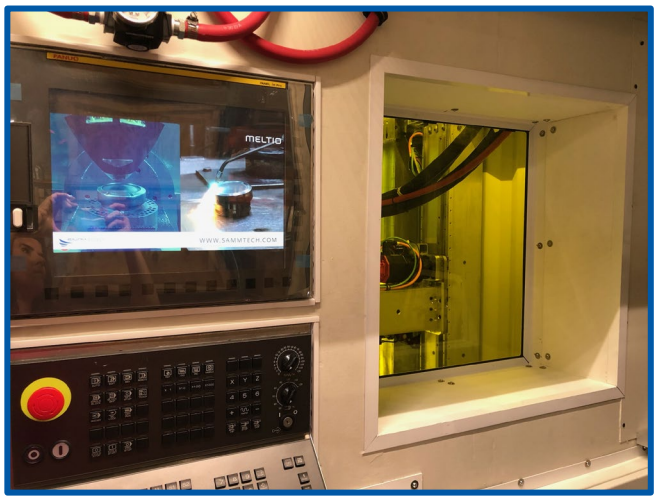
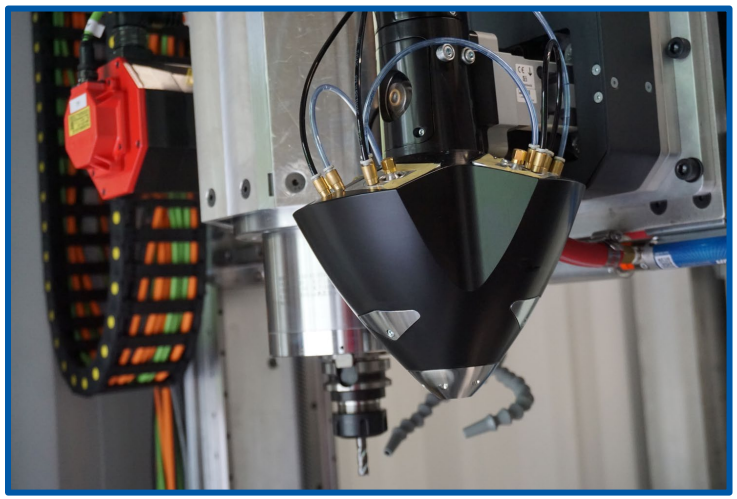
TECHNICAL PRODUCT SPECIFICATION

SAMM-MM020S | Snowbird Additive Mobile Manufacturing Technology Platform





Product Overview and Description

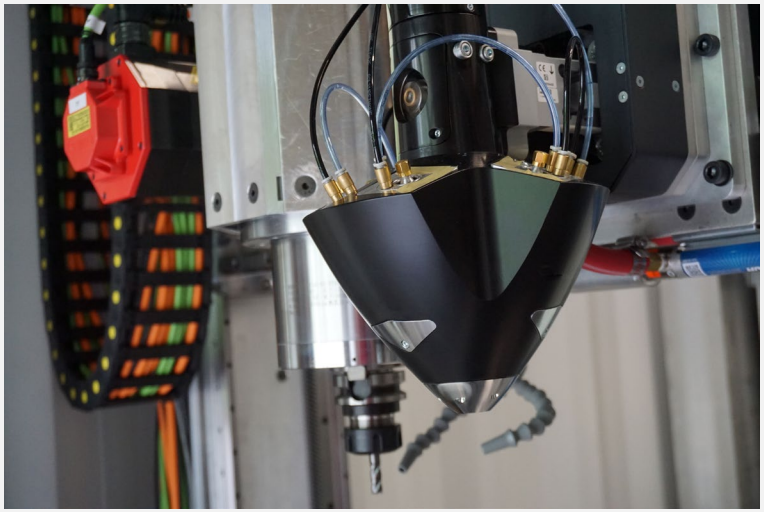
Snowbird Additive Mobile Manufacturing Technology – SAMM Tech – is a deployable, metal manufacturing platform that uses both additive and subtractive manufacturing capabilities in one process to produce large parts on demand. Meltio is our standard 3D additive manufacturing print head and engine which uses wire-laser-directed energy deposition capabilities to produce parts from standard metal weld wire. This specification refers to the standard 20-ft. (6M) container with hybrid manufacturing systems. Model SAMM-MM020S.

