



Summary Sheet

VOTAW PRECISION TECHNOLOGIES

13153 LAKELAND ROAD

SANTA FE SPRINGS, CA 90670

REGISTERED TO ISO 9001 +AS100

www.votaw.com

- * Quality Precision Machining, and Fabrication Excellence Since 1963
- * Secure 240,000 Square Feet under Roof
- * 35 Ton Crane Capacity with 32 Feet under the Hook
- * Precision Tooling– Machining, Fabrication, and Assembly
- * Precision Flight Hardware-Machining, Fabrication, and Assembly
- * Prototype (one of a kind)- Machining, Fabrication, and Assembly
- * Full Production Capabilities- Machining, Fabrication, and Assembly
- * Ground Support Equipment with Electronic, Hydraulic or Pneumatic Systems
- * Very Large to very small-Machining, Fabrication, and Assembly
- * Quality System– AS9100,A.I.S.C. with ASQC Certified Inspector
- * Horizontal and Vertical Lathes with Capabilities up to 32 Feet in Diameter
- * 3,4,5 and 6 Axis Mills with Capabilities up to 50 Feet in Length
- * Full Service Design Department Specializing in Tooling and Special Machinery for the Aerospace, Launch Systems and Aircraft Industry
 - Stress Analysis (including FEA)
- * CAD/CAM Systems including CATIA, Unigraphics II and Pro/Engineering
- * Inspection performed In– House and Off-Site Utilizing Hard Gages, Portable CMM, CMM X=200", Y=100", Z=71", Laser Trackers and Romer Arms
- * Complete Fabrication Facility with Certified Welders, NDT,ASME,ASIC and a Licensed State Certified Welding Inspector on staff

More information can be obtain by contacting:

Scott Wallace

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Mission Success Start Here

Machine Tools

5-Axis Bridge and Gantry Mills

Qty	Machine	Machine Type	X	Y	Z	A/B	RPM
1	Cincinnati 20V	Vertical	776"	168"	22"	A:±20° / B: ±20°	
1	SNK Gantry	Vertical	600"	180"	60"	+105 to -65° ±190°	
1	Cincinnati 30V	Vertical	490"	84"	22"	A:±25° / B = -25°	
1	Ingersoll	Vertical	355"	184"	36"	C: 360°/ A:360°	
1	JOBS Ever5	Vertical	236"	196"	59"	C: ±200°/A:±110°	
1	Rambauldi	Vertical	228"	102"	60"	+105 / -100 / 360	24,000
1	Nicolas Correa	Vertical	197"	128"	40"	A=+100/-90° C:=±200°	4,000
1	Parpas	Vertical	197"	119"	60"	+105 / -100 / 360	27,000
1	Nicolas Correa	Vertical	196"	122"	49"	+100 / -90 / 200	4,000
1	Nicolas Correa	Vertical	196"	106"	39"	+100 / -90 / 200	4,000
1	Viper Gantry	Vertical	160"	102"	37"	Z: -30°/ A: 35°	
2	Cincinnati Milacron	Vertical	120"	28"	24"	A&B= 54° included	
1	SNK	Vertical	55"	25"	21"	+25 / -25	5,000
1	Omnimil X5	Vertical	48"	44"	47.5"	A:-26°+124.5°/ C:360°	

Machine Tools

4-Axis Horizontal Mills

Qty	Machine	Machine Type	X	Y	Z	W	RPM
1	Mitsubishi 8" Spindle	Horizontal	472"	136"	43"	36"	
1	Mitsubishi 4" Spindle	Horizontal	348"	117"	45"	103"	
1	DeVlieg 5" Spindle	Horizontal	144"	72"		22"	
1	SNK	Horizontal	137"	98"	63"	27"	8,000
1	Lucas 6"	Horizontal	120"	96"	46"	72"	
1	DeVlieg 4" Spindle	Horizontal	120"	72"	20"	20"	
1	KIA	Horizontal	118"	63"	28"		6,000
2	Lucas 5"	Horizontal	106"	72"	38"	48"	
1	Toshiba	Horizontal	78"	84"		43"	
1	Toshiba 4" Spindle	Horizontal	78"	52"	51"	24"	
1	Lucas 6" Spindle	Horizontal	72"	43"	20"	20"	
1	CNC-1 Okuma MC-80H CNC Pallet Type	Horizontal	43"	39"	32"		

