Large-Scale PM-HIP Facility

Advanced Manufacturing for Critical Applications

A Clean Energy Supplier Alliance industry consortium, in partnership with the VERTical Innovation Cluster, is working to establish and operate a large-scale powder metallurgy hot isostatic pressing (PM-HIP) facility to serve national demand from an ideal site in Richland, Washington.

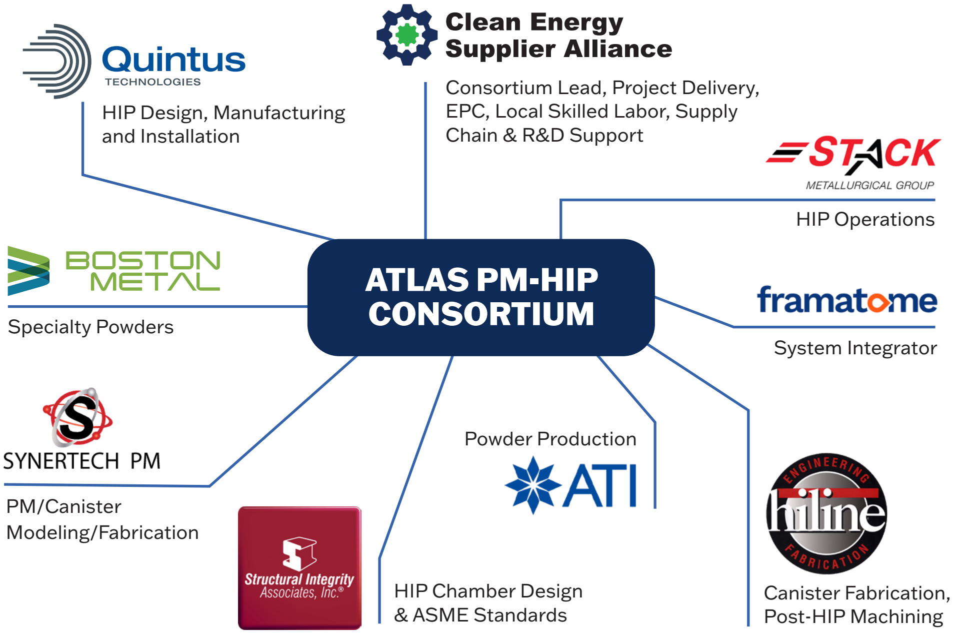
The facility will manufacture large-scale near net shape complex components using advanced materials for various high-tech industries, including nuclear energy, space, aerospace, aviation, military and other applications.

A U.S.-based advanced technology for large-scale (ATLAS) PM-HIP facility will reduce lead times and deliver faster, more cost-effective fabrication, increasing domestic capacity and capability while maintaining the exacting safety standards and integrity of the components. This facility will reduce dependence on foreign supply chains for heavy forgings.

Our Expert ATLAS PM-HIP Consortium

Working to Bring This First-of-a-Kind Facility to Market

Building this facility is a significant undertaking. Our highly experienced and growing consortium is ready to take on the challenge. Based on the size of the hot isostatic pressing (HIP) unit, this will be a first-of-a-kind facility, requiring a 3- to 5-year build cycle and an estimated $450 million capital investment.



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Facility & Consortium Highlights

- Comprehensive and deeply experienced global consortium
- Ideal site, workforce and community
- Reduces greenhouse gas emissions
- Strengthens national security
- First-article production anticipated by the end of 2030

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CESupplierAlliance.com
VERTicalCluster.com
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Filling a U.S. Supply Chain Gap

Powder metallurgy combined with hot isostatic pressing is an advanced manufacturing technology that will supplement traditional manufacturing methods to reduce the cost and time required to produce complex components like reactor pressure vessel heads, compressor rings, nozzles and landing gear while maintaining the safety and integrity necessary.

This project will accelerate the development and adoption of this advanced manufacturing technology that the Electric Power Research Institute, U.S. Department of Energy, U.S. Navy and others are working to commercialize.

Accelerating Deployment of Next-Generation Nuclear Energy

The modern nuclear supply chain must innovate and develop new materials, fabrication technologies, manufacturing techniques and service delivery approaches that deliver the promise of small modular and advanced reactor technologies: safer, simpler, cheaper and faster to deploy.

As we take large-scale PM-HIP to market, part of the process will be to apply and receive the required American Society of Mechanical Engineers (ASME) codes for nuclear applications.

Once built, the facility will be a model for supply chain technologies to support new nuclear and other advanced clean energy solutions.

The U.S. would need to substantially grow the component supply chain to support 300 gigawatts of nuclear; the largest gap is in large component manufacturing, e.g., reactor pressure vessels.

DOE Pathways to Commercial
Liftoff Advanced Nuclear Report

September 2024

Benefits of Large-Scale PM-HIP

- Near net shape = less machining
- Shorter lead times
- Easier ultrasonic inspection
- Less material waste = reduced costs
- Potential to eliminate welds
- Mechanical properties comparable to forgings
- No residual stresses

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