



Contested Logistics

MOBILE LARGE-FORMAT ADDITIVE MANUFACTURING BOLSTERS TACTICAL READINESS

Jeremy Heerdink | VP of Business Development
Snowbird Technologies

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About Snowbird Technologies

Snowbird Technologies is America's premier original equipment manufacturer of specialized HVAC, air-to-water, and additive manufacturing systems.

- Established in 1992
- ISO 9001:2015 Certified
- Independently Owned and Operated
- Small Business
- Jacksonville, Florida

Our Brands

- Snowbird Technologies
- Snowbird Water Technologies
- Snowbird Additive Mobile Manufacturing

Today's Speaker

Jeremy Heerdink | Vice President, Business Development





Factors in Contested Parts Logistics

- Enemy
- Extensive and unknown delivery lead times
- Proximity to the warfighter
- Large parts production and logistics

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The Challenge

The availability of repair parts remains a critical need for expeditionary operations.

Traditional supply chain and logistics methods are unreliable and leave warfighters in potentially dangerous situations.

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- COVID-19 amplified issues and initiated the Supply Chain Crisis
 - Weeks to months lead times for parts
 - Increased costs and equipment failures





The Solution

MANUFACTURE PARTS IN THE FIELD

Additive Manufacturing in a Portable Configuration Supports Tactical Readiness at Speed and Scale

- Easily portable through logistics infrastructure
- Produce large parts up to 250 cubic feet
- Produce parts in metal, composite, and plastic
- Hybrid manufacturing
- Obsolete and complex parts
- Production in unstable environments

The Capabilities

Snowbird Additive Mobile Manufacturing Technology (SAMM Tech) is an end-to-end, large-format 3D printer built inside a standard shipping container.

Its rugged exterior protects the print system, bed, and operator control panels during transport and set up in any environment imaginable.



Print Area

Up to 200 cubic feet (20-ft. model)

Materials Production

Stainless steel, mild steel, carbon steel, titanium, Inconel, composite, plastic

Technology

Patented gantry system

Magazine Changer

Automatic 8 or 10-tool

Print System

Meltio DED with dual wire feeders and hot wire upgrade (Composite, Cold Spray, Powder Induction, or any customer specific print head(s) can be integrated)

Compressor

30 SCFM output air compressor

Coolant Gun

Cold air coolant gun for milling tool cooling

Control System and Software

FANUC

Spindle

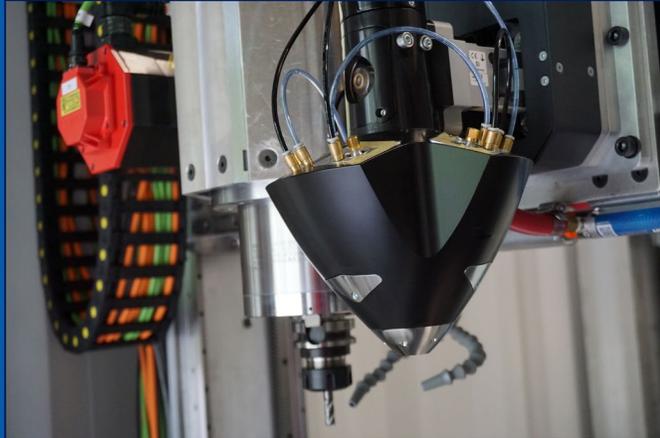
3-axis

Spindle Accessories

Standard water-cooled spindle with stand-alone water chiller

The Capabilities

MELTIO



3D Printing with Metal Directed Energy Deposition Technology (DED)

Metal wire is the safest, cleanest, and easiest to work with feedstock for additive manufacturing

Rapidly print large components with exceptional material properties

Precisely stacks layers of weld beads

Accepts any metal wire in diameter from 1.0 to 1.2mm

DED is faster than DMLS

DED produces better quality parts than WAAM

The Capabilities



Hybrid Manufacturing Using 3-Axis Milling

DED process replaces the need for casting to make large steel parts

Subtractive manufacturing capabilities allow for the complete machining and finishing of parts

Parts are made with less environmental impact, less risk to human health, and increased speed from concept to completion

Raw material stock goes in, finished parts come out

The Capabilities



Mobility

Deployable to any location

All machining support packaged inside the container

Raw material, welding gas, and power are the only necessary inputs in the field

Operate in any location, including on the freight trailer

Allows for center of manufacturing to be onsite, consolidating input materials and logistics footprint

The Capabilities

CREAFORM



Software and 3D Scanning

Comes with CAD and CAM software

Design components in the field

Generate tool paths that communicate with FANUC control system

Creaform MetraSCAN 3D optical CMM scanner gives the ability to 3D scan complex and obsolete parts



The Process

1. Prepare for Transport



2. Location Selection and Setup

3. Part Selection and Setup



4. Print, Finish, and Deliver



The Benefits

Onsite, On-Demand Parts Production is a Reliable Manufacturing Method that can Sustain and Support the Warfighter.



Produce Parts Near the Warfighter

Parts can be requested, designed, produced, and delivered in record time.



Produce Complex, Obsolete Parts

Parts can be scanned, drawn, printed, and quality-checked within hours.



Reduce Onsite Parts Inventory

Store and transport all materials and tooling heads required to produce finished parts onsite.



Reduce Equipment Downtime and Failures

Onsite maintenance, repair, and replacement of parts for equipment.



Improve Mission Self-Sufficiency

Unprecedented supply chain agility and sustained technological dominance for our warfighters.



In Closing

Manufacturing parts via additive manufacturing in a portable configuration is an adaptive logistics option to bolster tactical readiness amid an ongoing supply chain crisis.

- Establishes an onsite supply chain for warfighters in contested environments
- Ensures operational contingency
- Onsite and on-demand parts production
- Production of complex and obsolete parts
- Reduced equipment failures
- Improved self-sufficiency



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