



# MICHOUD

## ASSEMBLY FACILITY

### NCAM Machining

The National Center for Advanced Manufacturing (NCAM), a partnership between NASA, the State of Louisiana, Louisiana State University, and the University of New Orleans, provides a vehicle for Michoud tenants to utilize state-of-the-art manufacturing equipment.





## Universal Friction Stir Weld System 6 Axis (UWS1)

- 16 ft. x 21.5 ft. x 10 ft. XYZ travels
- 2-axis gimballed weld head
- 30 ft. rotary table or 6 ft. rotary table (table-on-table)
- Large scale complex contour friction stir weld capability
- Self reacting pin tool capability



## Universal Friction Stir Weld System (UWS2)

- 44.5 ft. x 22.5 ft. x 12 ft. XYZ travels
- 5K lbs - X, 15K lbs - Y & Z Loads
- 22 ft. rotary table & 22 ft. T-Plate area
- Large scale complex contour friction stir weld capability
- Self reacting pin tool capability



## Universal Friction Stir Weld System (RWT3)

- 144 ft. x 22.5 ft. x 12 ft. XYZ travels
- 5K lbs - X, 15K lbs - Y & Z Loads
- (3) 20 ft. rotary table
- Large scale complex contour friction stir weld capability
- Self reacting pin tool capability



## Fiber Placement Machine #1 – 5 axis (FPM1)

- 16.4 ft. x 40 ft. part capacity (80,000 lb.)
- 24 tow, bi-directional, 450°F head
- Cantilevered tool and "Domes on" capability
- Advanced CPS offline programming software



## Fiber Placement Machine #2 7 Axis (FPM2)

- 8 ft. x 20 ft. part capacity (40,000 lb.)
- 24 tow, bi-directional, 500°F head
- "Domes on" capability
- Advanced dexterity, streamlined head
- Capable of complex shapes and female tools
- New advanced CPS offline programming software



## Hi-speed Gantry Machining System 5 Axis (HSMC1)

- 23 ft. x 11.5 ft. x 5 ft. of XYZ travel (8ft. under the spindle)
- 24,000 RPM, 60 HP spindle
- 790 in./min. feed rates
- Siemens 840D CNC control with digital drives
- HSK type hi-speed tooling system w/20 tool automatic tool changer
- Laser tool measuring and part touch probe measuring systems



## Hi-speed Gantry Machining System 7 Axis (HSMC2)

- 32.8 ft. x 13.0 ft. x 11.4 ft. of XYZ travel
- C-axis (Head Rotation)  $\pm 400$  Degrees
- A-axis (Spindle Rotation)  $\pm 110$  Degrees
- 984 in./min. feed rates



## Universal NDE System –10 Axis (NDE)

- Twin 5-axis traveling column configuration
- 24 ft. x 12 ft. x 10 ft. of XYZ travel
- Multiple inspection system capability:
- Pulse echo UT ultrasonic inspection
- Through transmission UT ultrasonic inspection
- Spectroscopy inspection
- Jentec eddy current inspection



National Aeronautics and Space Administration

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