

*Proven strategies help to achieve process optimizations for DoD, manufacturers*

## **Assessments yield cost savings and increase operating efficiencies**



*Collectively, NCDMM clients have realized more than half a billion dollars in savings through NCDMM assessment projects.*

### **PROBLEM**

Manufacturers of all sizes continually face optimization and efficiency challenges that affect productivity. These challenges can also result in longer lead times and increased costs.

### **OBJECTIVE**

Manufacturing assessments typically seek to reduce overhead costs, increase operational efficiency, and improve resource management. While these objectives may seem large and difficult to define, the goal of the NCDMM team is to work with clients at their facilities to pinpoint exact focus areas prior to assessments. Regardless of the specific objectives, the assessments are performed with a comprehensive wide view of an operation to determine where improvements can be made no matter how small or incremental they may seem.

### **TECHNICAL APPROACH**

The NCDMM methodology uses a fundamental and systematic approach, utilizing industry best practices as a benchmark. This allows assessment at the facility as well as the production cell levels, and down to the manufacturing process, material, and machine levels. Assessments are based on a methodology developed for the U.S. Department of Defense (DoD) and contractor facilities to optimize the efficiency of production lines and building envelopes. Areas typically investigated to achieve process optimization

- Reverse Engineering and Model Generation
- Tooling and work holding
- Control and integration systems
- Material selection and handling
- Product routing
- Machine and process optimization
- Waste and scrap reduction
- Process energy use

The process begins with a facility walk through to provide the manufacturer with an overview and brief description of areas that could benefit from additional investigation. The identified areas are discussed and assessments are outlined along with identified potential projects. The resulting assessment provides a qualitative and quantitative understanding of the focus areas and the operation as a whole. Also included are recommendations and justification for the improvement as related to efficiency, cost savings, and productivity.

This project aligns to:



**Manufacturing Assessments**

#### **PROJECT END DATE**

Ongoing

*Determining baselines while implementing advanced technologies*

## ACCOMPLISHMENTS

Drawing on our extensive background in manufacturing, NCDMM's focus when conducting manufacturing assessments is to implement existing best practices and develop new ones to improve productivity, reduce costs, and increase efficiency. Additionally, NCDMM's assessments will often uncover areas to improve sustainability such as process energy consumption and material usage. Collectively, NCDMM clients have realized more than half a billion dollars in savings through assessment projects.

Below are three company successes:

### **GKN Aerospace: Proven Feasibility of Machine Cell**

- In response to a request by the U.S. Air Force, GKN Aerospace, a global engineering firm, and NCDMM, collected and tested data to demonstrate the effectiveness of a coolant recycling process. GKN conducted testing while NCDMM provided the research and analysis expertise.
- The assessment project realized a 20% decrease in power consumption, 33% increase in tool life, 56% reduction in cycle time, 11% reduction in water consumption; and a cost savings of \$6,000 per month with the implementation of a new cutting fluid recycling process.

### **Plasma Processes, Inc. (PPI): Process Optimization of Missile Component Manufacturing**

- PPI, a supplier of advanced materials solutions, based in Huntsville, AL, reduced the cost of its pintle/throat control mechanism which helps to propel tactical missiles. They worked with NCDMM and the Aviation and Missile Research, Development and Engineering Center (AMRDEC) to replace solid rhenium with a rhenium coating.
- In addition to reducing control mechanism production costs by 90%, the use of rhenium coating instead of solid rhenium also resulted in a 200% annual production increase and an 80% weight reduction in the mechanism.

### **Advanced Manufacturer in Southwestern Pennsylvania: Sustainability Improvements**

- NCDMM conducted a facility assessment and developed new manufacturing best practices for time savings, energy consumption reduction, and raw materials efficiency.
- Tool path optimization improvements yielded a 10-30% in time savings; 25-55% reduction in energy consumption, 30-40% reduction in cycle time, and 15-30% reduction in energy consumption – all of which led to a significant annual cost savings.

## PROJECT PARTICIPANTS

### **Project Principal:**

National Center for Defense  
Manufacturing & Machining (NCDMM)

### **Public Participants:**

U.S. Department of Defense

### **About NCDMM**

NCDMM delivers innovative and collaborative manufacturing solutions that enhance our nation's workforce and economic competitiveness. NCDMM has extensive knowledge and depth in manufacturing areas—both commercial and defense—continually innovate, improve, and advance manufacturing technologies and methodologies. Our experienced team specializes in identifying the needs, players, technologies, and processes to attain optimal solutions for our customers.

We connect the dots. That's the NCDMM methodology. NCDMM also manages America Makes and the V4 Institute and is the cornerstone of the Manufacturing Technology Deployment Group, Inc. (MTDG). To learn more, visit [ncdmm.org](http://ncdmm.org).