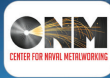


ADVANCED MANUFACTURING CHALLENGE

JUNE 20-21, 2023 | NATIONAL HARBOR, MD

In Partnership with



ATI Advanced Manufacturing Challenge

Join the nation's largest Advanced Manufacturing Acceleration program, connecting top fabrication technologies aligned with our nation's most critical challenges from the Navy Manufacturing Technology Program (ManTech). Pitch your technical project proposal to major OEMs and military leadership, representing multi-billion in funded projects seeking dual-use solutions aligned with Naval focused investment areas.

Contractual Disclaimer: *In addition to, and separate from the TechConnect World event in June, responses from industry may also be considered by ATI as market research information in support of the Navy ManTech portfolio. Responses received will not be considered as the basis for future contract award.*

Focused Areas Include:

Fleet Fabrication and Sustainment Technologies

Ongoing research and development activities are supporting the advancement of Navy ship (sub & surface) fabrication, including hull structure, shaping, and materials, encompasses the use of innovative design, materials selection, and total systems integration to significantly improve performance, payload capacity, and stealth while improving manufacturability, reducing costs, and speed to fleet. Performance goals include greater speed for the same power input by reducing drag, greater stealth through the reduction of acoustic and no acoustic signatures, and simplified fabrication using creative structural design and advanced materials.

Large scale automation is of particular interest to replace or enhance traditional artisan crafts and enable more standardized, repeatable, and expeditious processes in manufacturing. Specifically for repair, technologies that shorten repair periods, allow for at-sea shipboard repairs, and extend the life of critical components, and reduce the cost at repair facilities are essential to increasing the availability of ships.

Advanced/Novel Materials

Ongoing research and development activities are supporting the advancement of materials used across all weapon system programs. This includes improved material performance, decreased leadtimes of critical components, weight reductions, improved manufacturing throughput, etc.

Focused Areas Include *Continued*:

Additive Manufacturing

Advancement of additive manufacturing materials and processes and integration of additively manufactured components for use in all Navy applications remains a high priority for all ongoing research and development programs. This includes increased use of polymer and metal additive manufacturing to replace traditional long lead-time procurement of traditional forged or cast parts, use in tooling and fixturing, rapid prototyping, and in the design and development of critical and complex components.

Swarm / Unmanned / Autonomous Vehicle Production

A swarm is a group of unmanned vehicles that enable intra-vehicle communication and coordination of activities. Programs are evaluating and recommending improvements to the planned manufacturing process in order to develop this technology for the fleet. Additionally, ongoing research is being conducted to investigate ways to improve electronic communication packages, electronic interfaces between sensors and control algorithms, and high-precision speed management of drone propulsion systems.

Hypersonic Fabrication

Programs are focusing on more rapid production of critical hypersonic products and stabilization of the supply of critical hypersonics. These efforts include technologies required in the manufacturing of advanced hypersonic materials and components and to accelerate the manufacturing process for current and future hypersonic programs.

Energetics Production Improvement

Ongoing research and development activities are focusing on more rapid production of critical energetic products and stabilization of the supply of critical energetics and energetic materials. These efforts include the use of additive manufacturing to produce propellants, incorporating an advanced flow reactor to accelerate the manufacturing process for needed munitions, and the development of advanced mixing methods for igniter compounds that reduce the risk of accidental detonation and facility damage

High Energy Laser (HEL) Weapon Systems / Directed Energy

Future implementation of high-powered laser systems requires that power switches possess less weight and be available at a reduced cost. In addition, the quality and cost of ship-board spinel optical windows must improve. A key objective of ongoing research is to produce a fieldable system at an accelerated rate. Other initiatives include the development of a rapid manufacturing process for beam expanders using emergent hybrid materials, alternate sources and methods to apply gold for reflective coatings, an advanced production capability of off-axis mirrors, and easily replaceable optical assemblies for field repair.

Navy Sustainment Supply Chain

A top priority is to improve the overall Navy supply chain including logistics, acquisition, and material support. These efforts aim to generate readiness and sustainment throughout the Navy supply chain by decreasing material and part lead times, reducing cost, improving fleet repair functions, and updating supply chain management operations to increase information exchange opportunities between OEM's and supply chain.

Specific Technologies of Interest Applicable to all Focus Areas:

Robotics

- Increased use of intelligent robotics in all phases of heavy large-scale manufacturing,
 - Robotics e.g. Robotic welding and assembly, applications of COBOTS
 - Drones and remote operated devices
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IT/Digital/Virtual/Augmented Reality

- Industry 4.0+/Shipyards 4.0+ enabling technologies
 - 3D immersive model/digital twin technology
 - "Model to machine" enabling applications
 - Scanning technologies for design compliance
 - Low ambient light augmented reality capability
 - Innovative training tools/environments
 - Shipyards IT and communications infrastructure
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Artificial Intelligence (AI) & Machine Learning (ML)

- Machine vision/recognition
 - Automatic Identification and Data Capture (AIDC)
 - AI generated design
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Advanced Manufacturing Technologies

- Additive manufacturing of complex structural shapes
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Shipbuilder Enhancement

- Wearable device augmentation
- Worker safety enhancement
- Human augmentation technologies