

SUCCESS STORY

3029

*ACADEMI training delivered to members of the CCDC Aviation and Missile Center*  
**Army personnel gain greater knowledge base for additive manufacturing processes**



*Army personnel participating in the training workshop.*

**PROBLEM**

3D printing allows for attributes that include, light-weighting, enhanced design and aesthetics, faster lead times for critical components as well as unique materials. As this new technology continues to emerge and develop across the Army, leadership has designated the implementation of additive manufacturing as a high priority. The enhanced capability that additive manufacturing brings can better equip the warfighter through supply chain independence, closely tailored solutions specific to their needs as well as increased capability overall.

**OBJECTIVE**

The purpose of this effort was to deliver training related to Additive Manufacturing for Metals and Alloys for the benefit of the CCDC Aviation and Missile Center (AvMC). The training was to be consistent with previous Advanced Curriculum in Additive Design, Engineering and Manufacturing Innovation (ACADEMI) courses offered by the National Center for Defense Manufacturing and Machining (NCDMM) and to be held at the America Makes facility or the adjacent Building 5 facility in Youngstown, OH. The goal of the project was to deliver training that selected engineers would be capable of designing and additively manufacturing metal aviation and missile components for research, development, and prototyping.



**AMERICA MAKES  
 TECHNOLOGY  
 DEVELOPMENT  
 ROADMAP**

This project aligns to:



PROCESS

**ASTM PROCESS  
 CATEGORY:**  
 N/A

**EQUIPMENT:**  
 N/A

**MATERIAL:**  
 N/A

## TECHNICAL APPROACH

NCDMM/America Makes adapted the previously developed ACADEMI Additive Manufacturing education and training program for selected individuals within the CCDC AvMC MS&T workforce. NCDMM/America Makes worked with the Lanterman Group to collect and deploy current best practices of content and training to provide a course on additive manufacturing of metals and alloys. In execution of this project the team assembled the best training resources offered by America Makes project partners and industry experts. They then built upon several previous projects within their education and workforce development portfolio to provide the optimum ACADEMI training experience for CCDC AvMC personnel. The class utilized CAD and slicing software that was approved by CCDC AvMC leadership, as well as metal additive manufacturing equipment available within the America Makes innovation center and the associated Building 5 facility. A pre-training survey was sent to attendees to identify the skill levels of the attendees and desired outcomes of the training class.

## ACCOMPLISHMENTS

As a result of the program, eight attendees underwent the established ACADEMI training and participated in hands-on exercises and collaborative discussions with experts. The participants were able to have conversations with industry experts specializing in design, materials, process, etc. Each was given the chance to prepare and print a metal part on the ProX DMP 320 printer. An assessment was completed to determine whether the participants improved their skills after the training. The results showed that on average, every AM skill tested improved due to the training. The training was a success for all those involved because of the participants' similar interests and expectations. The training lasted 10 hours with a 3D Systems instructor present, which provided a higher-quality experience. Lastly, this was the first time an ACADEMI class was able to successfully print a metal build. Each participant provided feedback for further improvement to the training course and all were highly satisfied at the completion of the training.

## PROJECT END DATE

December 2019

## DELIVERABLES

- Training needs analysis
- Course syllabus
- Course content
- Two workshops
- Final Report

## FUNDING

**\$66,500 total project budget**

## PROJECT PARTICIPANTS

### Project Principal:

NCDMM/America Makes

### Other Project Participants:

The Lanterman Group

### Public Participants:

U.S. Department of Defense