MANUFACTURING THE FUTURE

Additive Manufacturing Solutions

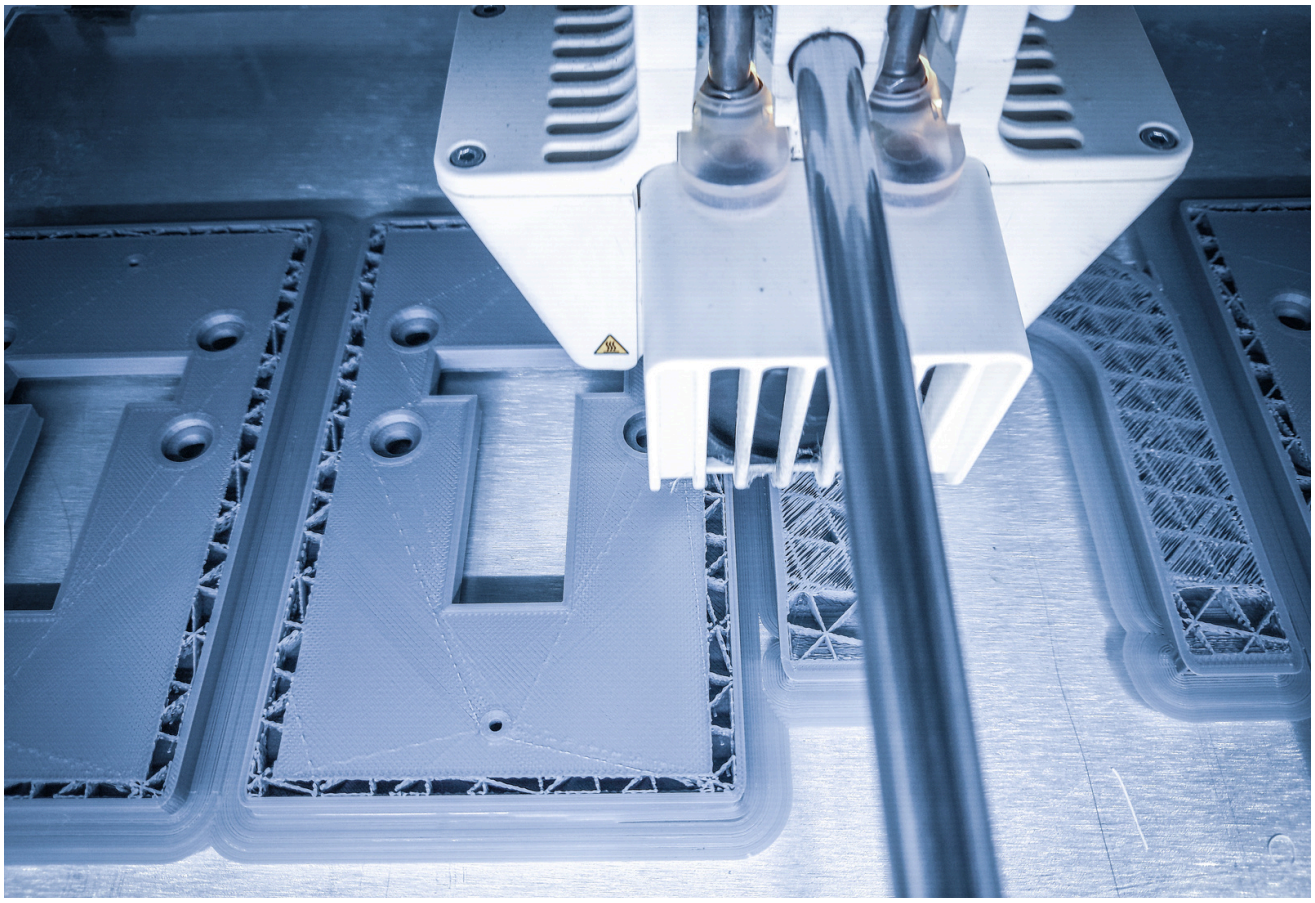
CRG Defense

Doing Defense Differently™

crgdefense.com

CONTENTS

Doing Defense Differently™ Since 1997



CRG DEFENSE CAPABILITIES

With nearly 30 years of expertise in research, development, and production, CRG Defense is a trusted industry leader. Our innovative solutions are designed to meet the evolving demands of today and tomorrow.

CORE COMPETENCIES

Aerospace Systems

Aircraft design/build/fly, quiet electric propulsion, aircraft repair and sustainment, electromagnetics

Human Health & AI

Casualty care, wearable sensors, edge computing, environmental sensors, autonomous detection and deterrence

Power & Energy

Domestic manufacturing of batteries, novel energy storage solutions, power generation, distribution, conversion, and management.

