

**solutions**  
for composite challenges



Janicki Industries solves problems through creative engineering solutions, cost effective fabrication and project management.

- ▶ [expansive facilities](#)
- ▶ [comprehensive equipment resources](#)
- ▶ [large, diverse engineering talent pool](#)
- ▶ [world class project management](#)
- ▶ [research and development](#)
- ▶ [contact us](#)

# high performance manufacturing

## From prototypes to production part runs

Expansive facilities, duplicate  
equipment and multiple  
production bays

Configured for concurrent  
engineering and production  
workflows

Greatly reduce your costs  
and turnaround times

### Hamilton, WA

[▶ floor schematic](#)

### Washington

- 5 manufacturing buildings
- 289,000ft<sup>2</sup>/26,849m<sup>2</sup>  
production capacity
- 6 large-scale high precision  
(±.002in/±.05mm)  
5-axis CNC mills
- Milling envelopes of 100ft x 20ft x 8ft/  
5.5m x 4m x 2m
- High bays
- Multiple work stations for  
large- volume production
- Temperature and humidity controlled
- 116 acres/4.7hectares

### Utah

- Operational Q3 2011
- 100,000ft<sup>2</sup>/9,290m<sup>2</sup>  
production capacity
- Plant expansion options
- 3 large-scale, high precision  
(±.002in/±.05mm)  
5-axis CNC mills
- Milling envelopes of 80ft x 14ft x 6ft/  
24m x 4m x 2m
- Designed for high-volume,  
large scale parts production
- Temperature and humidity controlled
- Located adjacent to Hill Air Force Base
- 6 acres/2.4hectars



# Extensive equipment resources

## Janicki Industries Premier Equipment: Proprietary 5-axis machining centers

Janicki Industries' machining centers are some of the largest, most precise in the world.

These 5-axis, gantry style CNC machines are designed, built, programmed, automated and maintained by Janicki.

Rotary axes on the machines have continuous contouring capabilities.

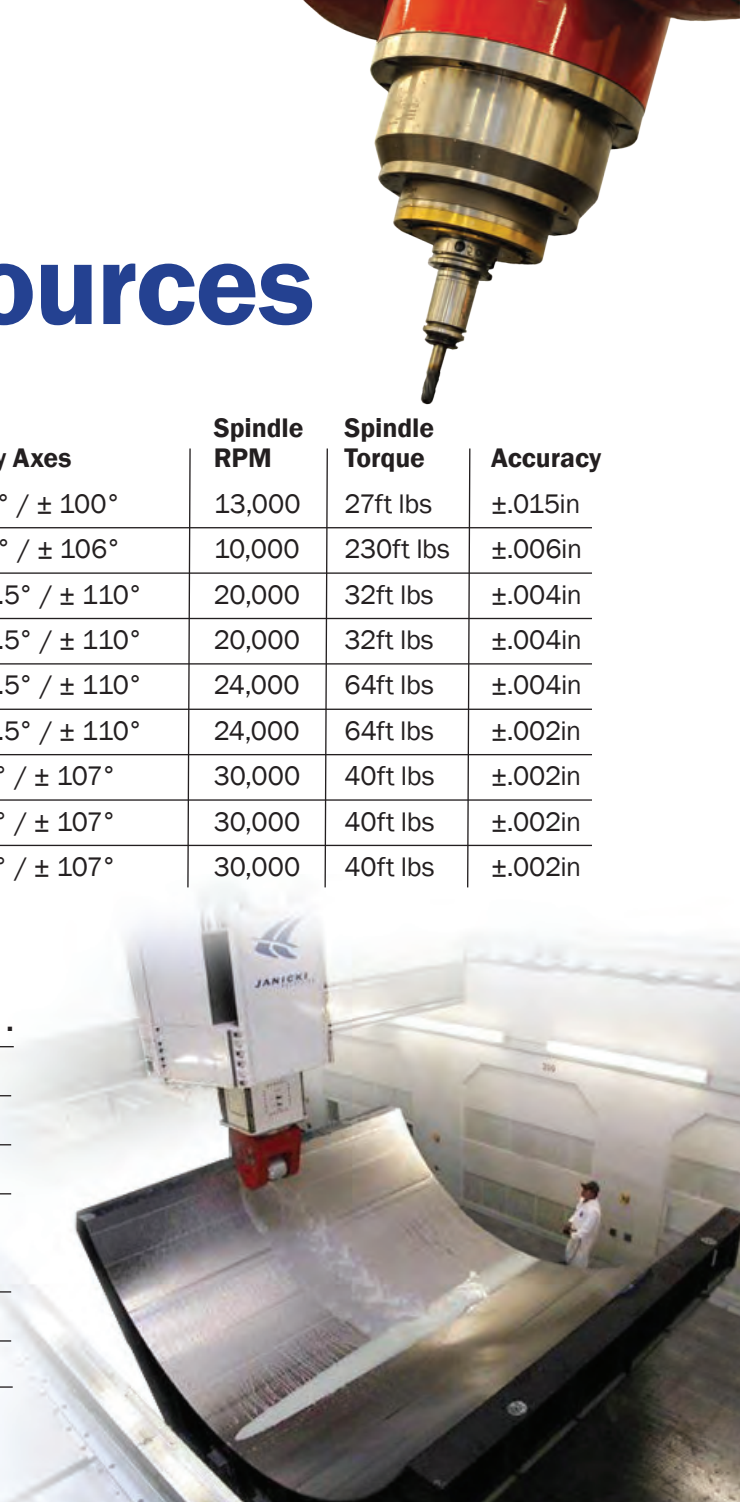
[▶ Metric Units Chart](#)

