Additive Manufacturing

MISSION

Be the go to engineering support for all AM technologies including fielded machines, and updating/creating processes.

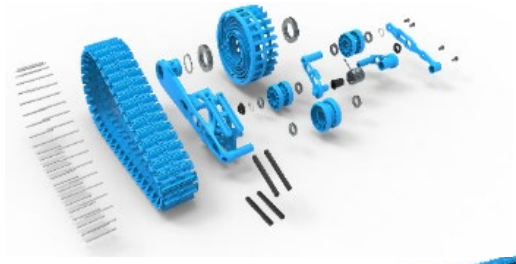
OVERVIEW

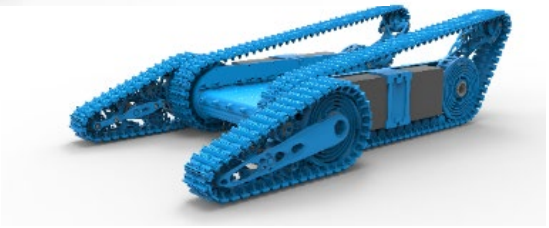
Additive Manufacturing, AKA 3D printing, is defined as a process of joining materials layer upon layer to create or repair parts using 3D data/models as opposed to traditional, subtractive manufacturing.

- Produce parts not possible with conventional manufacturing methods
- Economically efficient manufacturing processes
  - Manufacture without the need for molds & dies
  - Can quickly produce jigs, fixtures, and gauges
  - Less waste product and fewer processing/assembly steps
  - Design changes can be made without adding any cost
- Reduction in Army logistical footprint
  - Eliminates the need to ship components across the world
  - Cheaper to repair specialized components than to replace them
- Higher availability of parts
  - Can produce components that are “out of stock” or “out of print”
  - Can produce and/or repair parts at the point of need

"I believe that our two greatest things that we can really make advancement on are robotics and additive manufacturing. I think there is great strength in additive manufacturing."

AMC Commanding General





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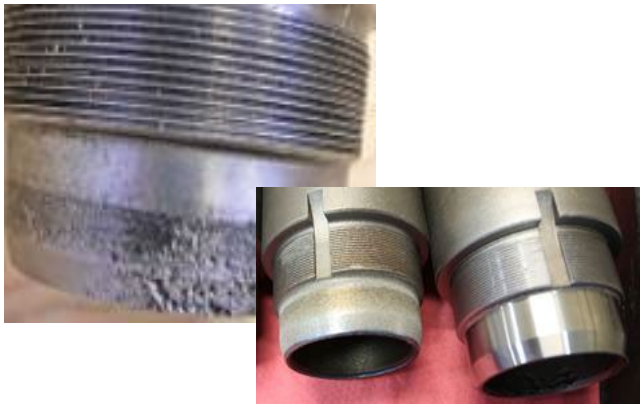
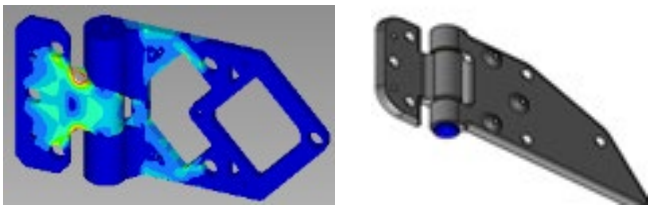


Abrams Road arm before repair (L) and after repair (R).



Door hinge single piece optimization (L) and original (R).

3D printed FMTV indicator box replacement

ACCOMPLISHMENTS

- Successfully repaired an Abrams road arm, currently undergoing testing at the Yuma Proving Grounds
  - Cost savings of $1,100 per part
  - Est. yearly savings of $500k
  - Optimized deposition settings for steel
- Produced production parts for Stryker upgrade program

LAB SPACE

- Established a 3D Printer Users Group co-lab
- 12 machines in GVSC AM lab space
  - 3 metal (Ti 6-4 / 17-4 / 316L / H13 / 4140)
  - 9 polymer (ABS/PC/Nylon/PP/TPU/Ultem)
- 3D scanning capability

EXTERNAL PARTNERS

GRID LOGIC

3D SYSTEMS

ARCONIC Innovation, engineered.

SCHAAV INC

CTC Concurrent Technologies Corporation

DM3D

MICHIGAN

THE PENNSYLVANIA STATE UNIVERSITY 1855

SCHOOL OF MINES 1874 COLORADO

COLLABORATION PARTNERS

ROCK ISLAND ARSENAL

ANNISTON ARMY DEPOT

ARL

…and many others.

FOR FURTHER INFORMATION:

U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND — GROUND VEHICLE SYSTEMS CENTER:
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