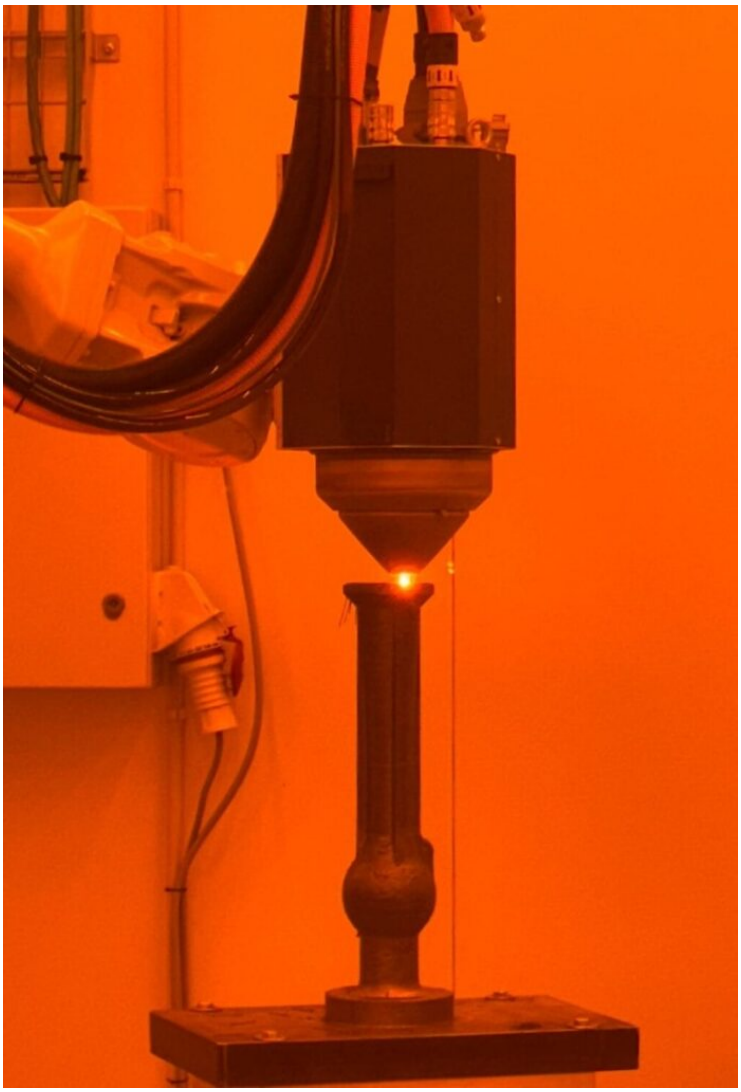
Low-Risk AM Process Improving Readiness Generation



NAVAL STATION ROTA, Spain – An additive manufacturing machine prints an eductor, or jet pump, using stainless steel wire for the Arleigh Burke-class guided missile destroyer USS Arleigh Burke (DDG 51). Forward Deployed Regional Maintenance Center (FDRMC) Detachment Rota, in partnership with the Spanish Armada's intermediate-level maintenance command and their embedded additive manufacturing (AM) contractor, manufactured parts for Arleigh Burke, generating timely readiness for the ship ahead of its planned patrol throughout U.S. Sixth Fleet.

By Naval Sea Systems Command Office of Corporate Communications

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NAVAL STATION ROTA, Spain – Forward Deployed Regional Maintenance Center (FDRMC) Detachment Rota, in partnership with the Spanish Armada's intermediate-level maintenance command and their embedded additive manufacturing (AM) contractor, manufactured parts for the Arleigh Burke-class guided missile destroyer USS Arleigh Burke (DDG 51) in early June. This innovative solution generated timely readiness for the ship ahead of its planned patrol throughout U.S. Sixth Fleet.

Expediting the process, the Naval Sea Systems Command (NAVSEA) engineering directorate empowered waterfront chief engineers to approve AM parts and components that carry little to no risk to the safety and operation of the ship. The NAVSEA guidance eliminated administrative barriers, effectively streamlining the process to support real-time needs during maintenance. This component is the 37th additively manufactured component installed in the Fleet since the process was adopted in 2023.

"We have empowered and equipped our waterfront and forward-deployed engineers and maintainers that directly support our warfighters," said Rear Adm. Pete Small, NAVSEA chief engineer. "This project executed with our Spanish allies further proves the significant readiness AM generates for our ships, restoring a critical system while meeting the compressed timeline for the ship's forward-deployed patrol."

The FDRMC team utilized the low-risk AM approval process to manufacture and install two new eductors, or jet pumps, into the vacuum collection holding and transfer (VCHT) system during a maintenance period. The eductors had leaks that had been temporarily patched and needed full replacement prior to the next patrol to restore system readiness and safeguard against future system failure while deployed. New eductors, typically made of cast-bronze, require almost a year to

receive and install, exceeding the maintenance timeline ahead of the ship’s upcoming patrol.

The FDRMC team partnered with a local AM contractor to manufacture the two replacement eductors with available corrosion-resistant stainless-steel wire. The first-time process took approximately two months to plan, scan, print, machine, weld and install aboard Arleigh Burke, shortening the timeline by more than 80% and meeting the ship’s operational schedule. Once the project was approved, the manufacturing only required seven days of work to complete the eductors ahead of install.

“FDRMC is the front-line readiness generator for our forward deployed naval forces in Fifth and Sixth Fleets,” said Capt. Mollie Bily, FDRMC commanding officer. “Our Rota AM team attacks each maintenance window looking for a way to use advanced AM to expedite parts and solutions for our homeported and deployed ships that must be ready for Fleet tasking at a moment’s notice.”

FDRMC provides emergent, intermediate and depot-level maintenance and modernization for Forward Deployed Naval Forces in U.S. 5th and 6th Fleets through fleet technical assistance, voyage repair, contract management oversight, assessments, and diving and salvage. FDRMC is the only forward-deployed RMC supporting two numbered fleets, serving three combatant commanders, and conducting work on three continents.

NAVSEA designs, builds, and maintains ships, submarines, and integrated warfighting systems for the US. Navy ensuring the warfighter is capable of projecting presence in peace, power in war, and assured maritime access.

For more on NAVSEA, visit: **https://www.navsea.navy.mil/**