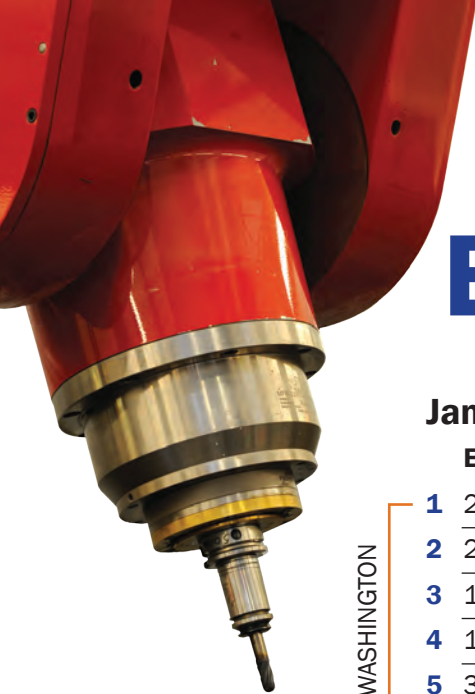
### Janicki Proprietary Mills ENGLISH UNITS

	Envelope Size	X-Axis	Y-Axis	Z-Axis	Rotary Axes	Spindle RPM	Spindle Torque	Accuracy
WASHINGTON	1 68ft x 19ft x 8ft	816in	228in	96in	± 195° / ± 100°	13,000	27ft lbs	±.015in
	2 88ft x 19ft x 8ft	1065in	235in	96in	± 203° / ± 106°	10,000	230ft lbs	±.006in
	3 40ft x 12ft x 5ft	480in	144in	60in	± 204.5° / ± 110°	20,000	32ft lbs	±.004in
	4 58ft x 14ft x 6ft	696in	144in	72in	± 204.5° / ± 110°	20,000	32ft lbs	±.004in
	5 100ft x 20ft x 8ft	1200in	240in	96in	± 204.5° / ± 110°	24,000	64ft lbs	±.004in
	6 100ft x 20ft x 8ft	1200in	240in	96in	± 204.5° / ± 110°	24,000	64ft lbs	±.002in
UTAH	7 18ft x 14ft x 6ft	216in	168in	72in	± 251° / ± 107°	30,000	40ft lbs	±.002in
	8 18ft x 14ft x 6ft	216in	168in	72in	± 251° / ± 107°	30,000	40ft lbs	±.002in
	9 80ft x 14ft x 6ft	960in	168in	72in	± 251° / ± 107°	30,000	40ft lbs	±.002in

