



Connecticut Center for
Advanced Technology, Inc.

Administrative Offices

222 Pitkin Street
East Hartford, CT 06108

860.291.8832

Advanced Manufacturing Center

409 Silver Lane
East Hartford, CT 06118

860.610.0478

www.ccat.us



Connecticut Center for
Advanced Technology, Inc.

**Advanced
Manufacturing
Center**

Your challenges and ideas. Our technology and expertise.

CCAT is known internationally for applying innovative technology in our world-class Advanced Manufacturing Center, where leading-edge technology is showcased, demonstrated, and evaluated. You'll find CCAT's team of experts ready to work with you to tackle your challenges and turn your ideas into reality.

Additive Manufacturing

Precision Machining

Scanning Technology

Applied Engineering & Manufacturing

Workshops

Business Assessments

Export & Cyber Compliance

Qualified Research Center (SBIR, STTR)



“ I gave CCAT a very complex part to optimize. I knew there was opportunity for cycle time reduction, but I didn't expect a 70% improvement. This is huge.

Mark DiLorenzo
Phoenix Manufacturing

ADDITIVE MANUFACTURING

Producing prototypes, repairing components, and building new parts.

Plastic

- ▶ Print ultra-high resolution parts with different degrees of transparency, shading and flexibility using plastic resins including ABS-like, elastomers and polycarbonates
- ▶ Print high resolution nylon parts reinforced with carbon, Kevlar and fiberglass fibers

Metal

- ▶ Print near net shapes with metals including steels, (mild, tool and stainless), alloys of aluminum, nickel, titanium, cobalt and copper, and refractory metals
- ▶ Build new parts, create prototypes
- ▶ Fabricate parts with integrated features and properties

- ▶ Add material to existing metal parts for unique repairs or modifications
- ▶ Perform cladding or surface treatment
- ▶ Create graded and mixed material builds using multiple hopper powder feeds
- ▶ Develop and test your repair process

Technology that delivers

- ▶ 3D Plastic Printing – Projet 5500X, Markforged II
- ▶ 3D Metal Printing - Optomec 850R LENS for controlled atmospheric builds, HRAM for custom High Rate Additive manufacturing system capable of building large parts quickly
- ▶ Hybrid Manufacturing - DMG Mori LASERTEC 65 3D for 3D metal printing and mill/turn capabilities in one machine





“ *As a company known for innovation in the development of advanced manufacturing systems, we recognize CCAT's research and manufacturing technical expertise.*

Richard Grylls, PH.D.
LENS General Manager, Optomec

PRECISION MACHINING

Run better and faster using new technologies that optimize machining and increase your productivity.

Machining Optimization

- ▶ Utilize tool path optimization software to improve material removal rates

CNC Programming

- ▶ Provide CNC programming support

Evaluate Cutting Tools

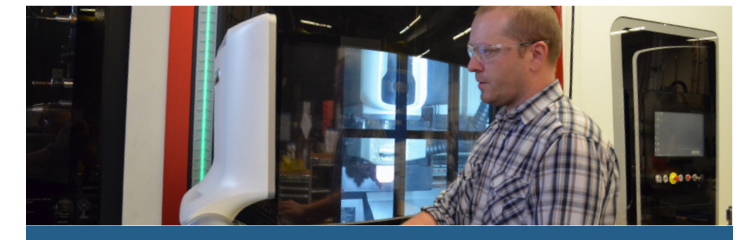
- ▶ Evaluate alternative cutting tools and methods to increase tool life

Evaluate Alternative Machining Technologies

- ▶ Compare your machining capabilities with EDM, ultrasonic or hybrid technology capabilities

Technology that delivers

- ▶ Mill/turn hybrid manufacturing – DMG Mori Lasertec 65 3D
- ▶ Large composite machining – Zimmerman FZ 33 5-axis
- ▶ Ultrasonic machining - DMG Mori 65 mono block 5-axis
- ▶ Simultaneous 5-axis machining with performance monitoring instrumentation that includes a high-speed camera, dynamometer, horsepower monitor - Mazak Variaxis 630-5X-II-T
- ▶ Wire EDM - Sodick SL400G with linear motor drive
- ▶ Machining Optimization software tools – Third Wave, VoluMill



SCANNING TECHNOLOGY

Are you searching for an easy, cost-effective way to get precise product inspection data or create 3D models from existing parts?

At CCAT, you have access to the latest structured light scanning technology, 5 axis coordinate measuring machine, and a computed tomography machine with micro focus capability for your quality inspections and reverse engineering needs.