Advanced Materials & Manufacturing

Advanced polymers, agile composite structures, additive manufacturing, manufacturing process development

Missionized Systems

Rapid development and fielding of qualified, integrated military systems designed to deliver a variety of effects within the DoD combat environment

Secure Production

Advanced materials, anti-tamper materials, composite EW systems, machined parts

PRIMARY NAICS & PSC CODES

NAICS	PSC	PSC
541715	AC12	AC32

ABOUT CRG DEFENSE

Founded in 1997, CRG Defense is a premier aerospace and defense firm with over 100 dedicated employees. We design, develop, and deliver advanced military solutions that empower warfighters to accomplish their missions effectively, while upholding our commitment to innovation, community building, and business growth.

DIFFERENTIATORS

- Enhanced security and streamlined supply chain with all services under one roof: R&D, prototyping, manufacturing, and more.
- Patented high-rate method of manufacturing composite aircraft primary structures..
- Cost-effective, high-performance composites.
- Secure facilities are 16 miles southwest of Wright-Patterson Air Force Base.

TECHNOLOGY TRANSITION

$250 million Non-SBIR sales and investments

58% SBIR/STTR Phase II conversion rate

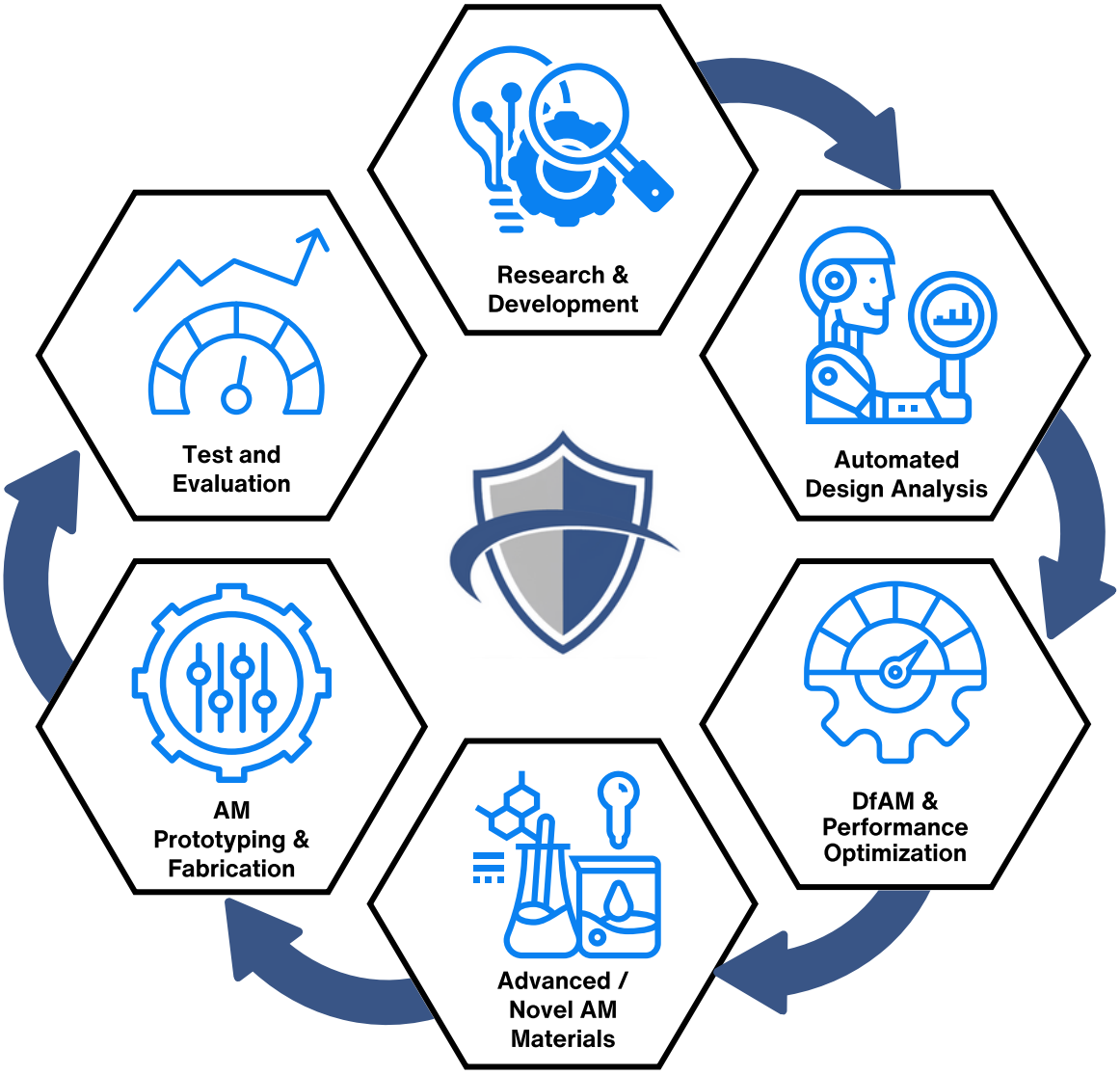
97 +32 Patents issued + patents pending

FULL SPECTRUM PERFORMANCE ADDITIVE

CRG Defense delivers end-to-end additive manufacturing (AM) solutions—from R&D to full-rate production—for both government and commercial clients. Our capabilities include advanced design tools, custom material development, and a full range of fabrication systems.