### Cranes ENGLISH UNITS

	Brand	# of Cranes	Tons Capacity	Span	Hook Ht .
WASHINGTON	Demag	5	15		
	Demag	1	10		
	Demag	2	25	77'8"	28'8"
	Demag	1	15	36'4"	22'10"
	Konecrane	2	10	64'5"	32'2"
	Konecrane	2	15	86'10"	30'9"
UTAH	Konecrane	2	10	64'5"	32'2"
	Hoj crane/ Kone hoist	1	15	88'9"	25'4"





# Equipment CONTINUED

## Janicki Proprietary Mills METRIC UNITS

	Envelope Size	X-Axis	Y-Axis	Z-Axis	Rotary Axes	Spindle RPM	Spindle Torque	Accuracy
WASHINGTON	1 20.7m x 5.8m x 2.4m	2072.6cm	579.1cm	243.8cm	± 195° / ± 100°	13,000	36.7Nm	±0.38mm
	2 26.8m x 5.8m x 2.4m	2705.1cm	596.9cm	243.8cm	± 203° / ± 106°	10,000	312.8Nm	±0.15mm
	3 12.2m x 3.7m x 1.5m	1219.2cm	365.8cm	152.4cm	± 204.5° / ± 110°	20,000	43.5Nm	±0.10mm
	4 17.7m x 4.3 x 1.8m	1764.8cm	365.8cm	182.9cm	± 204.5° / ± 110°	20,000	43.5Nm	±0.10mm
	5 30.5 x 6.1 x 2.4m	3048.0cm	609.6cm	243.8cm	± 204.5° / ± 110°	24,000	87.0Nm	±0.10mm
	6 30.5 x 6.1 x 2.4m	3048.0cm	609.6cm	243.8cm	± 204.5° / ± 110°	24,000	87.0Nm	±0.05mm
UTAH	7 5.5m x 4.3m x 1.8m	548.6cm	426.7cm	182.9cm	± 251° / ± 107°	30,000	54.4Nm	±0.05mm
	8 5.5m x 4.3m x 1.8m	548.6cm	426.7cm	182.9cm	± 251° / ± 107°	30,000	54.4Nm	±0.05mm
	9 24.4m x 4.3m x 1.8m	548.6cm	2438.4cm	182.9cm	± 251° / ± 107°	30,000	54.4Nm	±0.05mm

## Cranes METRIC UNITS

	Brand	# of Cranes	Metric Tons Capacity	Span	Hook Ht .
WASHINGTON	Demag	5	13.6		
	Demag	1	9.1		
	Demag	2	22.7	23.7m	8.7m
	Demag	1	13.6	11.1m	6.9m
	Konecrane	2	9.1	19.6m	9.8m
	Konecrane	2	13.6	26.5m	9.4m
	Konecrane	2	9.1	19.6m	9.8m
UTAH	Hoj crane/ Kone hoist	1	13.6	7.7m	

[▶ English Units Chart](#)



# Equipment CONTINUED

## Complete Machine Shop

- Haas SL-20 CNC lathe
- Republic Lagun RL-14X40 manual lathe
- Mazak VTC-300C vertical mill
- Bridgeport EZVISION mill
- OMV Brave mill
- Mitsubishi 4-axis horizontal boring mill



## CNC Waterjet Cutters

- Ward 2-Axis Waterjet  
12ft x 40ft x 10in/3.4m x 12m x 25cm
- Flow 2-Axis Waterjet  
6ft x 12ft x 10in/1.8m x 3.4m x 25cm

## CNC Komo Router #VR510TG

- 3-axis
- 5ft x 10ft x 12.5ft/ 1.5m x 3.1m x 3.8m

## Ovens

- 400°F/204°C oven — 100ft x 24ft x 14ft/  
30m x 7m x 4m  
Modular
- 500°F/260°C  
modified Despatch oven  
30ft x 10ft x 10ft/9m x 3m x 3m
- 250°F/121°C  
40ft x 20ft x 10ft/12m x 6m x 3m
- Multiple modular tent ovens
- 2 Wisconsin ovens 500°F/260°C
- 2 testing ovens 500°F/260°C

