U.S. ARMY

DEVCOM ARMAMENTS CENTER

U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND ARMAMENTS CENTER

Armaments Packaging Strategic Focus Areas	06 MAY 20206

ENTERPRISE & SYSTEMS INTEGRATION CENTER| SSTM JASON RUNELL, PACKAGING DIVISION

SUMMARY OF PRESENTATION

Armaments Center Packaging Division Overview

- We provide lifecycle Packaging Engineering support for guns and ammunition

Strategic Focus Areas

- The top 7 packaging strategic focus areas are aimed at addressing established and emerging stakeholder seeds

Strategic Process

- From identifying stakeholder needs to fielding high priority technical solutions

How to Support our Mission

- Key stakeholders include Industry, Academia, and Other Government Agencies (OGAs)
- How to work with the Government (for Industry & Academia)

Armaments Center Packaging Division

Overview

ARMAMENTS CENTER PACKAGING DIVISION OVERVIEW

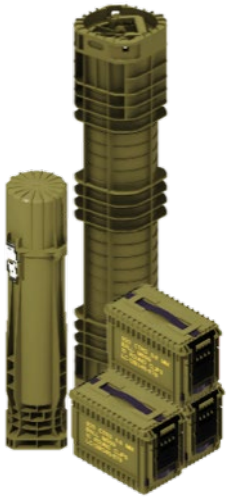
- *The DEVCOM AC Packaging Division provides lifecycle Packaging Engineering support for the Army's Armament Systems. This includes:*

  - Developing New Packaging Technologies
  - Designing New Packaging for New Weapon Systems
  - Designing Improved Packaging for Legacy Weapon Systems
  - Fabricating Packaging Prototypes
  - Performing Packaging Testing
  - Providing Packaging Engineering Support for Items in Production

We provide lifecycle packaging engineering support for the Army's Armaments systems.

PACKAGING TECHNOLOGY PORTFOLIO

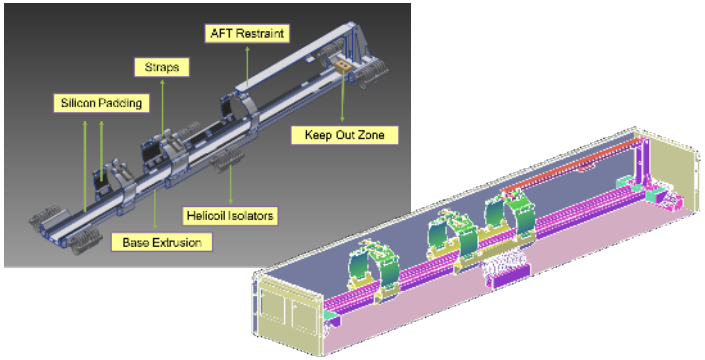
Polymer Packaging Technologies



Steel and Wood Packaging Material

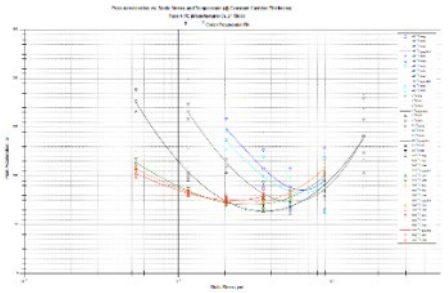
IM Packaging Technologies

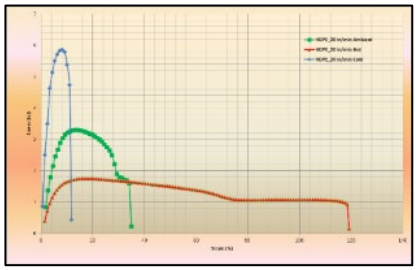
Extruded Aluminum/Cradle Shock Mount Systems

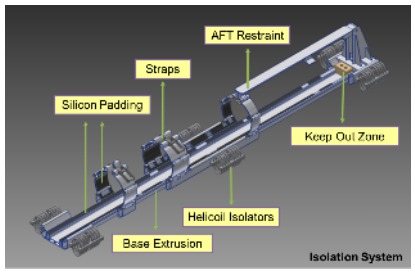


PACKAGING DIVISION CAPABILITIES

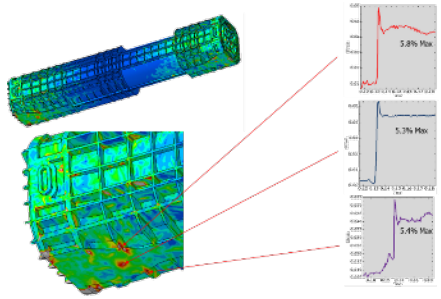
- **Design Analysis**
  - Cushioning Curves
  - Stress/Strain Screening
  - Creo Modeling
  - Cost Modeling

