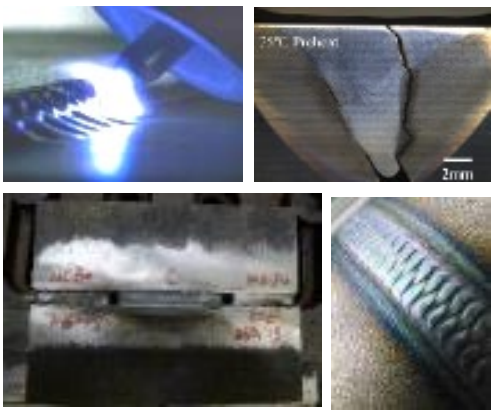
Joining – Welding/Mechanical Fasteners/Adhesives

MISSION

To provide technical expertise through materials joining solutions for ground vehicles and support systems.

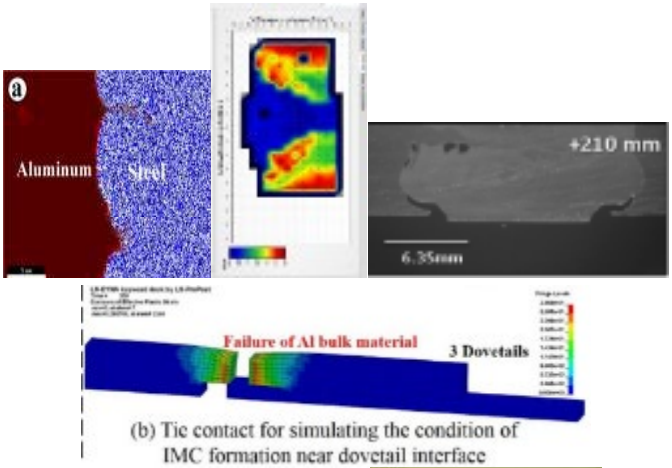
OVERVIEW

- Practically every segment of ground vehicle systems involves at least one aspect of joining.
- Welding is a complex engineering discipline that involves multiple characteristics from many competencies:
  - Materials Science
  - Metallurgy
  - Electrical Engineering
  - Mechanical Engineering
  - Design & Inspection
  - Automation
- Our team of engineers is specialized to use their advanced knowledge and skills to solve problems.
  - Provide solutions to problems involving fabrication of metallics, composites and dissimilar materials
  - Knowledge base of production specifications, properties and characteristics of materials, and engineering principles.
  - We ensure that vehicle structures and components are safe and a benefit to the Army.



RESEARCH AREAS

- Fusion based welding, i.e. Gas metal arc welding (GMAW), Gas tungsten arc welding (GTAW), Shielded metal arc welding (SMAW)
- Solid state welding, i.e. Friction stir welding (FSW)
- Dissimilar material joining (welding, adhesives and hybrid solutions)
- Hydrogen embrittlement and advanced characterization of welds and filler material
- Filler material development and weldability studies for new alloys and advanced materials
- Mechanical fastener evaluation and torque schedules and testing
- High strain rate adhesive evaluation and development
- Environmental exposure effects of joints



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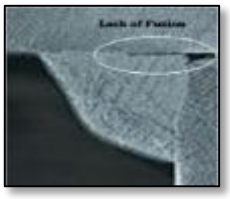
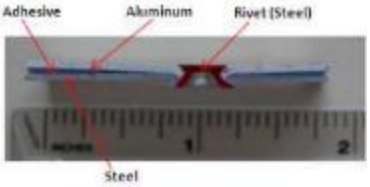
COMPETENCIES



Fusion based and solid state welding. Adhesive applications and mechanical fasteners.

Complex investigations concerning all phases of fastening & joining



Hybridized joining solutions.

Joint designs for structural and high strain rate applications

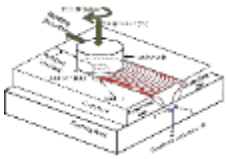
Department of Defense Manufacturing Process Standard

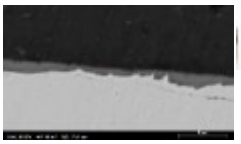
Development, review, and validation of standards, processes & specifications

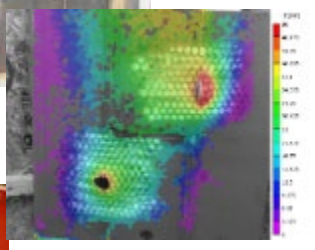
Environmental exposure evaluations.

CAPABILITIES

- Robotic gas metal arc welding
- Friction stir welding & processing
- Ballistic weld certification and testing
- Joint characterization
- Digital Imaging Correlation (DIC)
- High strain rate evaluation
- Environmental exposure testing







CUSTOMER SUPPORT

- Validation / verification of weld requirements
- Weld audits and quality inspections
- Non-destructive/destructive testing & evaluations
- Fastening & joining methods for novel materials
- Route cause analysis and mitigation strategies
- Contract language for weld requirements

FOR FURTHER INFORMATION:

U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND — GROUND VEHICLE SYSTEMS CENTER:
http://www.usarmygvsc.com/

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