

GDEB, HII, Partners to Advance Additive Manufacturing on a Virginia-Class Submarine



Composite of releases from General Dynamics Electric Boat and [HII](#)

GROTON, Conn., and NEWPORT NEWS, Va. (September 25, 2023) – General Dynamics Electric Boat, a business unit of General Dynamics, and HII’s Newport News Shipbuilding division announced Sept. 25 that the companies have advanced efforts to integrate additive manufacturing technology, also known as 3-D printing, into the shipbuilding process for nuclear-powered submarines. The use of certified 3D-printed parts has the potential to accelerate construction and delivery of submarines to the U.S. Navy by cutting lead times for critical components.

The companies have focused on the availability and deployment of marine-based alloys, such as copper-nickel, to provide an alternative to traditional copper-nickel castings. Recently, a copper-nickel deck drain assembly was identified as a candidate for the 3-D printing solution. Working with shipbuilding partner Electric Boat, and supplier AMMCON on the model and proof of concept, NNS successfully created a copper-nickel deck drain part using additive manufacturing. AMMCON is providing final machining and assembly of the part, before it is installed on Virginia-class submarine Oklahoma (SSN 802), to be delivered by NNS.

“As a leader in additive manufacturing for shipbuilding, we

are aggressively looking for opportunities to find ways to incorporate this technology into mainstream shipbuilding,” said Dave Bolcar, NNS vice president of engineering and design. “This collaborative project leverages authorizations made by the Navy that streamline requirements for low-risk additive manufacturing parts. It is possible due to the foresight and longer-term development efforts by our engineers to deploy additive manufacturing marine alloys for shipbuilding.”

“Our submarine design and engineering teams are focused on working with our supply and construction partners to speed the adoption of innovative technologies,” said Megan Roberts, vice president of quality, waterfront engineering, radiological controls and fleet support for Electric Boat. “These first efforts to install additive-manufactured parts on submarines demonstrate the technology’s potential to dramatically reduce lead times for critical components, which will enable us to deliver more submarines faster, supporting the Navy’s fleet demands.”

“We are honored to contribute to the ongoing success of the Virginia-class submarine program in this innovative way,” said AMMCON President Darrell Grow. “As a longtime supplier for nuclear-powered submarines, our team understands the importance of these national security assets and remains committed to delivering the critical parts needed for their delivery.”

As the lead design yard for the Virginia class, Electric Boat will continue work to incorporate additive-manufactured components into the construction stream. The highly digitized process could lead to cost savings and reduced construction schedules for Navy submarines.

This latest advancement in 3D printing follows [HII’s announcement in March](#) that NNS received certification and approval as a vendor for additive manufacturing components on

Naval Sea Systems (NAVSEA) platforms. The highly digitized process could lead to cost savings and reduced production schedules for naval ships.