



MOBILE COLD SPRAY SYSTEM DELIVERED TO ELLSWORTH AFB

BRINGING ADDITIVE REPAIR TO THE FLIGHTLINE

PROBLEM

Cold spray (CS) is an additive surface repair technology that uses particle deposition of metallic powder to repair worn, damaged, or corroded aircraft components. Despite the technology's effectiveness in cutting costs and expediting metal repairs, traditional CS methods required part removal from an aircraft for CS repair at maintenance depots or sustainment centers with large stationary equipment. While still effective, this approach extends repair times and ultimately increases non-mission capable time for the affected aircraft when compared to on-wing repair methods.

After assessing this limitation, the Air Force Rapid Sustainment Office's (RSO) Advanced Manufacturing Program Office (AMPO) asked, "What if we could bring CS capabilities to the flightline?"

SOLUTION

The RSO AMPO addressed its own question by delivering the United States Air Force's (USAF's) first Mobile Cold Spray System (MCSS) to Ellsworth Air Force Base (AFB), South Dakota in March 2024. In collaboration with the South Dakota Mines (SDM), Ellsworth AFB, and industry partner, VRC Metal Systems, AMPO created a self-contained, innovative mobile solution allowing maintainers to perform Air Force approved CS repairs directly on the flightline, decreasing repair times, avoiding high replacement part procurement costs, and enhancing aircraft operational readiness.

IMPACT

This inaugural deployment marks the beginning of a new era in CS technology for the USAF with the potential to revolutionize maintenance and sustainment practices. Recent successes of this MCSS include repair of a B-1 main landing gear door and restoration of 11 B-52 engine cowlings, both completed by a team from SDM and Ellsworth AFB and resulting in hundreds of labor hours saved and significant cost savings for the USAF.

A second MCSS is scheduled for delivery and set up at Robins AFB, Georgia in mid-2025.

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