Advanced Methods for Manufacturing (AMM)

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AMM Vision and Goals

**Vision**
- To improve the methods by which nuclear equipment, components, and plants are manufactured, fabricated, and assembled by utilizing practices found in industries such as oil, aircraft, and shipbuilding

**Goal**
- To reduce cost and schedule for new nuclear plant construction
- To make fabrication of nuclear power plant (NPP) components faster, cheaper and more reliable
Objective: To promote efficiency and the effective use of resources.

Open to Universities, Industry and National Laboratories

Important Dates
- Full Applications Due: February 15, 2017

NSUF-Infrastructure.inl.gov

FY 2012: 4 awards @ $3.03M
FY 2013: 2 awards @ $0.08M
FY 2014: 3 awards @ $2.40M
FY 2015: 4 awards @ $3.08M
FY 2016: 4 awards @ $2.80M
NEET-1 FOA Technical Focus Areas

1. Factory and Field Fabrication Techniques

2. Advances in Manufacturing Processes for components
1. Advanced and innovative manufacturing techniques for irradiation testing to demonstrate performance
Additive Manufacturing


- Laser Direct Manufacturing of Nuclear Power Components Using Radiation Tolerant Alloys – Lockheed Martin (complete)

- Environmental Cracking and Irradiation Resistant Stainless Steel by Additive Manufacturing – General Electric Global Research (10/1/2015 – 9/30/2017)

- Advanced Onsite Fabrication of Continuous Large-Scale Structures – Idaho National Laboratory (10/2/2015 – 10/1/2018)
Additive Manufacturing


- Enhancing Irradiation Tolerance of Steels via Nanostructuring by Innovative Manufacturing Techniques – Idaho State University (10/1/2016 – 9/30/2021)

- Irradiation Performance Testing of Specimens Produced by Commercially Available Additive Manufacturing Techniques – Colorado School of Mines (10/1/2016 – 9/30/2020)
- Monitoring and Control of the Hybrid Laser-GMAW Process – Idaho National Laboratory (complete)

Concrete Materials and Rebar Innovations

- Modular Connection Technologies for SC Walls of SMRs – Purdue University (complete)
- Ultra-High-Performance Concrete and Advanced Manufacturing Methods for Modular Construction – University of Houston (complete)
- Self-Consolidating Concrete Construction for Modular Units – Georgia Institute of Technology (complete)
- Improvement of Design Codes to Account for Accident Thermal Effects on Seismic Performance – Purdue University (10/1/2014 – 9/30/2017)
- Periodic Material-Based Seismic Base Isolators for Small Modular Reactors – University of Houston (10/1/2014 – 9/30/2017)
- Prefabricated High-Strength Rebar Systems with High-Performance Concrete for Accelerated Construction of Nuclear Concrete Structures – University of Notre Dame (10/1/2015 – 9/30/2018)
Surface Modifications and Cladding Processes

- Advanced surface plasma nitriding for development of corrosion resistance and accident tolerant fuel cladding – Texas A&M University (10/1/2015 – 9/30/2018)
- All-Position Surface Cladding and Modification by Solid-State Friction Stir Additive Manufacturing (FSAM) – Oak Ridge National Laboratory (10/1/2016 – 9/30/2018)
Data Configuration Management


- Geo-Referenced, UAV-based 3D Surveying System for Precision Construction – **Voxtel, Inc.** (complete)
AMM program has competitively awarded R&D since FY2012

Areas currently supported include:
- Concrete Technologies
- Additive Manufacturing
- Welding and Joining Innovations
- Surface Modifications and Cladding Processes
- Data Configuration Management

New FY 2016 projects were announced June 14, 2016

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