Available Resources to Business for State-of-the-Art Manufacturing

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Deliver optimized manufacturing solutions that enhance the quality, affordability, maintainability, and rapid deployment of existing and yet-to-be developed defense systems. Collaborate with government, industrial, and academic organizations to promote the implementation of best practices to key stakeholders through the development and delivery of disciplined training, advanced technologies, and methodologies.

Created as a non-profit organization to develop and deliver manufacturing solutions to the Department of Defense and its industrial base. The successes of the NCDMM help assure the readiness and sustainment of needed defense systems. These successes are widely recognized by Air Force, Army, Marine Corps, and Navy organizations as well as their contractors.
About the NCDMM

**Primary Program Sponsor**
- Manufacturing, Science and Technology (MST) Division of the Aviation and Missile Research, Development and Engineering Center (AMRDEC) – Huntsville, AL

**Customer Base**
- DoD Facilities – Depots, Arsenals, Shipyards, etc.
- Primes and tiered suppliers – Lockheed Martin, Boeing, BAE Systems, etc.
- Job Shops

**Locations**

NCDMM Headquarters on campus of Alliance Partner Kennametal Inc., Latrobe, PA

Advanced Manufacturing Laboratory located in Derry, PA

Letterkenny office located in the Letterkenny Industrial Development Authority Building, Chambersburg, PA
The Team

Customer – DoD and Suppliers

Alliance Partners (AP’s)

- Design
- Government Labs
- Cutting Tool Providers
- Diagnostic / Inspection
- Manufacturing Technology
- Workholding
- Machine Tools
- Process Optimization
- Research Universities
- Software
- Raw Material Providers

NCDMM Organization

2008 NCDMM Alliance Partner Summit
Army Materiel Command Involvement

**Depots**

**Red River**
- Site Assessment

**Anniston**
- HMMWV Armor Plate Drilling
- M1 Tank Seal Ring

**Tobyhanna**
- NVG Sheet Metal Clip Custom Metal Forming Machine
- Engineering Service

**Corpus Christi**
- Evaluation of Machining Issues
- UH-60 BIM Blanket Tap Test Evaluation
- UH-60 BIM Blanket Skin Removal Evaluation
- T-55 Compressor Rotor Turn Time Reduction

**Arsenals**

**Picatinny**
- Excalibur JUMPED Process

**Redstone**
- Contract Management
- PIF JUMPED Process

**Rock Island**
- Site Assessment
- HMMWV Drill Kits
- M119A1 Howitzer Trunnion Optimization
- Training

**Watervliet**
- FCS 120mm Gun Barrel Engineering Support
- Improved Boring of Large Caliber Cannon Tubes

**Pine Bluff**
- Facility Review

**Ammunition Plants**

**Milan**
- AMC Rapid Review Team Assessment

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**Selected project examples**
Aero-Based Weapon Systems

- Advanced Anti-Radiation Guided Missile (AARGM)
- Advanced Medium Range Air-to-Air Missile (AMRAM)
- Advanced Precision Kill Weapon System (APKWS)
- AIM-9 (Sidewinder) Missile
- AH-64 Apache Helicopter
- Attack Reconnaissance Helicopter (ARH)
- C17 Globemaster Transport
- CH-47 Chinook Helicopter
- CH-53 Sea Stallion Helicopter
- F-16 Falcon
- F-18 Hornet
- F-22 Raptor
- F-35 /JSF Joint Strike Fighter
- Future Scout and Cavalry System (FSCS)
- Global Hawk Unmanned Aerial Vehicle
- HH-47 CSAR-X
- Loitering Attack Missile (LAM)
- Non-Line of Sight (N-LOS) Weapons
- PATRIOT Missile System
- Precision Attack Missile (PAM)
- Targeting Systems
- UH-60 Blackhawk Helicopter
Land-Based Weapon Systems

- 105mm, 120mm, 155mm and M119A1 Howitzers
- XM 982 Excalibur Guided Artillery
- Expeditionary Fighting Vehicle (EFV)
- FCS UGV MULE
- HMMWV Up Armor
- M1 Abrams Tank
- M2A3 Bradley Fighting Vehicle
- M88A2 HERCULES Improved Recovery Vehicle
- Night Vision Goggles
1. **ENGINEERING:** Engage with the DoD and DoD supply base to implement new methodologies and “affordable” solutions that reduce/avoid cost and reduce lead times

