Direct Digital Manufacturing for Helicopter Engines & Other DoD Warfighter Platforms

OBJECTIVE/SOLUTION:
Improve manufacturing capabilities and affordability of production components using Direct Digital Manufacturing (DDM). This additive manufacturing technology enables the defense industrial base to supplement traditional component fabrication and performance limitations for both legacy and future critical gas turbine engine components.

Achievements:
• Critical to the customer/Critical to Quality (CTC/CTQ) identified, weighted, and used as basis of Quality Function Deployment (QFD)
• QFD completed and reviewed by Army ManTech
• Down selected to 5 candidate parts
• Material powder ordered
• Updated surface finish survey

Benefits:
• Validated method for DDM component(s) used in aviation propulsion and power generation gas turbine engines
• Enhanced component designs for performance and weight savings

Benefits (cont):
• Enable operational flexible reconfigurable factory infrastructure model with reduced logistical requirements and compressed supply chain
• Improved dimensional capability
• Improved throughput and surface finish
• Reduced process steps and part count (goal of 30% reduction)

Weapon System/Secondary Items Impacted:
• Initial transition to T700-GE-701D Black Hawk & Apache, applicable to Advanced Affordable Turbine Engine (AATE), Future Affordable Turbine Engine (FATE), and GE-38 for Navy CH-53K advanced heavy lift helicopter program and Future Vertical Lift (FVL)

Point of Contact: Army ManTech Manager, Program Executive Office Aviation, 5400 Fowler Road, Redstone Arsenal, AL 35898-5000

Distribution Statement A: Approved for Public Release, Distribution Unlimited