



National Composites Center  
2000 Composite Drive  
Kettering, Ohio, USA  
45420

28 January 2014

*Via email to: TAG@development.ohio.gov*

**Letter of Intent**  
**Technology Asset Grant Program**

*Lead Applicant:* National Composites Center

*Address:* 2000 Composite Drive  
Kettering, OH 45420

*Phone Number:* 937-297-9450

*Contact Person:* Lisa Novelli

*Email Address:* Lnovelli@compositecenter.org

*Collaborators:* Airbus S.A.S  
Adisco, Inc.  
Gosiger, Inc.  
Lord Corporation  
Magellan Aerospace  
Noble Tool Corp.

*Project Title:* Materials Manufacturing Technology Hub

*Requested Funds:* \$1,500,000

*Use of Grant Funds:* The grant funds will be used for the acquisition and/or installation of new technical equipment as well as to support facility construction/renovation.

## **PROJECT SUMMARY**

### **INTRODUCTION**

With aerospace manufacturing procurements expected to double within the next ten years, considerable strain will be placed upon suppliers to meet growing global demand. Having a significant stake in the aerospace industry, Ohio must leverage its strong manufacturing legacy to increase the competitiveness of its supply chain.

The National Composites Center (NCC), in collaboration with Airbus S.A.S. (Airbus), has devised a program to enhance Ohio and U.S.-based aerospace manufacturing through an unconventional approach to supply chain and workforce development. The Materials Manufacturing Technology Hub (MMaTH) stimulates economic growth by empowering business diversification and vertical progression within the aerospace manufacturing supply chain.

MMaTH exceeds current initiatives to help improve the overall state of American manufacturing in materials CNC machining. By addressing weaknesses that hinder workforce development and supplier certification and by creating a unique collaborative effort between academia and diverse industry interests, MMaTH provides a breakthrough opportunity to galvanize manufacturing within Ohio and the United States.

### **PROBLEM STATEMENT**

The need for MMaTH is perpetuated by a supply chain at risk of being unable to support the present and future needs for advanced CNC machining. The number of qualified aerospace manufacturers has dwindled significantly over the years. Manufacturers previously engaged in aerospace and defense work have shifted their focus to other areas, such as the growing medical device industry, or went out of business due to the downturn. Many suppliers are hesitant to invest more in aerospace machining due to a perceived history related to cyclical industry downturns and decreasing labor force. Economic conditions and skill-set deficiencies have precluded significant investments within the past several years in capital, personnel, and quality certification. The lack of an experienced workforce, inability to grow, and antiquated technology will force less financially stable companies to exit the industry. These small businesses are often considered the backbone of regional manufacturing. Their loss would considerably impact the state's ability to compete.

The future success and growth of aerospace manufacturing will be dependent upon those companies that can respond quickly to demand (speed to market) and market changes, utilize technology for improved productivity, and demonstrate unmatched flexibility (competitiveness). In today's environment, primes are looking to the supply base for up to 80% of the required

process and product innovation. This requires increased knowledge and capabilities on behalf of the suppliers, as well as better collaboration, interdisciplinary integration, and communication throughout the entire supply base. Suppliers to aircraft original equipment manufacturers (OEM) are likely to be challenged to keep pace with production requirements and are expected to invest in skills development, equipment, tooling, and manufacturing capacity.

The necessity of comprehensive supply chain development led to a partnership between Airbus and the National Composites Center via a Memorandum of Understanding signed on October 24, 2012. The MMaTH concept arose from an investigation of the Ohio and U.S. materials processing supply chain to support Airbus procurement needs. It was determined that Ohio suppliers could become more competitive if they had vital resources made available to them in the areas of technology, workforce development, and industry knowledge.

## **PROJECT GOALS AND OBJECTIVES**

The goal of the MMaTH program is to provide economic development opportunities within the American manufacturing industry and specifically Ohio. It seeks to create and retain jobs, improve competitive readiness of small to medium sized companies, augment workforce development efforts, and allow competitive opportunities for supply chain entry or advancement, and enable overall aerospace industry growth.