We specialize in:

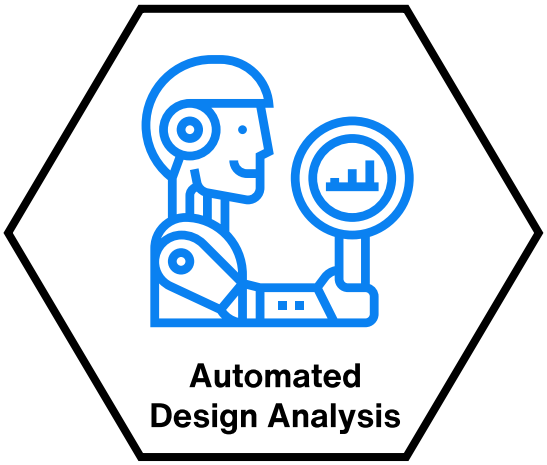
- Automated design analysis and DfAM for optimized performance
- Novel AM materials, including custom polymers and composites
- Flexible prototyping and scalable production using desktop to manufacturing-grade printers
- Post-processing and part qualification, including machining, annealing, and testing
- Secure and qualified facilities supporting sensitive applications

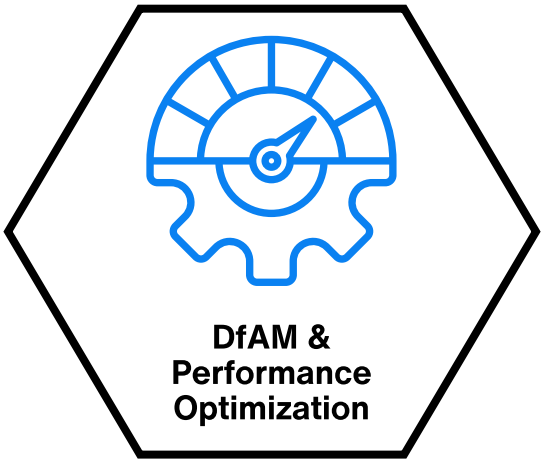


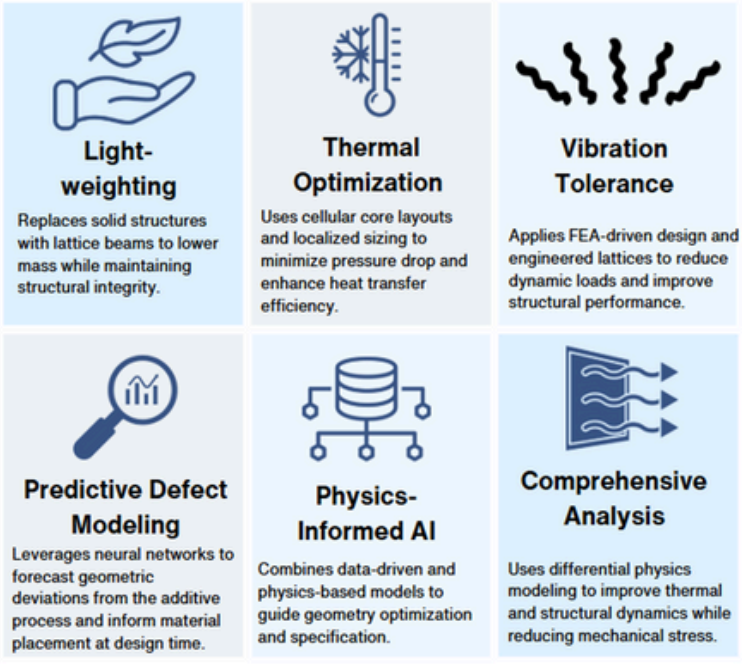
DESIGN, MODELING, AND SIMULATION

CRG Defense streamlines the path from concept to production by combining automated design analysis with advanced DfAM strategies—delivering parts that are high-performing, manufacturable, and application-ready.

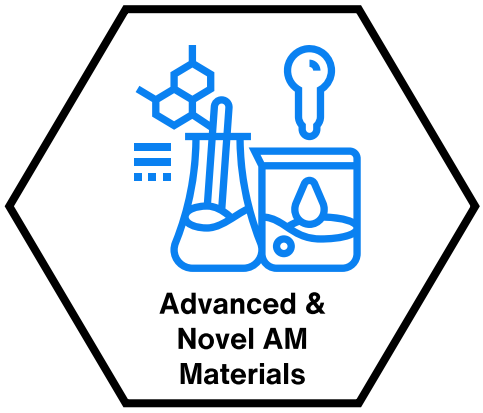
- SolidWorks/CATIA modeling
- Mold/tool design
- Finite Element Analysis (FEA) simulation
- Computational Fluid Dynamics (CFD) simulation
- Design with optimized lattice structures (LattiSolve pre-commercial service)
- Design for AM (DfAM) services—polymer and metal
- Part-to-print reverse engineering (pre-commercial service)
- Assembly consolidation and unitization







