U.S. DEPARTMENT OF ENERGY | Nuclear Energy

Advanced Methods for Manufacturing

Alison Krager
Office of Nuclear Energy
U.S. Department of Energy

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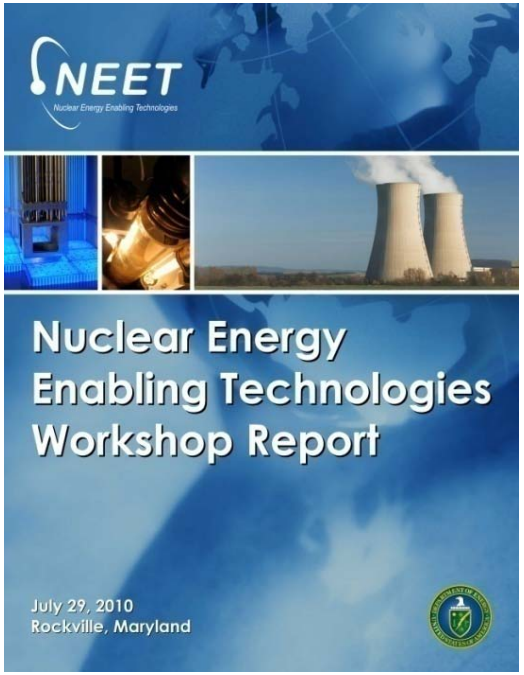
AMM Vision and Goals

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



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NEET-AMM FOA Technical Focus Areas

- **Factory and Field Fabrication Techniques**
- **Assembly and Material Innovation to Enhance Modular Building Techniques**
- **Advances in Modular Construction**

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Field and Factory Fabrication Techniques

- **Strength assistance tooling for factory and field workers**
  - Flexibility of the human body but increased strength and mobility
- **Advanced fabrication machines for rebar mat development and placement**
  - Take input from design information generated during design/engineering tasks
  - Be used to position assemblies in either modules or in the proper locations during field assembly
- **Heavy lift and load leveling equipment**
  - Use input from the design engineering packages
  - Create optimum movement in a shop or field environment

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Assembly and Material Innovation to Enhance Modular Building Techniques

- **Advances in high strength concrete and rebar**
  - High strength rebar, new rebar materials and new types of reinforcement systems to improve quality and reduce construction time
- **Inspection Equipment**
  - Techniques and sensors for quality assurance
    - i.e. looking for voids in concrete placement
- **Pre-assembled rebar systems**
  - Field equipment and processes for heading, swaging and splicing rebar to improve quality and speed of reinforced concrete placement

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Advances in Modular Construction

- **Improved design codes**
  - Steel-concrete composite design codes need to consider the underground environment
    - Soil structure interactions
    - Seismic base isolation
    - Coatings to protect the structures
- **Improved methods for transport and delivery**
  - The size of modules is limited more by transportation capacity than factory size
- **Advancements in integrated prefabrication**
  - Cable splices
  - Containment penetrations

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Summary of Expectations

- The technologies developed will **increase the reliability** of nuclear power plants while **decreasing the cost** of fabrication and construction
- The development of products and components will be able to **gain acceptance** by the appropriate regulatory or standard-setting bodies
- Specific products should be **licensed** for commercial nuclear plant deployment