## Autoclaves

### LAB AUTOCLAVE

- 500°F/260°C
- 150psi/10.5Kg/cm
- 30in/.76m diameter, 36in/.91m deep



### AUTOCLAVE ON SITE Q4, 2011

- 550°F/288°C
- 150psi/10.5Kg/cm
- 12ft/3.6m diameter, 50ft/15.2m deep  
(5,625ft³/160m³)
- 50,000lb/22.7 metric tonnes load capacity



## Annealing Furnace

- 1600°F/871°C
- 72ft x 24ft x 11ft/22m x 7m x 3.4m
- Heat distribution delta T 35°F/1.6°C
- Semi-truck accessible
- Modular for expansion to 108ft/33m



## Painting and Curing Booth

### PAINT

- 60ft x 16ft x 10ft/18m x 4.8m x 3m
- Door 9ft x 12ft/2.7m x 3.6m
- Permitted for chromated aerospace paints

### CURE BOOTH

- 26ft x 16ft x 10ft/7.9m x 4.8m x 3m
- Door 9ft x 12ft/2.7m x 3.6m

## Weld Shop

- Eight modular weld tables can be configured as needed
- Each table 18ft x 18ft/ 5.5m x 5.5m
- Surfaces laser tracked for accuracy ( $\pm 0.02$ in/.05cm)
- Two 25 ton/22.6 metric ton capacity cranes in invar shop
- 4 Fronius push/pull pulsed GMAW welding machines
- Lincoln and Miller welding machines
- Tube and pipe pinch/bend machine

### AWS CERTIFIED PROCESSES FOR:

- GMAW-P Invar36\*
- GTAW Invar36\*
- GTAW Aluminum Alloy 6061 and other M23 alloys
- GMAW Aluminum Alloy 6061 and other M23 alloys
- GMAW Aluminum for class M25 alloys
- FCAW steel
- GMAW steel
- FCAW stainless steel

\* Invar welding processes certified per AWS D1.1 standards

# Equipment CONTINUED



## Metrology

- Available for metrology studies at Janicki or at your plant
- Accurate measurements to better than  $\pm .003$ "

## Laser Trackers

- Leica LTD 500
- Leica LTD 600
- Leica LTD 800

- 5 -Leica AT901-LR Absolute Trackers
- Leica T-Cam/T-Probe
- 5 -Leica T-Cam/T-Probe II

## Laser Radar Scanners

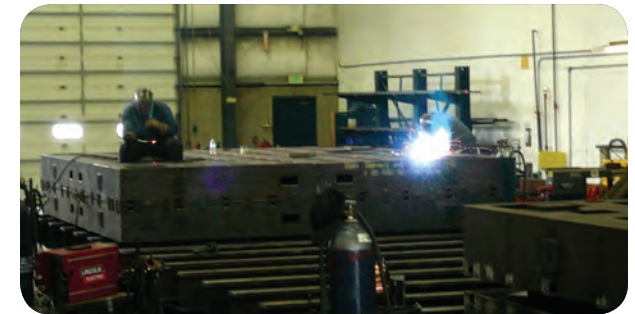
- Metris L260
- 2 -Metris M 260

## R&D Lab

- MTS Alliance RF/150
  - Axial Extensometer Model 632.24E-50
  - Flexural testing applications
  - Epsilon Extensometer Model 3442-008M-020-HTN2
  - MTS Large Load Cell (35,000 lb capacity) Model 4501035
  - MTS Small Load Cell (500 lb capacity) Model 450102
- TA Q400 TMA Thermo-mechanical Analyzer
  - Modulated capabilities
  - Dynamic capabilities
  - Probes (Standard, Macro, Penetration)
- TA Q20 MDSC Modulated Differential Scanning Calorimeter
  - Modulated capabilities
  - Finned air cooling system
- Testing Autoclave
  - 500°F/260°C
  - 150psi/10.5Kg/cm
- CTE Testing
- Brookfield Viscometer Model RVDV-I+
- DinoX Lite Digital Microscope Model AM-413M
  - Magnification: 10xs – 50xs, 230xs
- Type A Durometer Model 408
- Moisture Meter Model J-2000
- Hardness Testers Model GYZJ 934-1
- Micrometers Model 599-1-44

## Certifications

- ISO 9001:2008 Certified
- Registered/ITAR compliant with DoS, DDTC
- AS9100 Fall 2011
- Digital Product Definition (Metrology) approved by Boeing to D6-51991 Standard
- 6 Internal Auditors, trained in both ISO 9001 and AS 9100 Standards
- Calibration Program meets requirements of ISO/IEC 17025:2005, ANSI/NCSL Z540-1-1994 and A2LA
- Boeing approved DPD (Digital Product Definition) Supplier
- Approved source for Lockheed Space Systems Co.