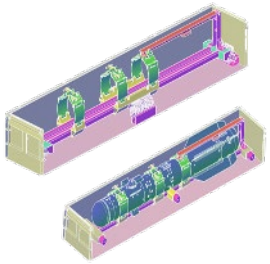


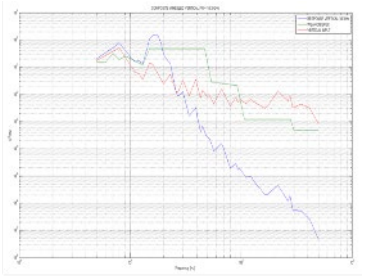




- **Modeling & Simulation**
  - Drop Test Simulations
  - Computational Vibration Analysis







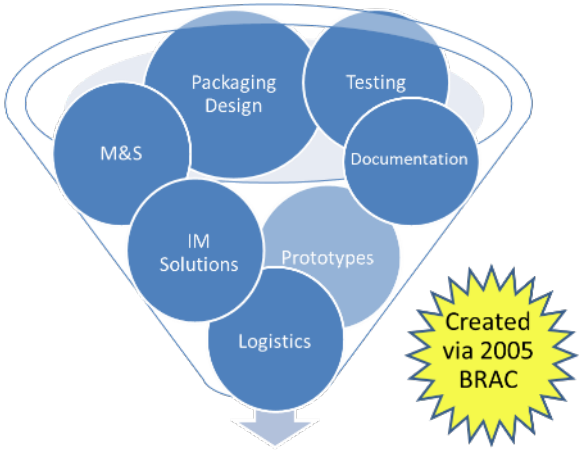
- **Prototyping & Testing**
  - Metal Container Manufacturing at the Prototype Integration Facility (PIF)
  - Instrumented Shock & Vibration Testing

ARMY / NAVY

JOINT PHS&T Center of Excellence

Stronger Together:

- 90 + Engineers Dedicated to Ordnance Packaging Design
- Two Comprehensive Test Facilities
- Pallet-Level Test Equipment
- State-of-the-art Vibration Tables
- Ordnance Handling Equipment Design



Output: Joint Service Full Packaging System under one "Roof" @ Picatinny Arsenal

Armaments Center Packaging Strategic Focus Areas

Overview

PACKAGING STRATEGIC FOCUS AREAS

Problem Statement: Modern Challenges such as Contested Logistics, supply chain shortages, renewed interest in Arctic warfare, and the rising cost of materials and labor require the US Army to rethink its approach to armaments packaging. The Army's inventory of steel and wood packaging designs are decades-old and inefficient at tackling these challenges. To address current and emerging stakeholder needs, the DEVCOM Armaments Center Packaging Division will focus RDT&E investments in 7 key areas.

Technical Priorities

1. Lightweight Materials & Polymers
2. Packaging of Lethal UAS
3. Packaging Design for Automated/Efficient Operations
4. Additive Manufacturing
5. Camouflage & Concealment
6. Wood Packaging Materials
7. Affordable IM Technologies

LIGHTWEIGHT MATERIALS & POLYMERS

Funded/Leveraged Projects

- "SixPAC" 6.8mm Packaging Design/Small Cal Modernization
- Lightweight Steel Container
- Packaging Study for E81 Mortar System
- Fiber-Molded Foam Dunnage

Current Proposals

- FCT Proposal - Lightweight Polymer Container for Mortars
- West Point Capstone Internal Proposal

Completed Strategic Objectives

- Incorporated into DoW Report on Packaging Strategic Focus Areas
- Publishing "SixPAC" Army.mil News Article
- Applied for "PAC" Patent Pending
- Leveraging Industry Solutions for "PAC" through multiple CRADAs

Polymers and other lightweight materials aim to reduce weight, improve logistics efficiency, reduce fuel consumption, enhance supply chain robustness, and reduce ammunition lifecycle costs.