Container Specifications

- Structure
  - Corten steel construction for durable, rugged tactical operations in harsh field environments
  - Dimensions (Width x Length x Height) – 8-ft. x 20-ft. x 9-ft. (2.44M x 6.1M x 2.7M)
  - US patented gantry system – single on model SAMM-MM010S
- Print Area
  - Laser-safe, sealed, controlled atmosphere
  - Safety sensors for laser system operation and automatic shut-off
  - Dimensions (Width x Length x Height) – 5-ft. x 10-ft. x 4-ft. (1.5M x 3M x 1.2M)
  - 200 cubic feet (5.6 cubic meters)
- Operator Enclosure
  - Houses the control systems for Meltio and FANUC software
  - Screens and monitors for all operations
  - Houses raw material supply such as inert gas and weld wire spools
  - Dual wire feed
  - Air compressor system
  - Laser-protected viewing window

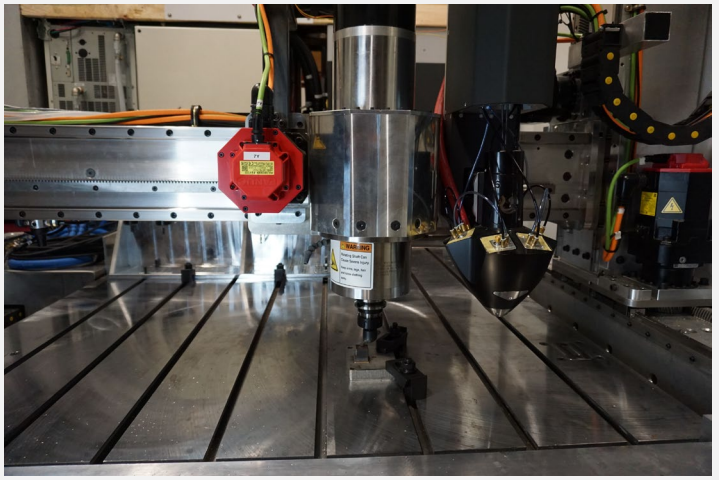
Print System (Additive Capabilities) Specification

- 3D Print Head: Meltio 3D
  - Engine Specifications
    - Weight: 142 kg
    - Laser Type: 6 x 200 with direct diode lasers
    - Laser wavelength: 976 mm
    - Total Laser Power: 1200 W
    - Power Input: 208/230 V single phase or 400 V three phase
    - Power Consumption: 2-5 kW peak depending on selected options
    - Process control: Closed-loop, laser and wire modulation
    - Cooling: Active water-cooled chiller
    - Wire Feedstock Diameter: 0.8 – 1.2mm
    - Wire Feedstock Spool: BS300 or wire drums
    - Deposition Rate of Steel: 1 kg/hour
  - Printhead
    - Size (Width x Depth x Height) – 202 x 297 x 784mm
    - Weight: 15.5 kg
  - Software
    - Meltio
    - CAD/CAM



Milling System (Subtractive Capabilities) Specification

- Control System and Software: FANUC
- Spindle: 3-axis, 8.5 kW
    - Spindle Vibration Displacement Tolerance: Under 0.0005” at max speed
    - Resolution and Repeatability: 0.0005” per foot
    - Max Cutting Speed: 9.1m/min on aluminum
    - Rapid Movement Speeds: 22m/min
- RPM: 8,000
- Automatic 10-tool magazine changer



Production Materials

Achieve exceptional mechanics, decreased thermal stress, and near isotropic properties. Available in welding wire between 0.8 and 1.2 mm in diameter.

- Stainless steel – 310S, 316L – 308L, 17 – 4PH
- Mild steel – ER70S
- Tool steel – H11
- Titanium – 64
- Inconel – 718, 625

The Meltio system’s LMD process produces fully dense parts with superior microstructure reaching a consistent 99.998% densification.

Layer height from 0.6 to 1.2 mm

Under some conditions, Meltio’s surface roughness using wire outperforms those produced with powder-based processes.

Optional Add-Ons – Not Included in the Standard Model but Available for Integration

- Dual or multiple gantries
- 5-axis spindle
- Titanium printing chamber design
- Operator enclosure air conditioning
- Climate control in the print chamber
- Renishaw probes
- Creaform MetraSCAN 3D Scanner
- FANUC robotic arm
- Trunnion table
- Heated print bed