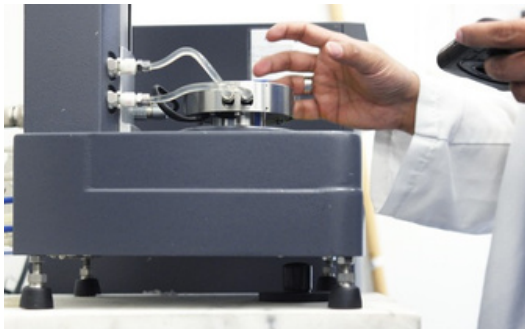
AM POLYMER SYNTHESIS, FORMULATION, AND CHARACTERIZATION



Polymer Chemistry and Polymer Compounding

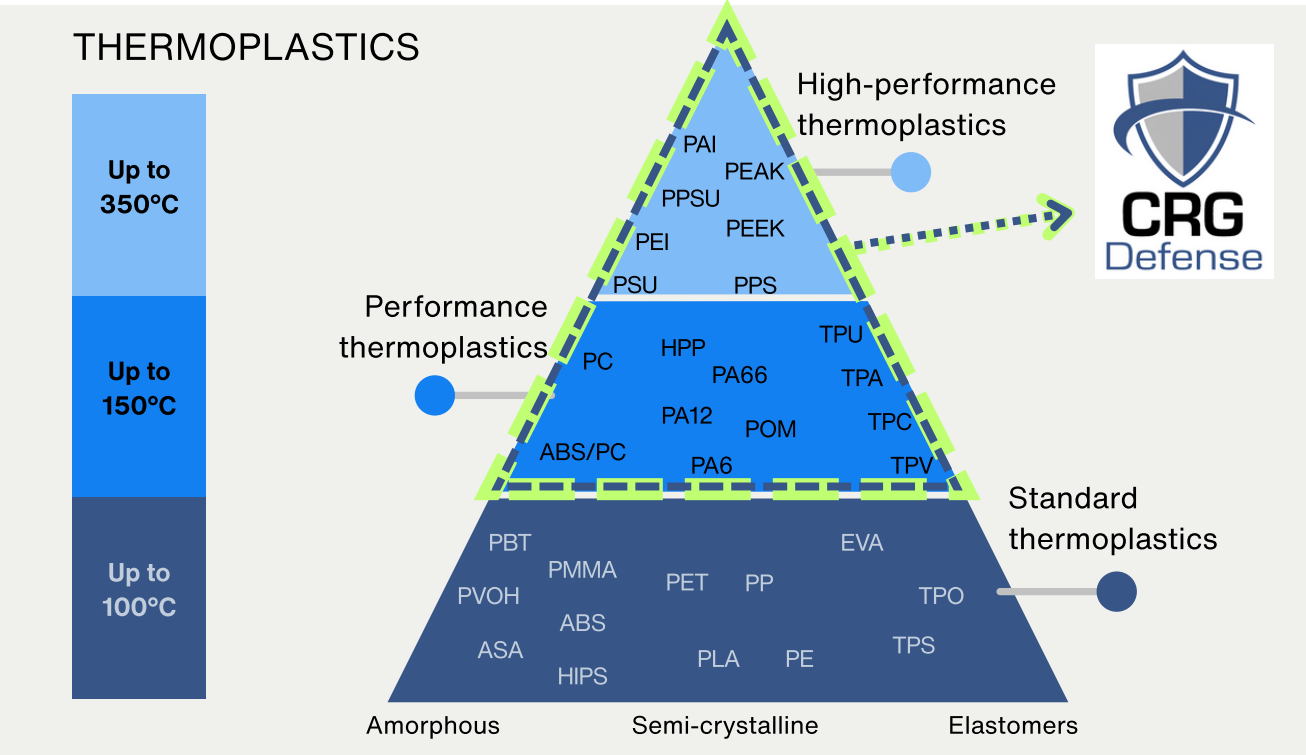
- Chemistry facilities with multiple synthesis reactors ranging from < 1–100 L
- Various mixers, mills, etc.
- Thermoelectron lab-scale twin screw extruder, pelletizer
- Single screw filament extruder, melt pump, filament winder