3-Axis Machining Centers

Qt'y	Machine	Machine Type	X	Y	Z	W	RPM
1	Awea	Vertical	158"	98"	39"		8,000
1	Haas	Vertical	120"	40"	25"		
1	Hass	Vertical	118"	30"	30"		3,200
1	Awea	Vertical	80"	50"	39"		6,000
1	Fadal	Vertical	60"	30"	28"		10,000
1	Haas Model VF5 30HP	Vertical	50"	26"	28"		10,000
3	Bridgeport	Vertical	42"	10"	6"	CNC	
4	Bridgeport	Vertical	42"	10"	6"		
2	Fadal	Vertical	40"	20"	20"		10,000
1	Cortini	Vertical	24"	18"	20"		24,000



Equipment

Mission Success Start Here

Machine Tools

CNC Lathes

	Machine	Length	Turning dia.
1	American Lathe CNC Controlled	480"	120"
1	Okuma LH50 CNC Controlled	168"	36"

VTL

	Machine			Ram
1	Gray CNC Controlled	384"	Swing	100"
1	Shibaura	216"	Swing	111"
1	Shibaura	216"	Swing	92"
1	Mori Seiki	216"	Swing	92"
1	Shibaura CNC Controlled	180"	Swing	130"
1	Shibaura CNC Controlled	163"	Swing	94"
1	Betts CNC Controlled	163"/190"	Swing	94"
1	King CNC Controlled	120"	Swing	96"
1	RD & D CNC Controlled	116"	Swing	90"
1	Bullard	84"	Swing	60"
1	YouJi Cyclone VTL-1600	78.7"	Swing	83"

Conventional Lathe

	Conventional Lathe		Turning dia.	Length
1	Mori Seiki		24" Swing	36"
1	Le Blond		19" Swing	96" between centers
1	Le Blond		18" Swing	42" between center



Equipment

Mission Success Start Here

Machine Tools

Grinders

Qty	Description	
1	Norton Surface Grinders	6" dia. X 12" lg.
1	Blanchard 22K	46" dia. X 24" under wheel
4	Tool and Cutter Grinder	14" X 48"

Bridgeport Mills

Qty	Description	
24	Bridgeport	X=48", Y=12", Z=6"
4	Bridgeport 3-Axis NC	X=48", Y=12", Z=6"

Welding Equipment

Qty	Cut-Off Saws
1	Event Abrasive 22" Saw
1	Mercury Radial 16" Saw
1	WFU Ellis & Son Cut-Off Saw
1	Trenn Jaeger Saw Model LPC 110/400
1	Amanda Cutt-Off Machine
6	Do all Band Saw
3	Marvel Saw Series 8 Mark III 16'4"

Qty	Presses
1	Pacific 600 Ton, 240"
1	Hydro-Press 20 Ton

Equipment

Welding Equipment

Qty	Welding Machines
22	Mig Welders 250 to 650 amp with variety of wire feeders
2	Miller Invision 450amp
6	Manual Heliarc– Airco and Miller
6	ARC Welders– Airco and Lincoln Electric
5	Sub Arc Welders– Lincoln and Linde with Wire Feed



Qty	Dry Ovens
1	Phoenix DryRod(bake)
2	Henkel Enterprises KT-99
1	Steelman 8' X 8' X 12' with Honeywell control & chart recorder
1	Rod baking oven
5	Portable ovens
6	Rod Storage and 1 Flux dry oven

Qty	Plasma Cutters
1	Power Max 45 T45V Torch
1	Power Max 85 H85 Torch
2	Max 200 Pac 200 Torch
1	Max 200 No Torch