[▶ Weld certifications](#)

## Advancing composite technology is our primary mission

To develop break-through solutions, we involve engineers in every stage of a project. The depth and breadth of our engineering talent gives customers a significant competitive edge.

**Over 20 percent of our 450 employees are engineers**

**Of our 90+ engineers, 17 have advanced degrees**

### Departments

**Engineering Design:** 1 Masters, 6BS  
**Laboratory Research & Testing:** 1PhD, 1Masters, 3 BS  
**Process Engineering:** 3 Masters, 17 BS  
**Automation:** 1PhD, 3 Masters, 4BS  
**Metrology:** 5 BS, 1 BA  
**Machine Operations:** 5BS  
**Program/Project Management:** 6 Masters, 25 BS  
**Facility Operations Management:** 2BS  
**Quality Assurance:** 3BS  
**Sales:** 3BS  
**Executive Team:** 1Masters, 3BS



**CAD Programs:**  
**NX/Unigraphics** - 36 seats  
**CATIA V5** - 14 seats  
**Rhino**

**Analysis:**  
**CATIA V5 / Elfini** = 2 seats  
**MSC SimDesigner** = 1 seat  
**Nastran / Patran** = 3 users  
**COSMOS** = 1 seat  
**MSC.ADAMS** = 1 user



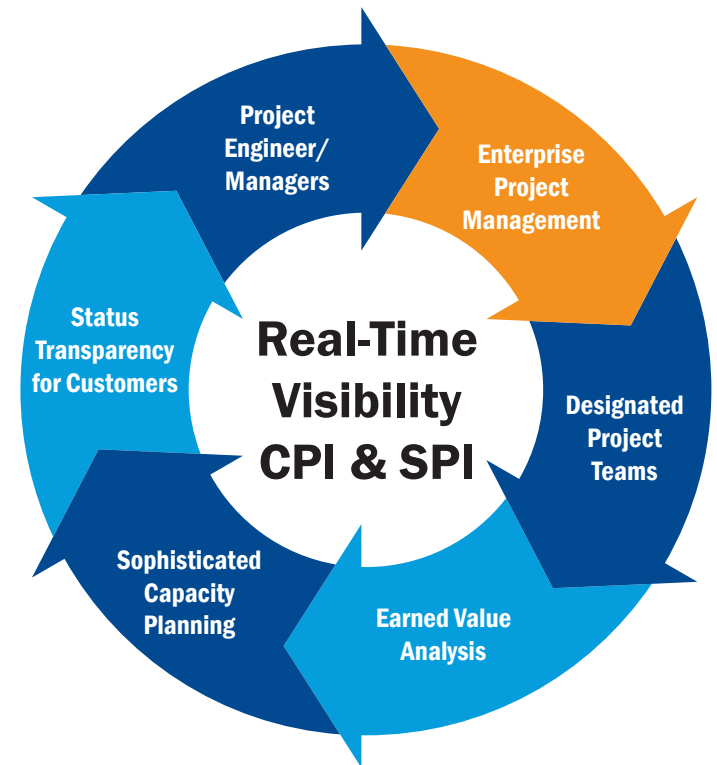
## Superior project management is absolutely critical to success.

### Here's how Janicki delivers results:

1. Eliminate decision-conflicts: your **project engineer is your project manager**.
2. Take a global view: a **single master scheduler** coordinates oversight of all projects, resources, schedules and costs – across the entire organization.
3. Commit to transparency: you have **visibility** of your project's performance: schedule, cost and resource availability.