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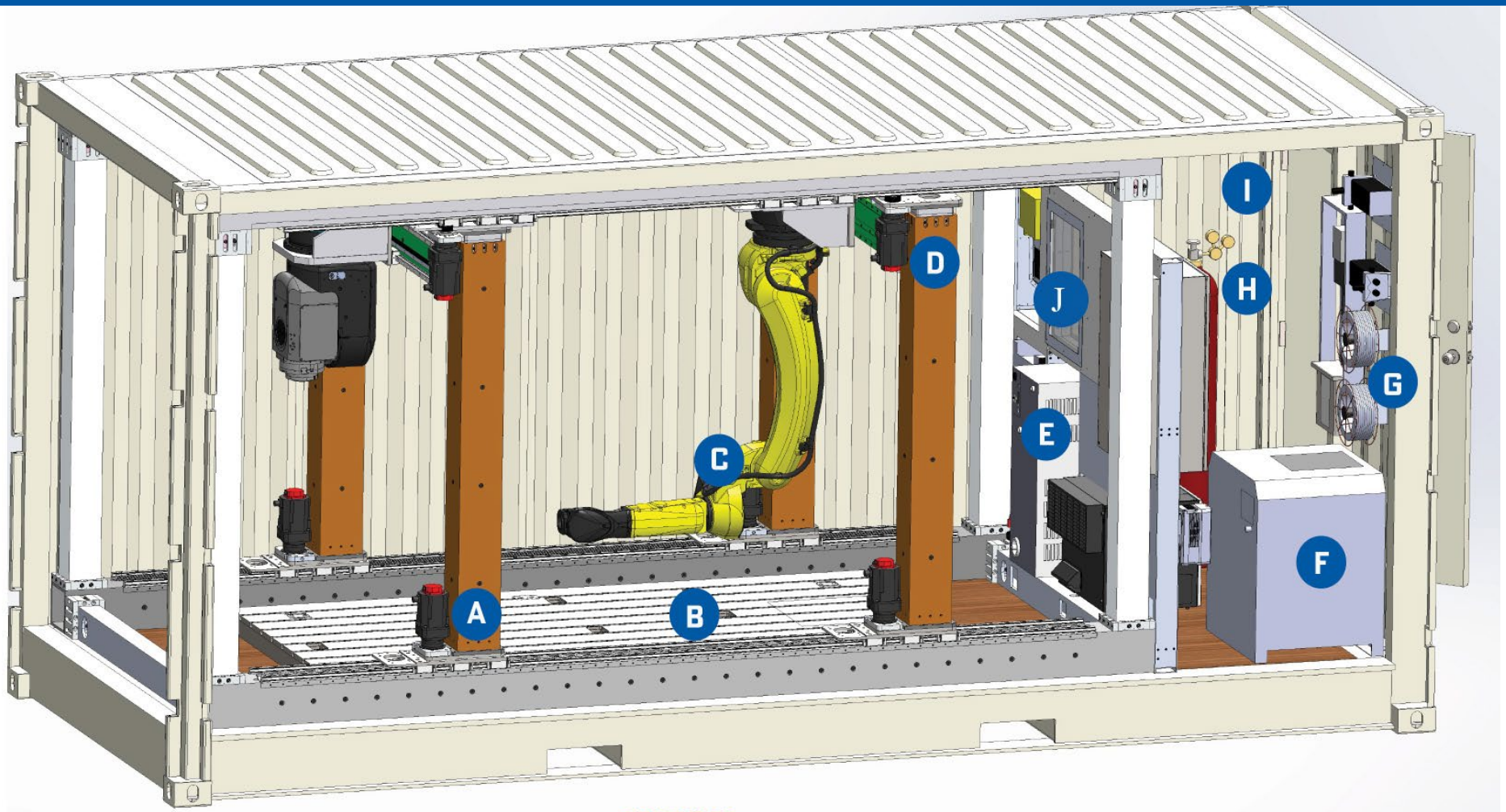
PRODUCT RENDERING

20-ft. SAMM Tech with optional 5-axis spindle and FANUC robotic arm (upgrade)



*Denotes protection under US Patent No. 10,434,712 B1

FEATURES

A. 5-axis machining gantry*
B. 5-ft. x 10-ft. print area
C. 6-axis FANUC robotic printing arm
D. Inverted robotic arm printing gantry*
E. Chilled water supply
F. Compressed air supply
G. Dual wire feed
H. Inert gas supply
I. Operator enclosure
J. Laser safety and shatterproof viewing window

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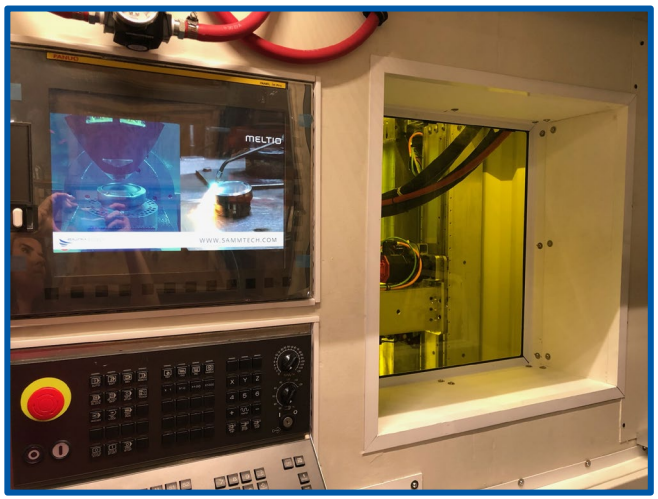