Qty	Weld Manipulator
1	Aronson Sub Arc 168" X 168"
1	Aronson Sub Arc 120" X 120"

Qty	Flame Cutting Burning Machines
2	Airco Radiograph Cutting Machine
7	Portable Burning Units



Equipment

Other Equipment

Qty	Roll Forming
1	700 Ton Single Stroke Press 45" Stroke, Y=96" (120 between columns)
1	Pullmax SMT Kumla Plate Rolls 1" X 120"
1	Pullmax SMT Kumla Angle Rilles 1" X 6" X 6"

Qty.	Waterjet		X	Y	Z
1	Waterjet #- 50hp pump 2 , bulk feed		212"	160"	
1	Flow Waterjet Mach 3 4020B	Vertical	157"	78"	8"
1	Waterjet#3 -50hp pump		120"	72"	

Qty	Riveting
5	Pneumatic Riveters

Qty	Lab Testing Equipment
1	Hydro Test System, Teledyne Sprague, Model S-216-C35 300 PSI
1	Magnetic Particle Inspection Unit, Model KH-15
1	Calibrated UV Light for LP and Hydrocarbon Inspection
2	Hydraulic Pumps and Cylinders with Load Cells /Calibrated Gauges; 25,000 Lbs.
2	Load Cell 15,000 lb. Martin Decker

Qty	Painting Equipment
2	Devilbiss Type 500 MBC 707285
4	Binks 2001 USA
1	Graco Gal. Paint Pod with Agitator 19A
2	Graco Gal. Paint Pod with Agitator 25A

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Inspection Equipment

- (2) Coordinate Measuring Machines 205" x 100" x 71"
- (1) Mitutoyo CMM (Manual)
- (3) Leica Laser Tracker System LTD 800
- (2) Leica Laser Tracker AT901-LR
- (2) Leica Laser Tracker T-Cam and T-Probe
- (1) Leica AT-401
- (1) Faro Ion Laser Tracker System
- (2) Faro Vantage Laser Tracker Sys.
- (1) Deltronic DH 214
- (5) Starrett Gage Block Sets
- (1) Mitutoyo Electronic Indicator
- (1) Hewlitt Packard Laser- Model 5526A
- (1) Krautkamen Branson USL-42
- (5) Starrett Gage Block Sets
- (1) 5 Ton Hydra Set
- (7) Faro Arm Portable CMM
- (1) Romer PXMM Arm (2) 8 foot (3) 12 foot
- (1) Laser Line Scanner
- (5) Renishaw MP700 Probe
- (1) Cadillac 48" height Gage
- (1) Ultradex Model A
- (1) Optical Comparator
- (2) Profilometer
- (1) 10 Ton Crane Tension Load Cell
- (12) Dial Bore Gage's
- (1) Mitutoyo Profile Optical Comparator
- (4) Ultrasonic Thickness Gage's
- (1) 10 Ton Hydra Set
- (1) Hydra-Set Model D Load Cell
- (1) Krautkramer



Branson Hardness Tester MIC 10



Equipment

Inspection Equipment

Mission Success Start Here



CERTIFICATE OF REGISTRATION

This is to certify that

Votaw Precision Technologies, Inc.

13153 Lakeland Road, Santa Fe Springs, California 90670-4542 USA

The above organization has been audited in accordance with the requirements of AS9104/1:2012. SAI Global Certification Services Pty Ltd (trading as SAI Global) is accredited under the Industry Controlled Other Party (ICOP) scheme. The certificate is issued through the Toronto, Canada office location.

operates a

Quality Management System

which complies with the requirements of

ISO 9001:2008 + AS9100C

for the following scope of registration

Machining, Manufacturing and Assembly of Large Precision Tooling, Ground Support Equipment, Molds, Lay-up Fixtures, Machining Fixtures, Work Stands, Fabrications and Tooling including milling and turning of large diameter Flight Hardware. Our capabilities also include tool design, 3, 4 and 5 axis machining and very large diameter turning as well as in-house Laser Trackers, CMM inspection and Model Base Definition.