### This approach delivers:

- Technical engineering driving your project
- Improved accountability
- Streamlined decision making
- More accurate scheduling
- Improved risk identification and management
- Solution-focused monitoring
- Outstanding on-time, on-budget, high-quality results



# Continually advancing the science of composite technology

Every engineer on the Janicki team is engaged in customer-driven research and development projects. Our R&D lab supports them through rigorous testing activities, new material investigations, and product cycle simulations. The ability to reproduce material, process or cycle conditions in the lab provides necessary information for innovations that offer better functionality and survivability in the real world.

R&D

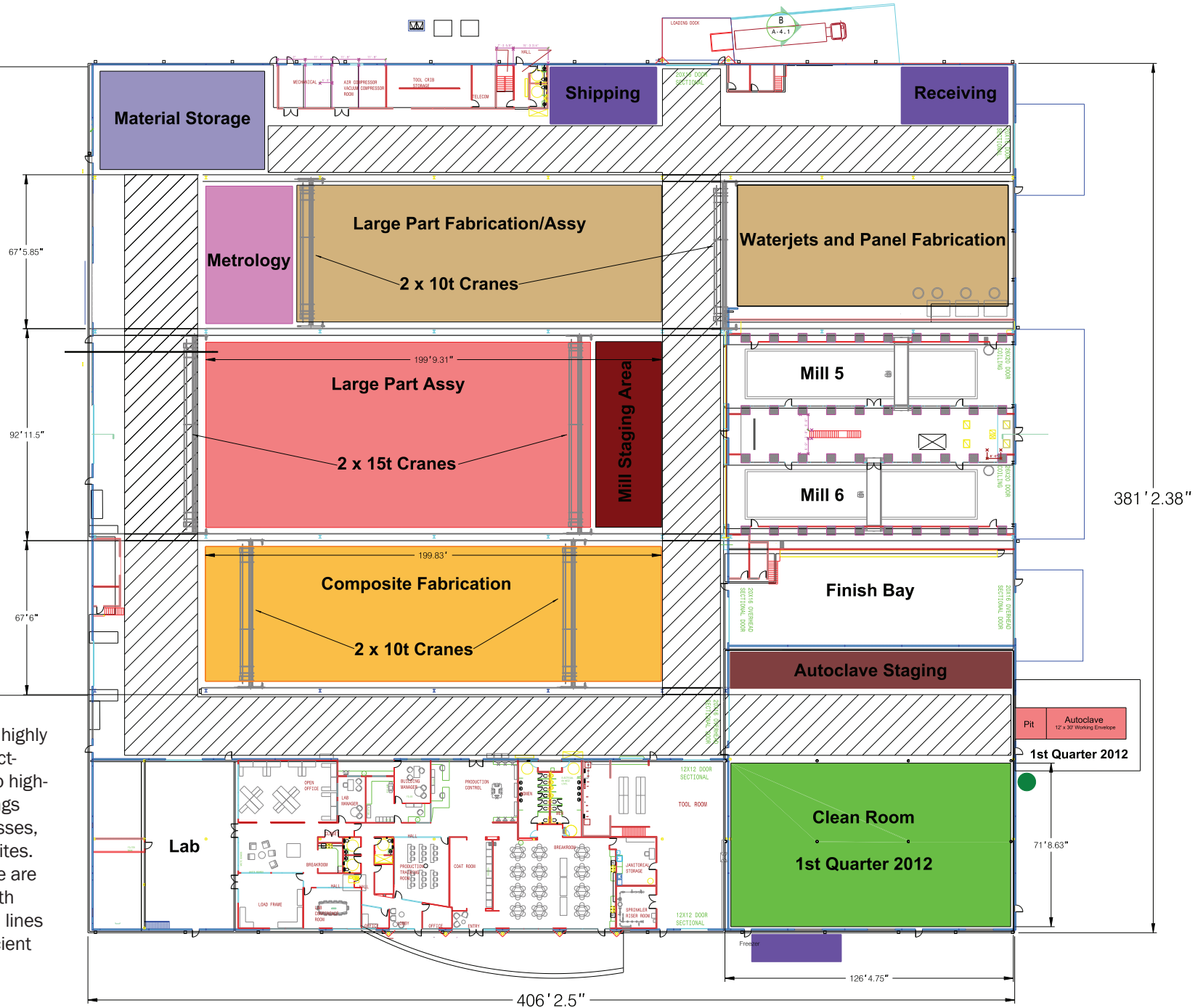
[▶ equipment](#)



