



*Composite
Prototyping
Center*



Training Overview at the Composite Prototyping Center (CPC) Winter 2018 Members Meeting IACMI



Composite Prototyping Center is the National Designee for the Department of Energy's Institute for Advanced Composites Manufacturing Innovation's Designated Center for New York and the Northeast Corridor

Plainview, NY... (October 15, 2015)

The Institute for Advanced Composites Manufacturing (IACMI) today signed a Memorandum of Understanding with the Composite Prototyping Center outlining a collaborative arrangement in which both will work to bring advanced composite materials and technologies to the marketplace. It is a major achievement for the CPC which has earned this national recognition as the IACMI's designated center for commercializing advanced composites manufacturing on Long Island, New York State and the broader Northeast corridor. The agreement provides the framework for collaboration in research, product development, commercialization, workforce training and STEM (Science, Technology, Engineering and Math) education.





*Composite
Prototyping
Center*

Our Mission

CPC's core mission was developed in recognition of the growing demand and opportunities in advanced manufacturing using composite materials such as carbon fiber, fiberglass, and aramid.

It is:

To take the best assets available to form a core manufacturing competency in the rapidly growing composite market, while providing companies access to essential training and 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 OEM's.



CPC's Primary Objectives

- Establish premier resources for composite prototype production for applications across diverse markets, including aerospace, automotive, energy, infrastructure, transportation, and leisure goods.
- Equip the CPC with essential production line technologies and staff the center with expert technologists.
- Assist companies to become qualified suppliers to OEMs and prime contractors for composite components / assemblies.
- Continue to secure government grants and private funding to facilitate CPC's future growth and development.
- Work closely with universities and community colleges to help develop multilevel certificate and degree programs consisting of advanced composite technologies for post secondary and undergraduate students thereby creating a highly-skilled workforce.
- Develop and conduct STEM training programs with local high schools.



Composite
Prototyping
Center

Composite Training and Education

CPC's training classroom is equipped 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 hardware and software
- Hardware and software to network to manufacturing process equipment to enable easy up/down loading of programs and online programming



Composite Training and Education

Education Curriculum and Certificate Programs:

- CPC offers introductory and composite design training courses for industry
- Stony Brook University will be offering a minor in composites (Mechanical Engineering degree)
- CPC is an approved CertTec® testing site for the Composite Technician Certification program
- CPC has launched a STEM Composites Initiative with local high schools which includes college credit from Vaughn College



Composite
Prototyping
Center

THE CURRICULUM

The Composite Technician Certification Program is a 60- hour course involving a comprehensive assessment of technician skills and knowledge focused on composites history, fiber reinforcements, matrix systems, and processes related to composite fabrication, inspection, damage assessment and repair common in today's industry.

Competencies Covered:

- Characteristics of Composites
- Fabrication Methods
- Testing, Inspection and Repair
- Health and Safety

CERTIFICATION

The Composite Technician Certification graduate is certified through CerTEC, a nationally recognized certifying agency.



COMPOSITE TECHNICIAN CERTIFICATION PROGRAM





Composite Technician Certification Program

Course Topics

- History of Composites
- Metrics/Measurements
- Characteristics of Composites
- Health, Safety and FOD Prevention
- Manufacturing Processes
- Tooling Design and Fabrication
- Joining Concepts
- Repair of Composites
- Design Practices and Guidelines
- Analysis of Composites
- Testing and Validation
- 3D Printing
- Machine Operations Automated and Manual
- Autoclave Operations and Oven Cure
- Fiber Placement and Filament Winding
- RTM, VARTM and other processes
- Prototyping



Composite Technician Certification Program

Course Lab Projects

- Wet lay-up of laminate panels
- Wet lay-up of honeycomb panels
- Bonding and assembling panels
- Damage and repair of composite honeycomb panels
- Fabricating and testing tensile test coupons
- 3D Printing
- CNC machining operations simulation
- Fabrication and assembly of a composite clip board
- RTM component demonstration
- Final Project design, tool fabrication and part fabrication



Composite
Prototyping
Center

THE CURRICULUM

This course is a 15 hour, four-week program taught by the engineering facility from Vaughn College and CPC Personnel. The curriculum consists of both classroom lectures and hands-on lab experience. Students that successfully complete the course will receive one college credit from Vaughn College.

- Introduction to Composites
- Design with Composites
- Analysis with Composites
- Composite Materials and Processes
- Manufacturing with Composites
- Hot Bond Repair

S.T.E.M. HIGH SCHOOL COMPOSITE TECHNOLOGY PROGRAM





Other Activities

Engagement with Empire State Development/MEP Network

- CPC works with the local MEP (MTRC) to leverage funding to assist SME's in supporting project work that originates at CPC
 - Four projects currently underway
 - MTRC provides approximately 40% reimbursement of project costs
 - Broad range of clean energy industries served – wind turbine, hybrid vehicles, materials development - and others (HVAC, Vision)
- CPC continues to work with MTRC to development additional training modules in composites
- CPC is a standing member of an area-wide Committee focused on workforce development issues and creating solutions to meet local workforce needs in manufacturing