetable.

"We have manufactured and delivered over 100 spacecraft for NASA science programs, commercial communications and national-security missions since we opened this facility in 2004," said Cyrus Dhalla, vice president and general manager of the company's tactical space systems division. "This new expansion will help us meet the increasing demand from these customers."

Programs currently in production at the Gilbert facility include earth-observation satellites for NASA and the National Oceanic and Atmospheric Administration.

The Gilbert campus conducts satellite design, engineering, manufacturing, testing and program management, with spacecraft manufacturing done under one roof.

Danish Military Signs Armor & Load Carriage Contract with Arizona Company

On Monday, April 25, Jason Beck, Founder and CEO of TYR Tactical in Peoria, Arizona and the Danish Ministry of Defense (DALO) signed a historic contract worth \$200,000,000.00. The contract will provide each soldier in the Danish military the most state-of-the-art body armor system in existence.

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This agreement will have an impact of more than 100 advanced manufacturing jobs for TYR Tactical, which is headquartered in the City of Peoria. This allows for higher economic growth and greater employment opportunities in the west valley spanning the next decade.

Air Lease Corporation Adds 32 Boeing 737 MAX Jets to Its Orderbook

Boeing and Los Angeles based Air Lease Corp. announced the aircraft lessor is expanding its airplane portfolio with an order for 32 additional 737-8 and 737-9 jets. As the travel market recovers, ALC is increasing its 737 MAX family offering to meet airline demand for modern, fuel-efficient and sustainable operations.

"Following our memorandum of understanding with Boeing in February for these 32 737 MAX aircraft, we are pleased to announce the signing of this definitive purchase agreement. We believe that the economic and operating advantages of the 737 MAX will serve our airline customers well.

ALC continues to grow its investment in the 737 MAX family. In February the lessor added 18 737 MAXs to its portfolio. With the new order, ALC has 130 737 MAXs in its backlog.

Capstone Sells 10 Turbines in Mid-Atlantic Deal

Capstone Green Energy Corp. announced that its distributor for the Mid-Atlantic region received an order for 10 microturbine systems for use at various oil and gas wellhead sites in the Marcellus Shale.

The model C65 microturbines from the Van Nuys manufacturer will be commissioned as needed through next year. E-Finity Distributed Generation in Wayne, Penn. secured the order.

San Diego Company to Deliver Modernized Radios

The U.S. Navy awarded L-3 Telemetry and Radio Frequency Products of San Diego, part of L3 Harris Technologies Inc. a \$15.3 million modification to a previously awarded contract. This modification exercises an option for the production and delivery of 255 modernized radios, to include 228 for the Navy and 27 for the government of the United Kingdom. Work will

be performed in San Diego and is expected to be completed in November 2023.

Vita Inclinata Takes Possession of Colorado Facility

Vita Inclinata, developer and producer of helicopter and crane load stabilization and precision hardware, has taken possession of its new 13,000 sq. ft. manufacturing facility in Broomfield, CO.

The company's newest manufacturing facility will house the primary production of the Vita Load Navigator (VLN), a heavy-duty stabilization system for cranes that mount to spreader bars and hoist loads over 25,000 lbs.

Vita currently has two manufacturing facilities located in Broomfield, CO, with additional sales and marketing support offices in Broomfield, Washington, D.C., and the UAE.

A New Greenfield Low Voltage Manufacturing Facility for EV Make-Ready Equipment in Pomona, CA.

Siemens is investing over \$40 million to build a greenfield manufacturing site to replace a legacy facility in Pomona, CA. The manufacturing location will produce vital low voltage electrical equipment for industrial and commercial installations in addition to "make-ready" power distribution equipment to serve the expanding EV market.

Jacobs to Continue NASA Aerospace Test Facility Support Under \$209M Contract

Jacobs has received a five-year, \$209 million contract to continue helping NASA manage ground test facilities and activities at the Ames Research Center in California.

NASA said the company will support experimental environments, such as the Sensor and Thermal Protection System Advanced Research Lab and high-enthalpy arc jet facilities, under the Aerospace Testing and Facilities Operations and Maintenance-5 contract.

The hybrid contract has a two-year base period of performance along with three one-year option periods.

The award extends Jacobs' support services to the Ames Research Center.

...Hotline

Raytheon Missiles & Defense Awarded \$624 Million for Stinger Missile Production

Tucson, Arizona based Raytheon Missiles & Defense, a Raytheon Technologies business, was awarded a \$624 million U.S. Army contract to produce 1,300 Stinger® missiles. The contract includes provisions for engineering support, as well as the test equipment and support needed to address obsolescence, modernize key components, and accelerate production.

"We're aligned with the U.S. Army on a plan that ensures we fulfill our current foreign military sale order, while replenishing Stingers provided to Ukraine and accelerating production," said Wes Kremer, president of Raytheon Missiles & Defense. "The funding will be used to enhance Stinger's producibility in an effort to meet the urgent need for replenishment."

Boeing Starts New A-10 Wing Deliveries to U.S. Air Force

Boeing in partnership with Korean Aerospace Industries and other key suppliers, has delivered the first new wing set for the A-10 Thunderbolt II fleet to the U.S. Air Force. The wing set arrived earlier this month to Hill Air Force Base in Ogden, Utah, where the Air Force has started aircraft integration.

"Boeing is working diligently to deliver greatly needed new wings for the A-10 fleet," said Lt. Col. Jaclyn Melton, materiel leader for A-10 Programs in the A-10 System Program Office at Hill Air Force Base.

Boeing was awarded the contract in August 2019 and is currently working to provide the Air Force with 50 wing sets. Each wing set consists of outer wing assemblies, center wing assembly, control surfaces and the fuselage integration kit.

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