2. **TRAINING:** Transfer these advanced solutions and knowledge to DoD, DoD suppliers and U.S. based manufactures through training programs, seminars and technical publications

3. **JOB SHOPS:** Enable job shops to better support DoD and DoD Prime outsourcing opportunities
**Impact Examples**

- **Chinook - Bulkhead Optimization**
  - Objective: Reduce weight and improve reliability of floor frame bulkhead
  - Impact: 15% Weight Reduction

- **795 Armor Drill Kits – OIF/OEF/CONUS**
  - Objective: Provide Armor Drill Kit to Drill Up Armor in the Field
  - Impact: Reduced installation time by 30%

- **Navy Propulsion Shaft Machining**
  - Objective: Reduce shaft taper inspection time from 74 man hours to 24
  - Impact/Cost Avoidance: $8M

- **Picatinny Arsenal XM982 Excalibur**
  - Objective: Eliminate a production bottleneck from 40 hours/part to 1.5 hours/part
  - Impact/Cost Avoidance: $75M

- **Black Hawk Ti Rotor Component**
  - Objective: Improve manufacturability from 60 to 95 pieces/week
  - Impact/Cost Avoidance: $2.2M

- **Edge-of-Part Composite**
  - Objective: Reduce cost of trimming composite wing skins
  - Impact/Cost Avoidance: $225M

**Cost Savings/Avoidance To-Date: > $478 million**
Core Initiative #2 Training Programs

- Are You At Your Speed Limit?
- Machine Tool Performance Analysis & Improvements
- Holding Onto Your Future...Quick Change Workholding and Fixturing for Today’s Competitive Shop
- Metalcutting Application Engineering
- Hard Turning Made Easy
- Threadmilling
- Productivity Under Pressure
- Programming and Verifying the Future
- When to Five Axis Machine
- Tool Holding, Measuring and Inspection
- Is Hard Machining Really That Hard?
- The Art of Reverse Engineering
- Portable CMM
- Metal Cutting Applications
- Lathe & Milling Applications
- Milling Applications
- Cutting Tool Materials
- Lathe Applications
- Haas Emulator Training
- GD & T
- Blue Print Reading & Quality Inspection Techniques
- Operator Performed Maintenance
- Certified Metal Cutting Professional Program

Participating To-Date: >450 people, >141 organizations, in 25 states
Objective

Enable job shops to better support defense outsourcing opportunities

Job Shop Consortium

• Established in western PA
• A national program
• Over 87 various-sized manufacturing firms
• Many firms classified as small disadvantaged businesses HZ, WO, VO, 8A, DV and others
National Efforts

Expand NCDMM Efforts

- Transition NCDMM’s western PA Small Business model - Nationally

NCDMM has contributed to more than $150 million in western PA defense work
NCDMM Manufacturing Solutions

NCDMM Small Shop Efforts
• Assess area manufactures capabilities and capacities
• Provide technology awareness and training programs
• Assist in implementing advanced technologies
• Look for potential opportunities and provide guidance for shops

What steps you can take to engage and obtain DoD work
1. CCR Registration, CAGE Code
2. Work with your local PTAC
3. DLA training in Columbus, Oh. “TKO”
Virtual Opportunity Information Center

Your **ONE** Source for Defense Manufacturing Opportunities

**Features & Benefits**
- Build your proposal inside of VOICe
- RFPs and RFQs sorted by shop capabilities
  - Advertise your shop services
  - Locate partners to complete your bid

**Our Mission:** Develop a Virtual Bid Board that matches manufacturing out-sourcing needs of large defense contractors with the capabilities of job shops.
Highlighted Benefits

• 132 projects completed to date
• $480M savings/cost avoidance
• Manufacturing Consortium consists of 87 shops of all sizes and capabilities – provide national exposure to prime, tier, DoD outsourcing opportunities
• Delivered technology training and awareness programs involving over 450 personnel from over 141 organizations across 25 states
• Supported advanced DoD training with Industrial College of the Armed Forces (ICAF) and Depot and Arsenal Executive Leadership Program (DAELP)
Acknowledgement

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and the

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