PACKAGING FOR LETHAL UAS

Funded/Leveraged Projects

- Currently designing Packaging for 3 Developmental Lethal UAS Systems
- Tasked to perform SME assessment of packaging suitability for commercially available Lethal UAS systems under evaluation by the Army

Planned Projects

- Will be developing packaging designs for 2 additional Developmental Lethal UAS Systems

Completed Strategic Objectives

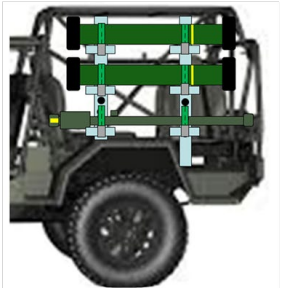
- Incorporated into DoW Report on Packaging Strategic Focus Areas

Planned Strategic Objectives

1. Benchmark existing Lethal UAS packaging designs from Industry, other services, and NATO allies.
2. Establish Army best practices/standards for Lethal UAS packaging designs.

Lethal UAS have transformed global warfare. We must develop robust packaging standards that enable robust protection without constraining the rapid advancement of this game changing technology.

PACKAGING DESIGN FOR AUTOMATION/OPERATIONAL EFFICIENCY



Funded/Leveraged Projects

- Packaging Study for E81 Mortar System
- “SixPAC” 6.8mm Packaging Design/Small Cal Modernization

Completed Strategic Objectives

- Incorporated into DoW Report on Packaging Strategic Focus Areas
- Interviewed E81 User Liaison to identify need to elicit proposed solutions
- Met with CLIK Project Lead, CLIK – AC’s Standardized Mechanical and Electrical Interface for Lethal UAS.

Planned Strategic Objectives

- Identify ammunition vehicle/weapon interfaces that could benefit from automation/efficiency-enabling design features.
- Elicit Industry Expertise to develop standard interface (if needed)

Packaging design features and interface technologies that enable automated and operationally efficient handling, transportation, and resupply in contested environments.

WOOD PACKAGING MATERIALS

Funded/Leveraged Projects

- Enhanced Mold Prevention & Remediation
- Ammo Derogation OMA Efforts
- “SixPAC” 6.8mm Packaging/Small Cal Modernization

Completed Strategic Objectives

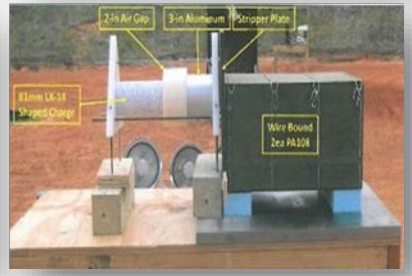
- Engaged with Green Current Solutions (GCS) on their polymer pallet solution
- Reviewed Navy PHS&T Test Report on GCS’s Polymer Pallet

Project Opportunities/Potential Proposals

- Advanced Laser Welding
- GCS Polymer Pallet Evaluation

Continued Research and Development to overcome challenges with WPM including enhanced preservative treatments, identifying material alternatives, and improving marking processes.

INSENSITIVE MUNITIONS



Funded/Leveraged Projects
- IWV material replacement
- Sealed Seam
- Heat Management
- Container Venting Lid (Yang)

Completed Strategic Objectives
- Presented at 2026 AIMB meetings
- Responded to FY26 call for proposals

Planned Strategic Objectives
- March AIMB meetings and programs scheduled
- Conducted IM Projects Brainstorming Session (FY27)

Continued Research and Development of affordable Insensitive Munitions (IM) packaging solutions to improve ammunition survivability, enhance demand reduction, and reduce ammunition lifecycle cost.

ADDITIVE MANUFACTURING OF MUNITIONS PACKAGING

No Funded/Leveraged Projects

<u>Completed Strategic Objectives</u>

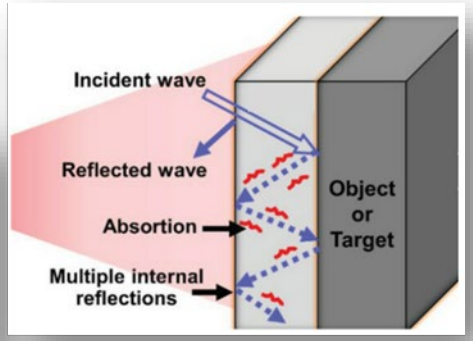
- Incorporated into DoW Report on Packaging Strategic Focus Areas
- Collaborating with AC Prototype Integration Facility for tour of AM capabilities

<u>Planned Strategic Objectives</u>

- Participate on Armaments-Focused AI Working Groups
- Leverage planned/ongoing AM S&T to develop AM-compatible packaging designs

AM packaging designs will enhance battlefield readiness in preparation for when AM technologies become affordable and practical for in-field manufacturing and eventually mass-production.

