

Xerox Elem Additive and U.S Navy Deploy First Metal 3D Printer at Sea



The amphibious assault ship USS Essex (LHD 2), shown here in 2018, now has an ElemX liquid metal printer onboard. *U.S. MARINE CORPS / Cpl. A. J. Van Fredenberg*

NORWALK, Conn. – Xerox Elem Additive Solutions announced July 18 that an ElemX liquid metal printer was recently installed onboard USS Essex (LHD 2), making it the first metal additive manufacturing machine deployed on a U.S. naval vessel.

The ElemX was placed on the ship earlier this month in Pearl Harbor, with at-sea trials beginning immediately. The installation is the latest step in the U.S. Navy's strategy of using additive manufacturing to increase operational readiness for the fleet. It also builds on the relationship between the U.S. Navy and Xerox Elem Additive that began with the Naval Postgraduate School in Monterey, California, receiving the first installation of the ElemX in 2020.

"The military supply chain is among the most complex in the world, and putting the ElemX on USS Essex means Sailors can now bypass that complexity and print parts when and where they need them," said Tali Rosman, GM of Elem Additive. "We are proud to continue our partnership with the Navy to help them advance their additive manufacturing capabilities and execute their long-term vision."

The ElemX leverages Xerox's liquid metal additive manufacturing technology that uses standard aluminum wire. Unlike other metal 3D printing technologies, there are no hazardous metal powders with ElemX and no need for special facility modifications or personal protective equipment to operate the machine. The printer also requires minimal post-

processing and therefore provides a faster time-to-part. This ability to produce reliable replacement parts on-demand reduces the dependency on complex global supply chains for deployed forces.

To withstand various sea states and environmental challenges that U.S. naval warships encounter, the ElemX was installed in an industrial shipping container to ruggedize it. Trials have already begun to establish operational guidelines and technical feasibility studies to determine applications and use cases. A team on USS Essex will design and print shipboard items and provide feedback to NPS and Commander, Naval Surface Force Pacific.

The ElemX 3D printer was commercially introduced in February 2021, and since then Elem Additive Solutions has expanded operations, including opening an Additive Manufacturing Center of Excellence in Cary, North Carolina. The ElemX is a safer and simpler metal 3D printer, addressing supply chain resiliency for transportation, aerospace, defense and industrial manufacturing.