NAVSEA Approves First Additive Manufactured Metal Component for Shipboard Use

WASHINGTON – Naval Sea Systems Command (NAVSEA) has approved the first metal part created by additive manufacturing (AM) for shipboard installation, the command said in an Oct. 11 release.

A prototype drain strainer orifice (DSO) assembly will be installed on USS Harry S. Truman (CVN 75) in fiscal 2019 for a one-year test and evaluation trial. The DSO assembly is a steam system component that permits drainage/removal of water from a steam line while in use.

Huntington Ingalls Industries Newport News Shipbuilding builds Navy aircraft carriers and proposed installing the prototype on an aircraft carrier for test and evaluation.

"This install marks a significant advancement in the Navy's ability to make parts on demand and combine NAVSEA's strategic goal of on-time delivery of ships and submarines while maintaining a culture of affordability," said Rear Adm. Lorin Selby, NAVSEA chief engineer and deputy commander for Ship Design, Integration, and Naval Engineering. "By targeting CVN 75, this allows us to get test results faster, so – if successful – we can identify additional uses of additive manufacturing for the fleet."

The test articles passed functional and environmental testing, which included material, welding, shock, vibration, hydrostatic, and operational steam, and will continue to be evaluated while installed within a low temperature and low-pressure saturated steam system. After the test and evaluation period, the prototype assembly will be removed for analysis and inspection.

While the Navy has been using additive manufacturing technology for several years, the use of it for metal parts for naval systems is a newer concept and this prototype assembly design, production, and first article testing used traditional mechanical testing to identify requirements and acceptance criteria. Final requirements are still under review.

“Specifications will establish a path for NAVSEA and industry to follow when designing, manufacturing and installing AM components shipboard and will streamline the approval process,” said Dr. Justin Rettaliata, technical warrant holder for Additive Manufacturing. “NAVSEA has several efforts underway to develop specifications and standards for more commonly used additive manufacturing processes.”