PACKAGING CONCEALMENT & CAMOUFLAGE



No Funded/Leveraged Projects

Completed Strategic Objectives

- Met with C5ISR EM Detection SME
- Met with Penn State ARL Coating SMEs
- Submitted 3 proposals for EM Concealment/Camouflage Coating Development

Planned Strategic Objectives

- Seek funding opportunities for concealment and camouflage packaging coatings
- Explore CRADA opportunities and other strategic partnerships.

In today's Contested Environments, our enemies have the technology to locate and destroy our ammo stockpiles and convoys. We must develop technologies to conceal our ammunition from advanced enemy detection systems

STRATEGIC PROCESS

Overview

STRATEGIC PROCESS

- Understand Established & Emerging Stakeholder Needs
- Define Technical Priorities/Strategic Focus Areas
- Identify Existing Technical Solutions
- Develop/Mature Technical Solutions
- Transition Solutions to the Field

UNDERSTAND STAKEHOLDER NEEDS

- Stay up-to-date on National Defense, DoW, and Army Strategies to understand high level priorities. ***(Established Priorities)***
- Continuously engage with Internal Stakeholders to refine/revise technical priorities based on emerging stakeholder needs ***(Emerging Needs)***
- Engage with Internal and External Stakeholders to identify cutting edge technologies that shape new technical opportunities. ***(Technology Opportunities)***

Key Stakeholders

- High Level Strategy Publications (e.g. National Defense Strategy)
- Customers (e.g. PAEs, CAEs, PMs)
- End Users (e.g. Infantry Soldiers, Warrant Officers, ASP Personnel)
- Suppliers (Pkg Manufacturers, Ammunition Load Plants)
- Subject Matter Experts
- Industry Partners
- Academia

DEFINE TECHNICAL PRIORITIES

- Establish comprehensive list of stakeholder needs (Stakeholder Analysis)
- Rank priorities based on:
  - Alignment with mission & capabilities
  - Demand Signal
  - Lifecycle Cost/Performance Impacts
  - Technical Feasibility
- Obtain Stakeholder Consensus

IDENTIFY EXISTING TECHNICAL SOLUTIONS

- Leverage Subject Matter Experts (SMEs) to identify solutions that might exist internal to the USG

- Perform Market Research to identify solutions that might exist in Industry or Academia
  - Issue Requests for Information (RFIs)
  - Internet Search
  - AI Query

MATURE PARTIAL OR DEVELOPMENTAL SOLUTIONS

When existing solutions aren't available, we must:

- Modify Partial Solutions
  - e.g. Solution exists but does not meet US Military Requirements
- Mature Developmental Solutions
  - e.g. Solution is currently being developed by the USG, Industry, or Academia, but needs has not yet been demonstrated or qualified.
- Develop New Technical Solutions
  - e.g. Solution does not exist and must be developed from the ground-up.

TRANSITION SOLUTIONS TO THE FIELD

- Leverage existing project funding to develop, qualify, and/or implement technical solution

- Secure funding through formal proposal process
  - Establish Business Case
  - Identify potential sponsor/call for proposals
  - Obtain Customer Endorsement

- Execute Project (as needed):
  - Develop
  - Qualify
  - Implement

How to Support our Mission

Overview

WE NEED YOUR SUPPORT!

Industry and Academia are key stakeholders, essential to transitioning solutions to the field

- Vast Talent Pool of Scientists, Engineers, and Designers
- Ongoing cutting-edge Research & Development
- Comprehensive, Agile Manufacturing Capabilities
- Expansive Product Lines

Other Government Agencies provide key strategic partnerships to drive priorities and identify technical solutions:

- Highly specialized Experts
- End User Feedback Loop
- Ongoing cutting-edge Research & Development

WAYS TO WORK WITH THE GOVERNMENT *(FOR INDUSTRY & ACADEMIA)*

- Register on **SAM.gov**
  - Simple Credit Card Purchases
  - Respond to RFIs
  - 4023 Authority “Contracts”
  - Full and Open Contracts
- Become a NAC Member – *National Armaments Consortium*
  - **DOTC** Contracts – *Defense Ordinance Technology Consortium*
- **CRADA** – Cooperative Research and Development Agreement
  - No funding exchange from USG to Industry Partner
  - Typically, USG provides technical information, engineering support and test services in exchange for prototypes, technical information

SUMMARY OF PRESENTATION

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Strategic Process

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THANK YOU.


U.S. ARMY