



Rock Island Arsenal - Joint Manufacturing & Technology Center

Chris Schladt – Manufacturing Eng. Tech.





Rock Island Arsenal – Joint Manufacturing & Technology Center



Mission:

Develop, manufacture and deliver readiness solutions through conventional and advanced manufacturing processes for the U.S. Army and Department of Defense systems globally.



M9 ACE Detent Plate (Additive Manufacturing)



Highlights:

Vertically Integrated Manufacturing

Machinist Apprentice Program

Readiness and modernization through manufacturing

- Advanced Manufacturing
- Obsolescence
- Integrated Engineering



Metalworking & Machining Shop Set

Center of Industrial and Technical Excellence:

Mobile Maintenance Systems

Add on Armor Prototype, Development & Production
Foundry Operations

Advanced Manufacturing Center of Excellence

FY21 Workload: \$179.2M Planned Revenue / 751.6K DLH

FY21 Major Programs:

Metalworking & Machining Shop Set (MWMSS)

HET Urban Survivability Kit (HUSK)

M997A3 Ambulance

M915A5 B-Kits

Stryker AoA

XM35



HET Urban Survivability Kit (HUSK)

Demographics:

1182 Total Employees

868 Permanent Civilians

2 Military

195 Temp/Term Civilians

117 Contractors

Average Age = 47 years old

Average Years = 12 years

Veterans = 26%

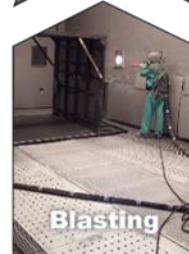


M997A3 Ambulance





RIA-JMTC Capabilities



Vertically integrated metal manufacturer capable of taking a raw material and bringing it to a finished product all under one roof.





RIA-JMTC Forging Capabilities

- **RIA Forging Dep.**

Forging Hammers

- Pneumatic - 2k, 5k lb.
- Steam - 8k lb.
- Gravity Drop – 12k lb.

Upset Forge - (*horizontal forge consisting of a clamping, header and stationary die*)





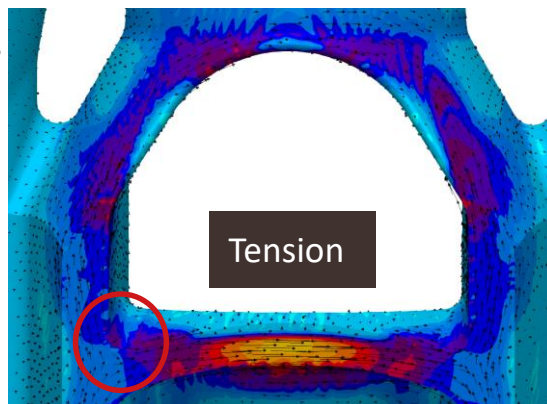
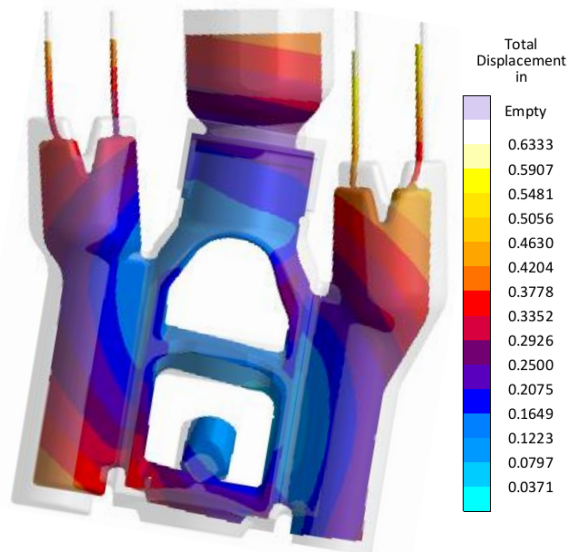
RIA-JMTC Simulation Capabilities

- **RIA Simulation Capabilities**

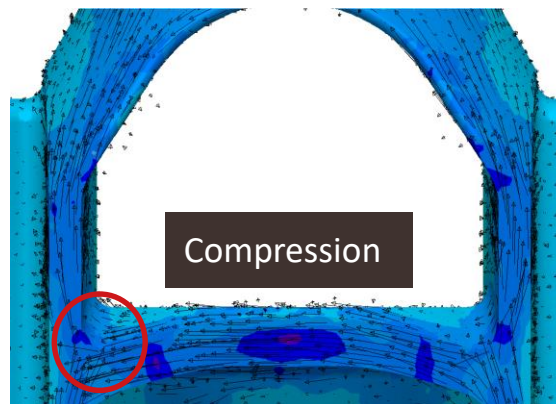
RIA has acquired two new modules for MAGMAsoft.