Polymer Characterization



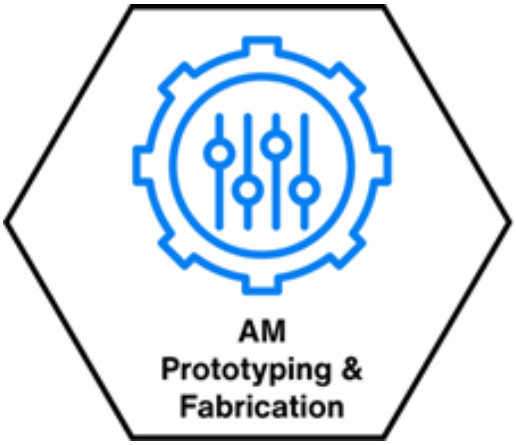
- Fourier Transform Infrared Spectroscopy (FTIR)
- Scanning Electron Microscopy (SEM)
- Dynamic Scanning Calorimetry (DSC)
- Thermogravimetric Analysis (TGA)
- Rotational rheometers
- Pycnometer
- Guarded hot plate thermal testing
- Four-point probe electrical testing
- Flame Retardant – UL-94 or similar*
- Gas Chromatography Mass Spectroscopy (GC-MS)*

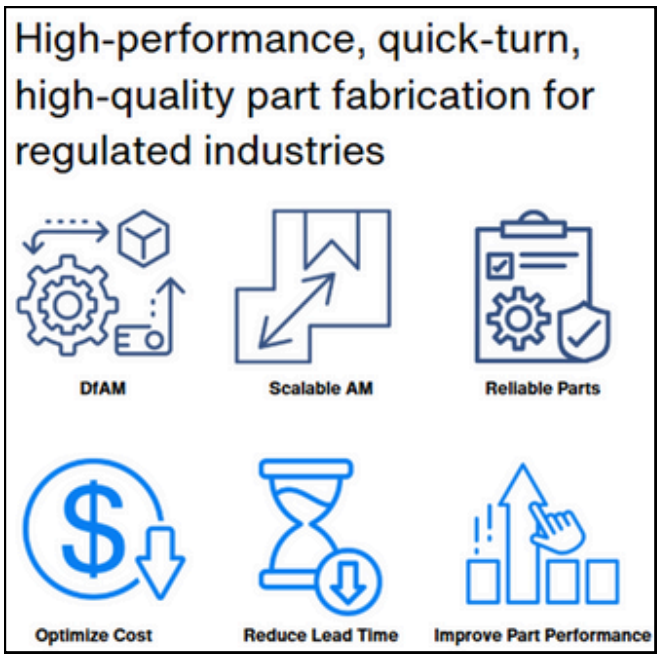
** External partner service*

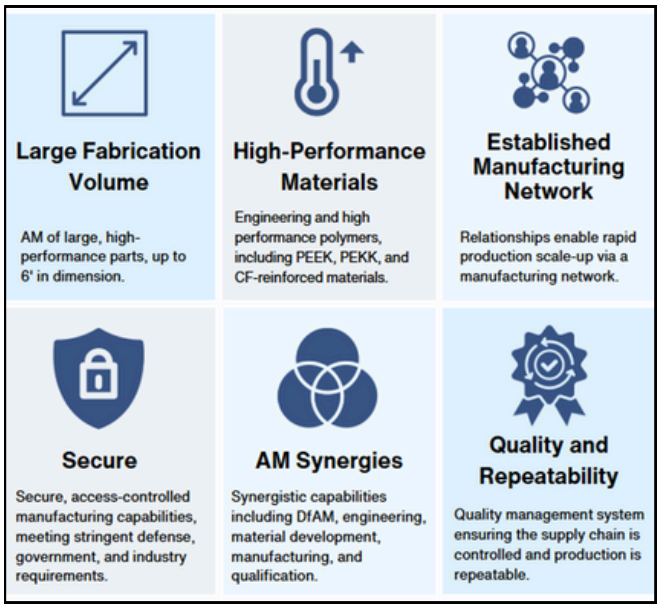


PARTS MANUFACTURING

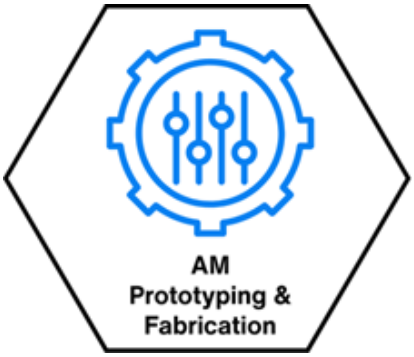
CRG Defense's additive manufacturing capabilities support a scalable and distributed production model, using everything from desktop systems to large format high temperature printers. This approach enables rapid iteration, localized fabrication, and smooth expansion to full production when needed.







