Fairbanks Morse Defense Expands Robotic Welding Capabilities to Strengthen Fleet Readiness and Reduce Maintenance Downtime

FMD's advanced robotic welding technology cuts repair times, enhances safety and boosts fleet readiness for naval operations

Release From Fairbanks Morse Defense

BELOIT, Wis. – January, 12, 2025 – Fairbanks Morse Defense (FMD) has announced the expansion of its robotic welding program aimed at boosting ship repair and maintenance efficiency for the U.S. Navy and allied fleets. The company's robotic welding technology combines automation, precision and data-driven performance to reduce operational downtime, improve safety and extend the service life of naval assets.

FMD's robotics integrate advanced machine learning technology that enables automated weld control, consistent quality and real-time weld fault detection. By merging robotics with human expertise, FMD can accelerate repairs while ensuring

each weld meets stringent naval standards. This innovation is part of the company's broader strategy to modernize maintenance operations and strengthen mission readiness across the maritime defense sector.

"Robotic welding represents a fundamental shift in how we approach fleet sustainment. It allows us to complete repairs faster, more accurately and more safely than ever before. This technology does not replace skilled technicians, but it enhances their capabilities, ensuring ships are returned to service in record time without compromising quality or safety," said Keith Haasl, President, Service and Technology at Fairbanks Morse Defense.

FMD's robotic welding technology is engineered to perform critical repairs in confined or challenging environments, such as engine rooms and below-deck components. Robotic welders work up to three times faster than manual welding and can reduce crank bore repair time by as much as 75% (even in large-scale jobs).

FMD robotics are programmed to maintain heat distribution and weld spacing consistently from the first bead to the 1,000th. This ensures each weld is executed with consistent accuracy and durability, reducing the likelihood of rework or failure. The technology also captures detailed data from every weld performed, creating a traceable record that supports quality assurance and predictive maintenance programs.

FMD's welding robots have been deployed successfully in high-pressure naval repair operations, including emergent crank line repairs on U.S. submarines, where the system demonstrated three times faster weld repair under demanding conditions. The project validated the effectiveness of robotic welding in critical mission support and confirmed its role as an enabler of faster fleet readiness.

By automating repetitive or high-risk welding tasks, the system minimizes exposure to heat and hazardous materials for human operators, improving overall workplace safety. Skilled technicians remain integral to the process, overseeing operations, conducting inspections and managing complex or customized welds that require human oversight. This human-machine collaboration supports FMD’s long-term workforce development strategy by allowing technicians to focus on high-value work while leveraging robotics for precision and endurance.

FMD’s robotics program is aligned with its broader focus on digital transformation across its service and technology divisions. The company remains focused on advancing automation, extended reality training and predictive analytics as part of its long-term strategy to deliver innovative solutions that enhance operational performance and mission success.