

Advanced Manufacturing Crises Production Response (AMCPR) Program

Blackhawk Down Scenario

An America Makes Project | Department of Defense Manufacturing Innovation Institutes

Technology: UH-60 Blackhawk Fuel Elbow



Project Participants: National Center for Defense Manufacturing and Machining (NCDMM), Deloitte, Office of the Secretary of Defense (OSD), Air Force Research Laboratory (AFRL/RXMS), US Army DEVCOM Aviation and Missile Center (AvMC), US Army Test and Evaluation Command (ATEC), EOS, 3D Systems, ZVerse, Inc.

Institutes' Role: America Makes received funding from OSD to lead a coordinated effort, the Advanced Manufacturing Crisis Production Response (AMCPR), focused on extending the America Makes mission to play a critical role in the preparedness and response to any potential crises. One key goal of the AMCPR program was to “practice” need fulfillment in times of crisis through scenario execution using the AMCPR Exchange. In this scenario, mission readiness of a UH-60 Blackhawk fuel elbow, made of carbon steel, finished in cadmium and dyed black, was diminished due to dissipation of the supply chain.

Technology Description: The fuel elbow was rapidly redesigned and manufactured using direct metal laser sintering (DMLS) in 316L stainless steel. Zverse leveraged automation-assisted 2D to 3D conversion technology to create a 3D model from a legacy 2D print from the US Army. The suppliers, 3D Systems and EOS, additively manufactured the fuel elbow component and shipped to the US Army for testing.

Impact: This scenario demonstrated how additive manufacturing can provide a rapid response when there is no existing supply chain to provide a part. The AMCPR Exchange provided a complex, missions critical component through digitally distributed manufacturing, improving mission readiness. The platform proved effective at restricting access and supplying the UH-60 Blackhawk fuel elbow to the entity in need.