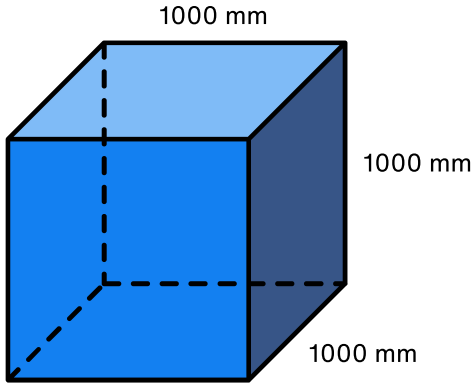
MANUFACTURING-GRADE PRINTER

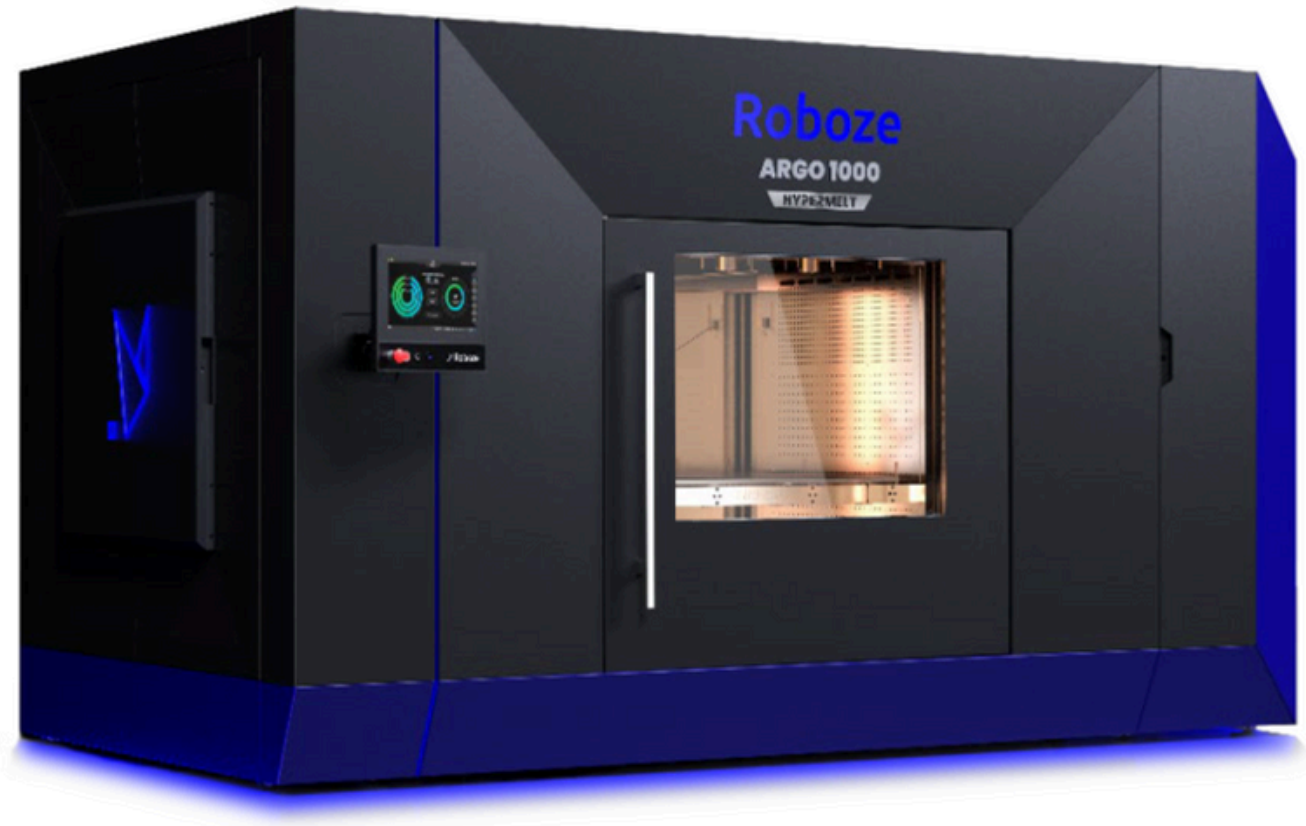


Roboze ARGO 1000 HYPERMELT FGF System

- Build volume, mm: 1000 x 1000 x 1000
- Build volume, inches: 39.4 x 39.4 x 39.4
- Pellet feedstock
- Optimized for full-scale, high-temperature materials
- Up to 2,000 g/hr print speed
- Vertical resolution: 0.2–3.0 mm

CRG Defense's state-of-the-art Roboze ARGO 1000 HYPERMELT pellet printer represents the pinnacle of current additive manufacturing capabilities. With a massive 1 cubic meter build volume, high-precision production, and dual independent extruders (IDEX), this system processes aerospace-grade thermoplastics like PEEK, PAEK, and reinforced polymers at an impressive 2,000 g/hr print speed. Offering vertical resolutions from 0.2 to 3.0 mm, it combines large-scale production with high-performance material capabilities.