Certificate No.: CERT-0068963

File No.: 008693

Issue Date: March 14, 2013

Original Certification Date: March 17, 1999

Current Certification Date: March 3, 2013

Certificate Expiry Date: March 2, 2016

Chris Jouppl
President,
QMI-SAI Canada Limited

Guillaume Gignac, Ing.
Vice President, Corporate Operations, Accreditation & Quality
QMI-SAI Canada Limited



AS9100C



Registered by:
SAI Global Certification Services Pty Ltd, 208 Sussex Street, Sydney NSW 2000 Australia with QMI-SAI Canada Limited, 20 Canton Court, Suite 200,
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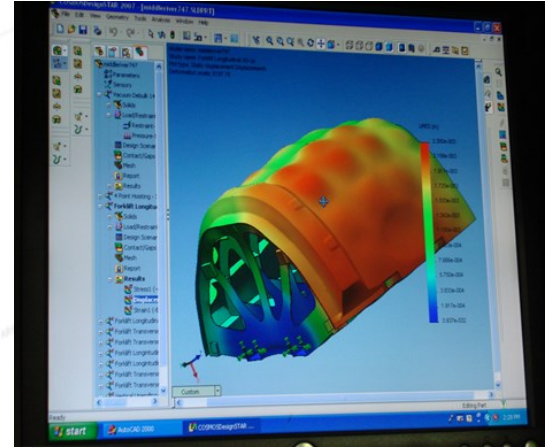
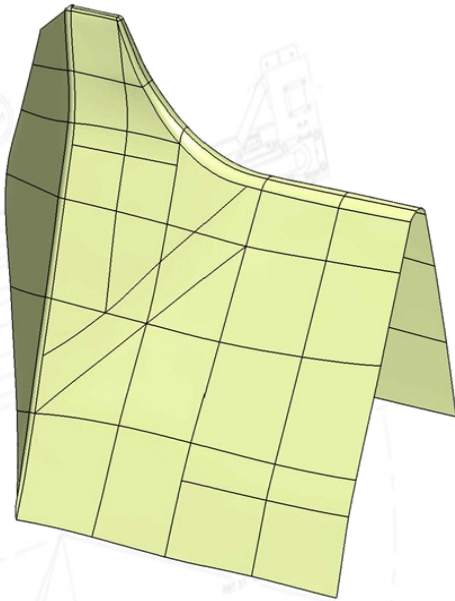
IMPROVE. INSPIRE. IMPROVE.

Engineering & Design Department

Mission Success Start Here

◆ Standard CAD/CAM Workstations

- State of the art CAD/CAM workstations
- 32 Gigabits of RAM
- SSD Drives
- Dual 27" Monitors



◆ Standard CAD/CAM Workstations

- ICam post processor
- Easytalk DNC
- CATIA V 5 and backwards compatible
- Unigraphics/NX
- Pro-Engineer /Creo
- SOLIDWORKS
- COSMOS Software Design
- MathCad
- AutoCad
- Mastercam

◆ Verification Software

- Vericut-7.3
- Verisurf- 9.1 –X8





Equipment

Engineering & Design Equipment

◆ Network

- Newly deployed 64 bit Servers running Server 2008R2; Server 2012; SQL Server 2008R2
- Gigabit Network Backbone
- Secured FTP Server



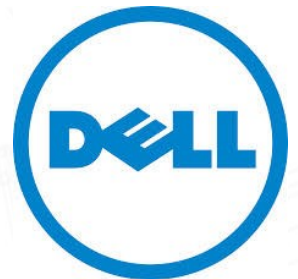
◆ Business Intelligence Software

- JobBOSS Enterprise Resource Planning System
- uniPoint Quality Management System

Exact JobBOSS

◆ Standard Desktop Workstations

- Dell 64-bit Desktops running Windows 7 pro
- Microsoft Office 2010
- Microsoft Project, as required
- Adobe Acrobat, as required
- Microsoft Visio, as required



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