



AEROSPACE RECOMMENDED PRACTICE	ARP7043™	
	Issued	2022-08
Recommendations for an Additive Manufacturer Designing/Repairing Aircraft Components		

RATIONALE

This SAE Aerospace Recommended Practice (ARP) is intended to provide an airframe manufacturer or system supplier recommendations for additive manufacturing (AM) in establishing an aircraft development program.

FORWARD

The development of an aircraft system using additive manufacturing (AM) for a modern high-performance air vehicle is an engineering, manufacturing, and program management process which covers many years in calendar time and also crosses over many disciplines and abilities. The process is subordinate to, and dependent upon, the plan for development of the aircraft itself. A good documented design guide allows the design team to perform the task more effectively.

These recommendations may be used by a contractor to validate maturity at milestones during a development program for a specific aircraft and to demonstrate compliance to aircraft requirement specifications before initiation of the actual work. The working planning documents should be revised and updated at intervals during the development program as influencing factors dictate. A milestone chart using a commercially available software package should be a part of the plan and should show the interrelationship between phases of the development and various functions involved in work to be performed. Audit reviews should be identified and scheduled. The progressive design verification process to demonstrate compliance with requirements must be clearly delineated.

For the purpose of this document, the “airframer” is defined as the design authority of the aircraft and the Cognizant Engineering Organization, whereas the “system supplier” is defined as the integrator contracted by the airframer for the system development.

1. SCOPE

1.1 Form

This SAE Aerospace Recommended Practice (ARP) provides recommendations for additive manufacturing (AM) designed/repaired aircraft components

1.2 Intent

These recommendations reflect procedures that have been effective for designing/repairing components.

1.3 Application

This ARP should be applied to additively manufactured part designs and repairs for aircraft system, propulsion, cabin safety, and structural applications. Each application may have unique design and certification performance needs (examples are given in this document for guidance) and requirements for compliance to meet the aircraft requirements specification and airworthiness/safety compliance. A thorough review of the air framer and the regulatory airworthiness requirements is essential for each application.

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