## Here are a few of the things we are working on now:

- Consolidating processes to achieve lower costs
- Developing less expensive materials with equal or better performance
- Improving environmental resistance under temperature and pressure
- Reducing thermal oxidative degradation
- Experimenting with techniques for making larger, thicker parts
- Improving coatings to increase tool life, enhance release, and prevent chemical and environmental degradation
- Increasing options for out-of-autoclave processes, products and chemicals
- Improving understanding of material Tg's using our Janicki-developed Heat Deflection Machine

# Hamilton Bldg 5 General Mfg Layout



Janicki's facilities are designed to be highly flexible, adapting to a variety of project-types, from prototypes and models to high-volume parts production. The buildings readily accommodate multiple processes, eliminating transportation between sites. Throughout the Hamilton facility there are numerous work stations complete with gas, electrical power, communication lines and water. This allows for highly-efficient parts production runs.

# Our solutions are as diverse as your challenges

### Very large-scale wind turbine blades

Janicki collaborated on engineering design, created tooling, established processes for, and assembled the first three ship-sets of parts, major sub-assemblies, and total final blade assemblies.

### Latest generation Humvee JLTV composite hoods

Janicki redesigned, created the tooling, processes, production, and assembly of the first 50 ship-sets of parts, major sub-assemblies, and total final assemblies.

### Airplane panel and wing trim production

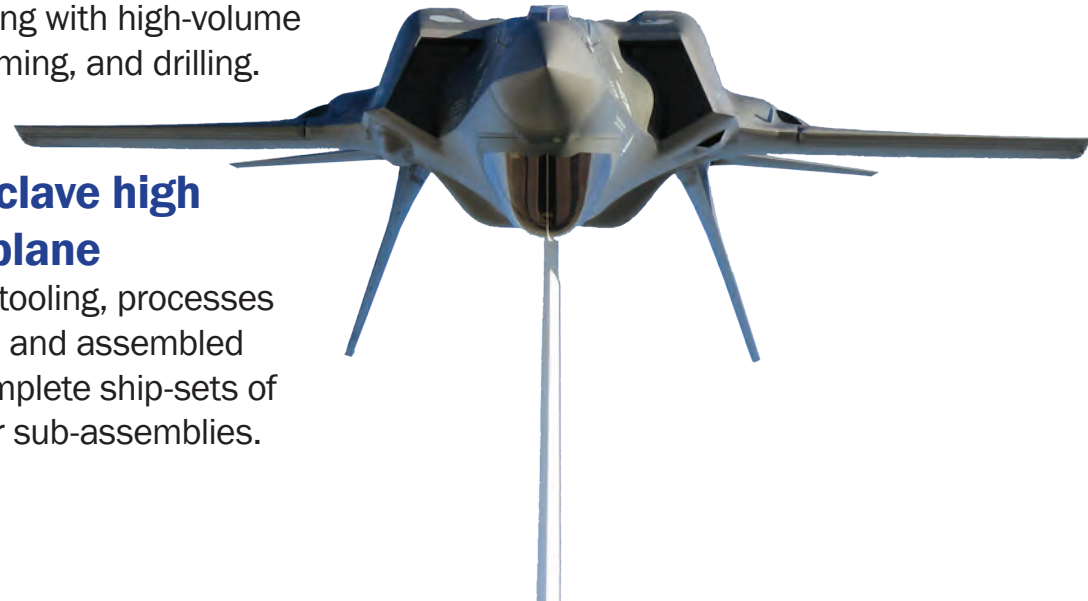
Janicki modified the tooling and processes, formulated and implemented new machine technology, accomplished testing and QA steps to reach 100 percent compliance of finished parts, and is now proceeding with high-volume production trimming, and drilling.

### Out-of-autoclave high altitude airplane

Janicki created tooling, processes and production, and assembled the first two complete ship-sets of parts and major sub-assemblies.

### Advanced Composite Cargo Airplane

Janicki collaborated on engineering design, created the tooling processes and production, then sent a team to the customer's facility to build the parts.





**ISO 9001:2008**

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