

Affordable, High-Rate Composite Aircraft Manufacturing

2023-2024 PDAC Submission

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Need: Affordable Mass

The affordable mass concept: a fleet of *low-cost* air-, land-, and sea-based *drones that can be deployed by the thousands*

Affordable mass is an urgent DoD priority:
















- Kathleen Hicks, Deputy Secretary of Defense:
 - “**Help us overcome the PRC’s biggest advantage, which is mass...** Now is the time to take all-domain, attritable autonomy to the next level: to **produce and deliver** capabilities to warfighters **at the volume and velocity required** to deter aggression, or win if we’re forced to fight.”
- Frank Kendall, Secretary of the Air Force:
 - “The **affordable mass concept** and all our analytics show overwhelmingly that this **provides us an overmatch capability** and **changes our loss-exchange ratios dramatically in our favor.**”



Solution: CRG's Agile Composite Structures

- High-rate manufacturing process to support critical DoD needs
- Low cost, high performance aerospace composite material
- Complex shapes and mating features in a single part enables enable rapid assembly
- Leverages existing US capital equipment infrastructure
- Developed and demonstrated on multiple DoD programs (AF, Navy)

Automotive production rates with Aerospace properties

	CRG's Agile Composite Structures	Prepreg Composite Structures	Al 6061 Structures
Strength			
Weight			
Material Cost	\$	\$ \$ \$	\$ \$
Fabrication Time			
Assembly Time			
Labor			

CRG Affordable, High-Rate Composites

Project Overview

- Demonstrate affordable, high-rate composite manufacturing method
- Generate as-built material properties to support design of attritable aircraft
- Establish supply chain partners for materials and distributed manufacturing

TACFI/STRATFI

- SBIR/STTR: Gov matching funds up to \$15M

Dual-Use Applications

- Advanced air mobility (AAM) composite structures
- Wind turbine components (conventional and airborne with IACMI)



What We Do

Applied Research & Development

CRG focuses on rapid innovation and delivering new capability to our customers



Core Competencies

Aerospace Systems

- Aircraft Design/Build/Fly
- Quiet Electric Propulsion
- Aircraft Repair and Sustainment
- Electromagnetics

Human Health & AI

- Casualty Care
- Wearable Sensors
- Environmental Sensors
- Autonomous Detection and Deterrence
- Edge Computing

Power & Energy

- Energy Storage
- Power Generation and Conversion
- Power Distribution and Management

Advanced Materials & Manufacturing

- Advanced Polymers
- Additive Manufacturing
- Affordable, Agile Composite Structures
- Manufacturing Process Development

How We Transition