Focused on CNC machining of aerospace components, MMaTH will offer resources for suppliers in strategic areas such as Engineering Technology, Training (Workforce Development), Business Analytics, and Supply Chain Development. These tactical sections address issues that have been widely identified as barriers currently facing the industry.

Specific objectives for the MMaTH program include the following:

- Develop solutions for Airbus and Tier 1 suppliers in commercial aerospace part issues, i.e. cost reductions, new production methodologies, improved quality, efficient machining, manufacturing repeatability
- Help suppliers advance or gain entry into the aerospace market through certification and networking
- Create new and enhance existing manufacturing jobs through apprenticeship training

Achieving these objectives will provide a path for expansion of the program as well as improve the competitiveness of Ohio companies to attain economic growth.

## **TECHNICAL APPROACH AND WORK PLAN**

The MMaTH program (Hub) is a project administered by NCC to expand and strengthen Ohio's supply chain in CNC machining. The predominant focus of the center is the development of a CNC machining/forming supply chain to support current needs as well as the aerospace market surge.

As a concentrated center of excellence dedicated to materials manufacturing, MMaTH builds upon a strong Ohio manufacturing legacy, enhancing the existing supply chain and increasing business attraction. The Hub will be administered by the National Composites Center (NCC), a 503(c)3 not-for-profit applied research and development organization. Founded in 1996 as one of the first centers of its kind in the United States, NCC offers a rich history of expertise and achievements in advanced materials processing and manufacturing development. As a result of its work with private industry as well as university collaboration, NCC has proven to be a valuable asset for economic development in Ohio through company attraction, job creation, and business attraction and incubation.

NCC will serve as the Program Manager, leading a centralized structure to manage strategic activities as well as coordinate efforts from Hub participants. With regional support offered by Montgomery County and the City of Kettering, the Hub will be located within the Kettering Business Park which offers ample space for offices and manufacturing. The offices will house business operations such as accounting, human resources, engineering, production planning, and program management. The manufacturing area includes adequate plant space for equipment, tooling, inspection, and production work areas. The Kettering Business Park is an ideal setting that can accommodate business attraction related to the MMaTH program.

## **COMMERCIAL MATURITY OF THE TECHNOLOGY/MARKET ACCEPTANCE**

MMaTH ("Hub") provides a definitive environment for an improved learning experience that meets the needs of industry. This program will be the first to gather expertise from a unique group of resources spanning vital facets of manufacturing and machining. Representatives from machine builders, tooling designers, CNC programming, aerospace procurement, quality compliance, and information technology will unite to solve parts problems for Airbus and Tier 1 suppliers, perform as trainers, and serve as business consultants. No other center in the country delivers this type of synergistic methodology. The Hub is designed by industry, for industry, to bolster manufacturing efforts in Ohio and the U.S.

## **PROJECTED IMPACTS**

Knowledge integration is a key component for creating advancements in aerospace engineering technology. The unification of a cohesive group of subject matter experts

representative of the CNC parts manufacturing community to work collaboratively within the Hub is a key strategy for ensuring project success. The ability to improve and advance aerospace engineering technology would yield the following MMaTH program benefits to Airbus and other participants:

- Cost reduction and increased throughput due to more efficient machining, reducing cycle time
- Cost reduction attained by the ability to machine materials or parts features that were not previously possible
- New production methods and materials due to improved machining processes
- Weight reduction enabled by new materials and machining processes
- Resolution of quality issues through new machining methods
- Improved product performance resulting from improved machining capabilities
- Testing of new design concepts
- Technology intellectual property (IP) in innovative processes (trade secret or patentable)

## **SUSTAINABILITY**

The flexibility offered by the MMaTH program allows for incremental growth and investment for sustainability. Scalability allows for careful analysis of capital and operating requirements and return on investment (ROI).

The program model is scalable and progresses through various phases. Phase I establishes a foundation for anticipated growth and sustainability and sets the stage to develop expansion objectives. The ROI can be derived based on the success of Phase I to achieve optimal levels of scale-up during subsequent phases.

The ultimate goal would be to have MMaTH recognized as a world class center and vital resource for aerospace supply chain development. Economic growth in Ohio will be realized through the creation of jobs for trained workers, company expansions to meet market demand, increased revenues for suppliers, and business attraction.