Structured Light Scanning

- ▶ Quality Control - validate geometric dimensions and tolerance accuracy to 0.0004 inches
- ▶ Reverse Engineering - create 3D CAD models and drawings that capture design intent or exact surface models for form, fit and function analyses
- ▶ Rapid Prototyping – 3D print prototypes from scan
- ▶ Integrated on machine inspection for in-process verification

5 Axis Coordinate Measuring Machine (CMM)

- ▶ 10.10.8 CMM equipped with Renishaw's REVO 5 axis scanning head and Modus software
- ▶ REVO system that delivers high performance tactile scanning, non-contact inspection and surface finish analysis on a single CMM

3D Computed Tomography (CT) X-ray Scanning

- ▶ Advanced Material Analysis
- ▶ Product Quality Compliance/Screening
- ▶ Product Contamination
- ▶ Internal and External Measurements
- ▶ Density Analysis

Technology that delivers

- ▶ Structured light scanner – M3DI SLS-SE and MICRO 3D scanner
- ▶ Blue light scanner - GOM ATOS Triple scanner with 5108 ScanBox *(owned & provided by the state of CT)*
- ▶ 3D CT X-ray scanner - NSI X-5000 *(owned & provided by the state of CT)*
- ▶ CMM - Powered by Renishaw



Rely on CCAT's experts to lead and conduct applied engineering and manufacturing research programs.

CCAT's technology experts provide applied engineering and manufacturing services as well as project planning and management in the areas of aerospace, medical and commercial manufacturing, and energy solutions.

Materials

- ▶ Aerospace alloys
- ▶ Refractory metals
- ▶ Polymer/organic matrix composites
- ▶ Ceramics
- ▶ Ceramic matrix composites

Industries

- ▶ Aerospace
- ▶ Medical
- ▶ Commercial

Leadership in national projects

- ▶ America Makes
- ▶ US Air Force
- ▶ Clean Energy Smart Manufacturing Innovation Institute (CESM II national test bed)
- ▶ National Aerospace Leadership Initiative (NALI)



Keeping up with the latest manufacturing advances and determining if they are right for your business and ongoing challenges.

CCAT's Technology Workshops make it easy to discover what's new by showcasing leading-edge machines, tooling, and software. You learn from experts about innovative ways to increase productivity, ensure quality, and improve your bottom line.

Designed to fit your schedule and meet your needs

- ▶ Workshops are held throughout the year
- ▶ Partial day sessions minimize your time away from work
- ▶ Hands-on demonstrations enhance learning about new methods and technologies



BUSINESS ASSESSMENTS

A candid, comprehensive evaluation of your manufacturing technology and operations.

Examine your business

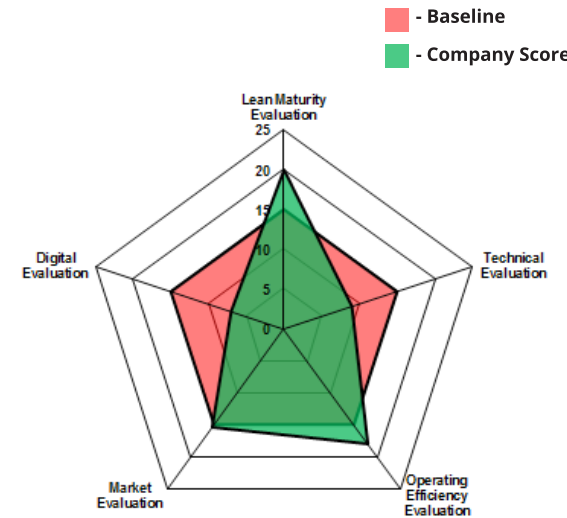
- ▶ Our assessment focuses on five areas:
- ▶ Technology
- ▶ Operating efficiency
- ▶ Lean maturity
- ▶ Digital solutions
- ▶ Market position

Review your ratings

- ▶ One hundred attributes are measured relating to equipment, work instructions, quality system, product/process technology, information technology, innovation, capacity, energy management, metrics, on-time delivery, clean/green, inventory, workforce, leadership, workplace, processes, part management, product life-cycle, and markets served

Create a growth strategy

- ▶ Your customized assessment identifies opportunities for improvement, projects future performance and helps create a strategy for steady, successful growth



“Not only do they [CCAT] have access to the latest technology and manufacturing processes but also have the technical staff to help figure out what it is you actually need.”

Erik Herold
Lead Mechanical Engineer, Dynamo Micropower

