Composite Prototyping Center

CPC

Facility & Capabilities

Now Open
WELCOME
Our Mission

CPC’s core mission was developed in recognition of the growing demand and opportunities in advanced manufacturing using composite material such as carbon fiber, fiberglass and aramid. It is:

To take the best assets available to from a core manufacturing competency in the rapidly growing composite market, while providing companies access to essential training /workforce development, process technologies , prototype manufacturing and test capabilities. Thus enabling these companies to meet the rapidly growing advanced composite manufacturing supply chain needs of prime contractors and OEMs.
Our Primary Objectives

- Establish premier resource for composite prototype production for application across diverse markets, from aerospace, automotive, energy, infrastructure, transportation and leisure goods.
- Equip the CPC with essential production line technologies and staff the center with expert technologist.
- Assist companies to become qualified suppliers to the OEMs and prime contractors for composite components / assemblies.
- Continue to secure government grants and private funding to facilitate CPC’s future growth and development.
- By working closely with local universities and community college, help develop multilevel certificate and degree programs consisting of advanced composite technologies for post secondary and undergraduate students thereby creating a highly-skilled workforce.
• Site Specifications:
  
  – Building: **121 Express Street, Plainview N.Y.**
    
    • Total sq. ft. = 25,500 sq. ft.
      
      – 1<sup>st</sup> floor: 20,000 sq. ft.; 2<sup>nd</sup> floor 5,500 sq. ft.
    
    • Electric power: **2,500 amps /480 volts & 1,200 amps /208 volts**
    
    • Other utilities: **Natural gas, N2, compressed air, vacuum, water**
    
    • Ceiling Height: **20 ft. (clear under roof structure)**
    
    • Fully Air Conditioned
    
    • Shipping Dock and drive - in entrance for large deliveries
    
    • High efficiency LED high bay lighting
    
    • Secured controlled access
2nd Floor Mezzanine

Training Classroom
CPC will support the following processes & functions:

<table>
<thead>
<tr>
<th>Process / Function</th>
<th>Techniques</th>
<th>Tools and Equipment</th>
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<tr>
<td>Automated Fiber Placement / Filament Winding</td>
<td>RTM / VaRTM</td>
<td>Conventional post-machining</td>
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<tr>
<td>Autoclaves, Ovens</td>
<td>Compression Molding, Heated Press</td>
<td>Hand Lay-Up with Laser projection assisted templates and kitting capabilities</td>
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<tr>
<td>Clean Room (Class 100,000)</td>
<td>Single Ply Cutting System with nesting s/w</td>
<td>Test and inspection – NDT and CMM tools and instruments</td>
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<tr>
<td>Composite Repair</td>
<td>Automated / Laser Enabled Kiting Process</td>
<td>s/w Design &amp; Analysis Tools – CATIA, Pro-E &amp; Nastran, Fibersim, etc.</td>
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Automated Fiber Placement Machine: *mfg. by Automated Dynamics*

- Mfg. parts up to 90” long by 48” cross section/diameter
- Thermo-set Head, 4 -1/4” tows
- Thermo-plastic Head, 1 - 0.25” /0.50” tape, in-situ consolidation
- Flat panel capable (48”x 96”)
**Autoclave:** 8ft dia. x 20 ft. long

- 165 psi & 450 deg. F.
- 12 vacuum lines
- 24 TCs
- N2 atmosphere

**Autoclave:** 5 ft. dia. X 8 ft. long

- 300 psi & 800 deg. F.
- 2 vacuum lines
- 4 TCs
- N2 atmosphere
Compression Molding Heated Press *(mfg: Wabash)*

- 250 ton, 800 deg. F, Heated Platen 48” x 48”, 36” stroke
- 100 ton, 800 deg. F, Heated Platen 18” x 18”, 36” stroke
Single Ply Auto Cutter /Laser projection system *(mfg: Gerber)*

- 6ft. x 12 ft. table with laser marker, nesting & kitting s/w
• Vacuum Assist Resin Transfer Molding System
• Filament Winding System
  • Pre-preg and wet processes
  • Capable of fabricating 8 meter long, 5 ft. dia. parts
3D Printing System *(mfg:Stratasys)*

- Rapid Prototyping
- Tool Manufacturing direct from CAD files
- Fast turn around samples
- Significantly reduced cycle time to market
- Lights Fabricating
- Customization simplified
- Eliminate set up time
• **Clean Room:**
  – 1,200 sq. ft.
  – Class 100,000
  – Hand Layout tables
  – Vacuum Bagging tables
  – Laser projection system aids in the following operations:
    • Nesting, picking, kitting and lay up of plies
Test & Inspection Lab (sample of some of the instruments):

- NDT equipment such as:
  - Ultrasonic Inspection (Flaw detection & Bond integrity)
  - Universal Testing Machine
  - Drop Tester
  - Electron Microscope & Cameras

- Coordinate Measuring Machine: *mfg. Faro Arm*

- Available through our strategic partners
  - Environmental Testing
  - Fatigue Testing
• Auxiliary Equipment:
  – Walk-In Oven *(mfg.: Wisconsin)* (6’w x 12’ l x 8’h) @ 800 deg. f.
  – Coupon Oven *(mfg: Wisconsin)* (4’x4’) @1,000 deg f.
  – Walk-In Freezer for storage of thermo-set material
  – Machine Shop for post machining
  – Capabilities to manufacture very large parts
• Composite Training and Education
  – **AMMTIC’s training classroom is equip with:**
    - Dell Workstations (seven)
    - Software Tools:
      - CATIA v5 CAD/CAM with composite module
      - Siemens CAD /CAM (Nastran (FEA) /ANASYS)
      - Fibersim Composite Design
      - Pro-E Wildfire
      - SolidWorks s/w
    - Video Conferencing & webinars
    - Mfg. process equipment networked to enable easy up/down loading of programs and of line programing.
  – *Education Curriculum and certificate programs:*
    - LIFT offers composite design training courses
    - Stony brook University will be offering a minor in composites (Mech. Eng. degree)
    - LIFT collaborating with local colleges on a Composite Technician Certification program.
Advanced Material and Manufacturing Technology
Innovation Center (AMMTIC)

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