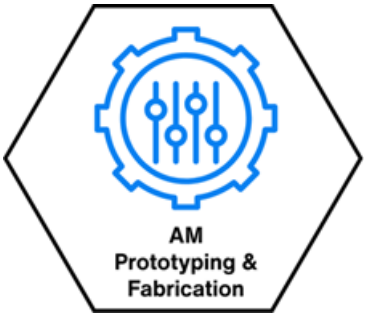
INDUSTRIAL-GRADE PRINTERS

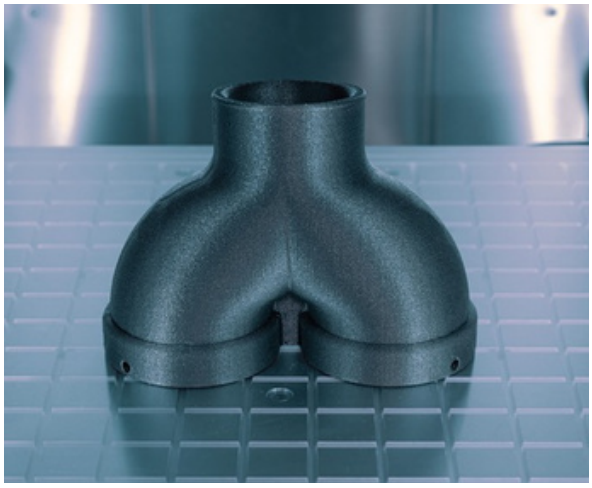
Large Format FFF Additive System 1

- Build volume, mm: > 1000 x 1000 x 2000
- Build volume, inches: > 39.4 x 39.4 x 78.7
- Filament feedstock
- Vertical resolution: 0.1–0.9 mm

CRG Defense's largest additive manufacturing system boasts an impressive 1,000 x 1,000 x 2,000 mm build volume, enabling rapid production of full-scale prototypes and mock-ups. Featuring dual independent extruders (IDEX), this system supports multi-material and multi-color printing within the same layer.

While currently optimized for consumer-grade thermoplastics, CRG Defense is actively exploring advanced material applications for this high-capacity, networked printing solution.





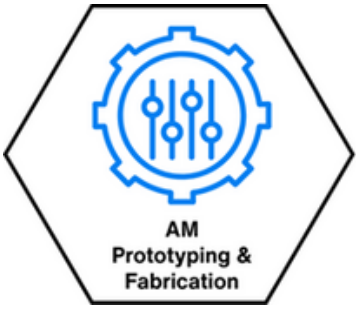
Medium Format FFF Additive System 2

- Build volume, mm: 500 x 700 x 800
- Build volume, inches: 19.7 x 27.6 x 31.5
- Filament feedstock
- Vertical resolution: 0.1–0.9mm

CRG Defense's versatile mid-range additive manufacturing system features a generous 500 x 700 x 800 mm build volume and dual independent extruders (IDEX), bridging the gap between large-scale and precision printing.

This networked system supports advanced consumer-grade thermoplastics, including flexible and high-strength materials, offering a balance of size and precision for diverse manufacturing needs.

INDUSTRIAL-GRADE PRINTERS



Medium Format FGF Additive System 3

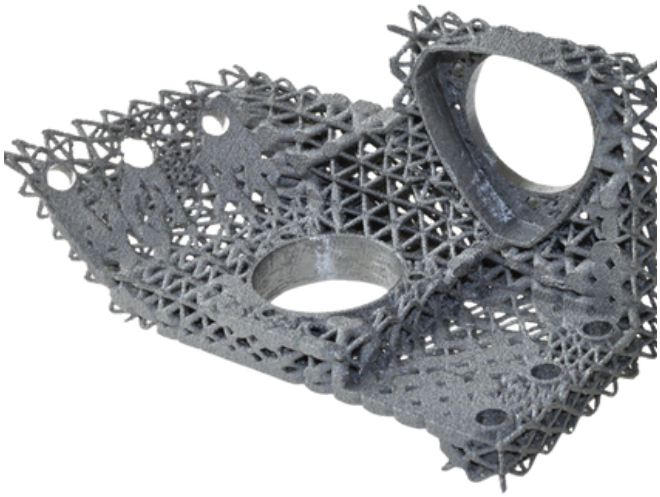
- Build volume, mm: 600 x 600 x 600
- Build volume, inches: 23.6 x 23.6 x 23.6
- Pellet feedstock
- Vertical resolution: 0.5–1 mm