- MAGMAsoft – calculation of mold filling, solidification & cooling
- MAGMA HT Thermal
 - Optimization for metal cleanliness
 - Tracking and management of dross and other contaminants
 - Miro Segregation of elements
 - Heat Treatment
 - Reduction of process times in furnace
 - Minimization of distortion

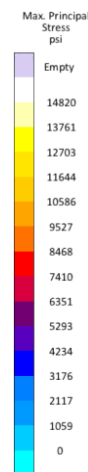
- MAGMAstress
 - Maximum yield stress
 - Total Displacement



Design 1



Design 2





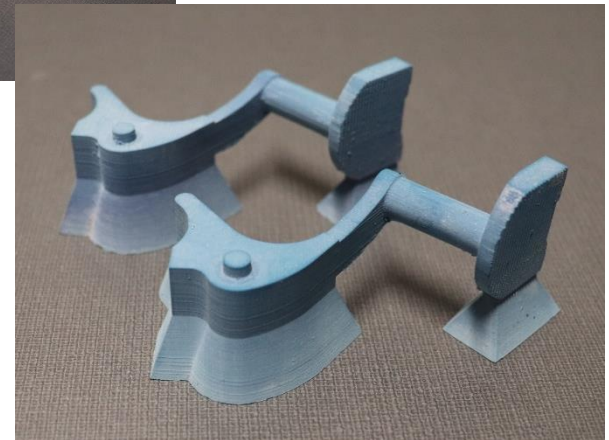
RIA-JMTC Investment Additive Capabilities

- **RIA 3D Wax Printer**

RIA has acquired solidscape 3D wax printer

Build Envelope 6 x 6 x 4 inches (152.4 x 152.4 x 101.6 mm)

- Advantages
 - No Tooling Necessary
 - Accurate
- Disadvantages
 - Slow





RIA-JMTC Sand Casting Additive Capabilities

- **RIA Sand Printer**

RIA has acquired ExOne Sand printer

Build Envelope 70.9 x 39.4 x 27.6 inches

(1,800 x 1,000 x 700 mm)

- Advantages

No Tooling Necessary

Accurate

Multiple sands types & sizes

65GFN, Ceramic, Chromite

- Disadvantages

Not cost efficient for large simple shapes

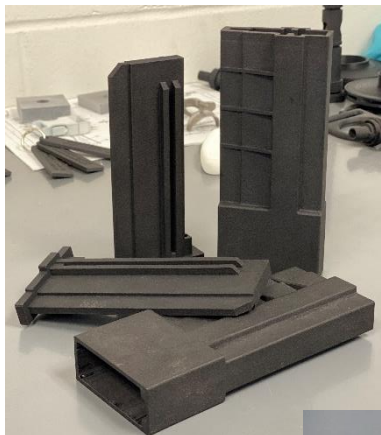




Additive Manufacturing Capabilities

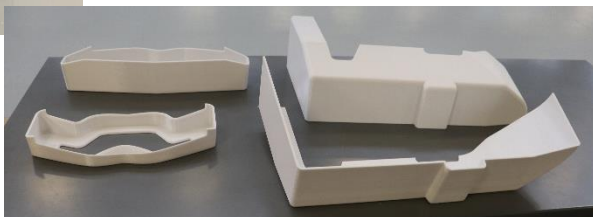
Largest Polymer Build Volume

35.98 in x 23.98 in x 35.98 in
914 mm x 609 mm x 914 mm



*Materials:

ABS
PLA
ULTEM
PC
Nylon
Carbon Fiber
Kevlar
TPU



Total Polymer Printers: 14*

Applications: High volume parts with high quality surface finishes and textures.

* Current Capabilities as of 2 NOV 2020

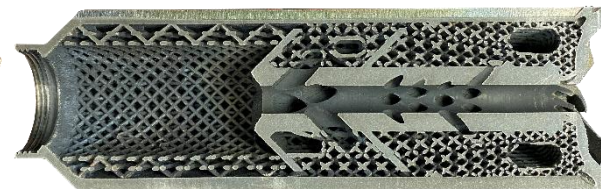
Largest Metal Build Volume

10.82 in x 10.82 in x 14.96 in
275 mm x 275 mm x 380 mm



Materials:

Ni718
316L Stainless Steel
17-4 PH Stainless Steel
Maraging Steel MS1
Ti Gr5
Ti64 ELI



Total Metal Printers: 5

Applications: Metal parts. Reduced weight designs, simplified assemblies, conformal cooling, enhanced fluid flow, topology optimization, mass customization.





Questions ?



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