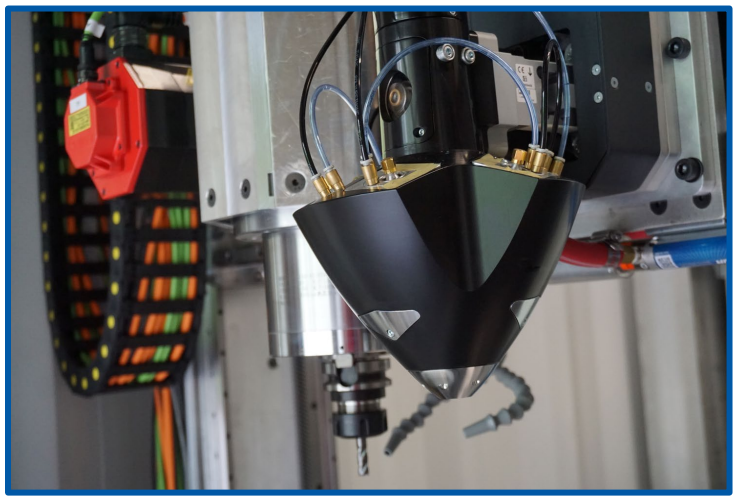

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Container Specifications

- Structure
  - Corten steel construction for durable, rugged tactical operations in harsh field environments
  - Dimensions (Width x Length x Height) – 8-ft. x 10-ft. x 9-ft. (2.4M x 3M x 2.7M)
  - US patented gantry system – single on model SAMM-MM010S
- Print Area
  - Laser-safe, sealed, controlled atmosphere
  - Safety sensors for laser system operation and automatic shut-off
  - Dimensions (Width x Length x Height) – 4-ft. x 4-ft. x 4-ft. (1.2M x 1.2M x 1.2M)
  - 64 cubic feet (1.8 cubic meters)
- Operator Enclosure
  - Houses the control systems for Meltio and FANUC software
  - Screens and monitors for all operations
  - Houses raw material supply such as inert gas and weld wire spools
  - Dual wire feed
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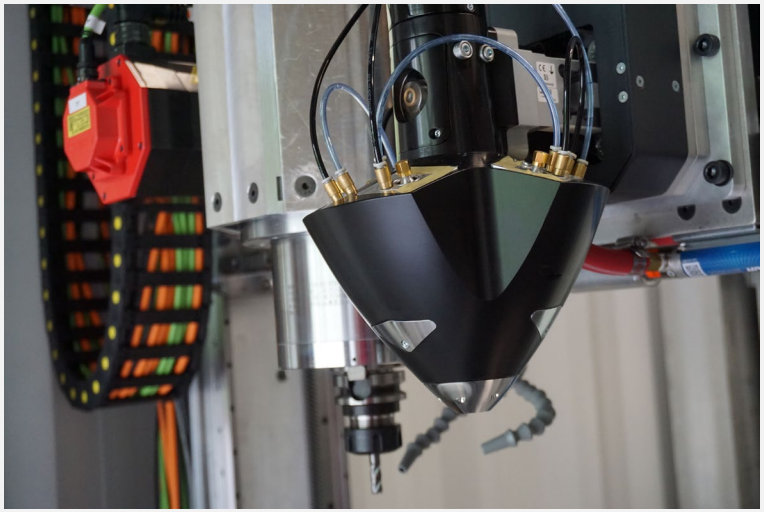

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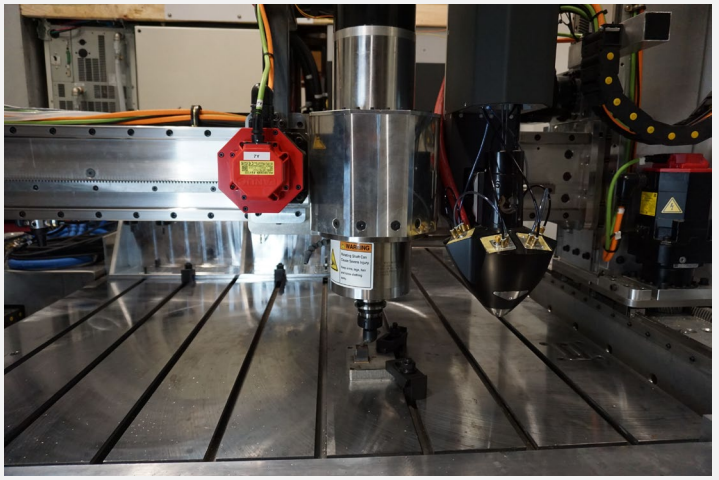

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