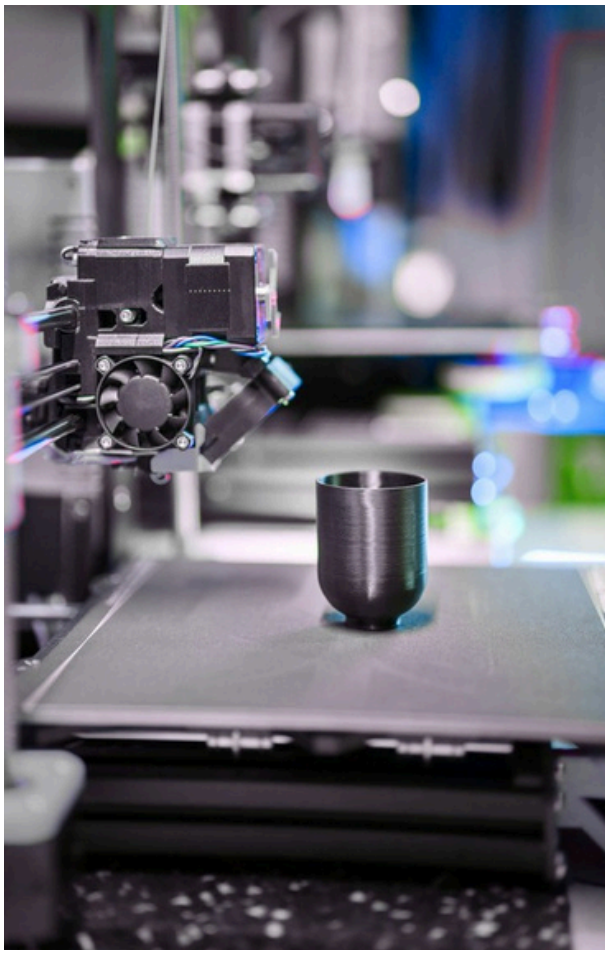
This printer is a custom-modified large-scale printer, upgraded with a single pellet-fed extruder. The system currently operates as a proving-ground for pellet materials, both custom and COTS. The extruder can reach temperatures over 400°C, allowing for proving of engineering-grade thermoplastics like PEEK, PAEK, and advanced Nylons. Small-scale prints of these materials are possible, but the pellet system is far more apt at fast, large-scale, consumer thermoplastics like PLA and PETG.

Metal AM - DMLS, DED, WAAM

(external partner service)

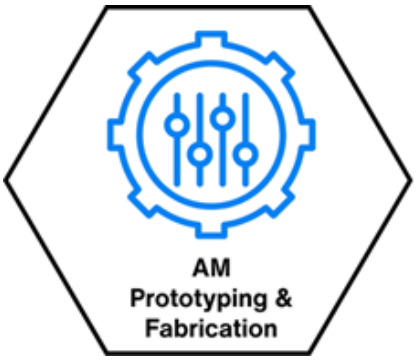
CRG Defense has an extensive network of partners to leverage for metal-based additive manufacturing.





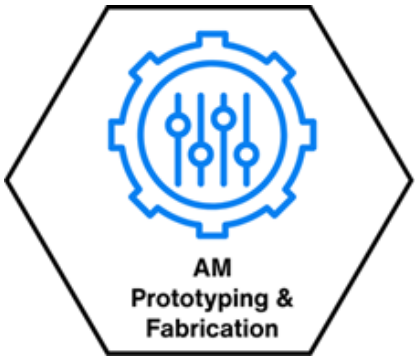
DESKTOP GRADE PRINTERS

- 8x, Prusa M4k FFF
- 2x, Prusa XL5T FFF
- 2x, FormLabs Form3 SLA



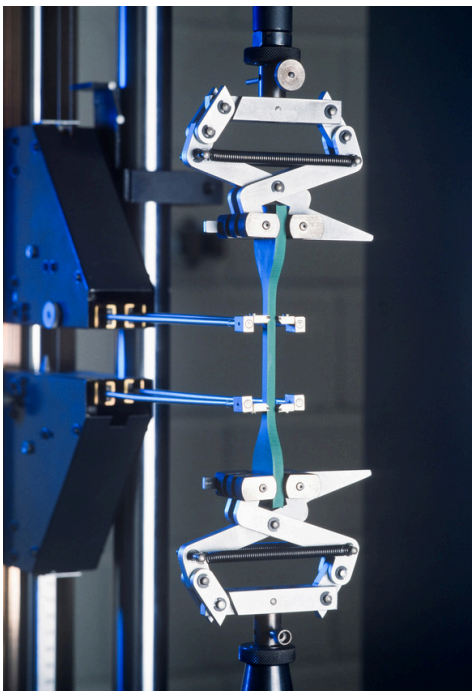
Post-Processing

- Support removal and sanding
- QA/QC inspections with or without COA/COC
- 3D scanning and comparative dimensional analysis
- HAAS 5-axis CNC machine center (in development)
- Annealing/heat treat ovens
- Development of application-specific evaluations
- Statistically representative qualification services



Bulk Material/Component Characterization

- DMA
- Mechanical Test Rig for tensile, compression, flexural
- Environmental chamber can be attached for low/ high temperature testing
- Rockwell hardness tester
- Impact testing*
- Fatigue testing*
- CT-scan*
- Flame retardancy - UL-94 and others*
- Development of application-specific evaluations
- Statistically representative qualification services



** External partner service*

Quality

CRG Defense operates under an ISO 9001:2015/ AS9100 D compliant quality system with the option of multiple levels of quality control, quality assurance, and compliance to meet the application requirements.

CRG DEFENSE LEADERSHIP

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VP, Research & Development

Jeff Bennett

Senior VP, Operations

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VP, Security

Jake Monat

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Dave West

VP, Integrated Capabilities Office (ICO)

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- ask questions;
- request pricing;
- place orders; and
- arrange a consultation, demo, or visit.

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