McAlester Army Ammunition Plant (MCAAP) Presents
Resonant Acoustic Mixing for Energetics
- **DoD’s premier bomb and warhead loading facility**
  - Production ranges from 40mm to 30,000 lbs Massive Ordnance Penetrator

- **Stores over one-third of the DoD’s conventional munitions**

- **Largest onload capacity of any DoD depot/storage facility**

- **Organic Industrial Base leader for ammunition public-private-partnerships**
  - 20+ year history with partners such as Raytheon, Boeing, General Dynamics, & Textron Systems
High Sheer Mixer

- Long Mix Cycle, Hours
- Macro Mixing at Blade Edge
- Pinch Point Hazard
- High Scrap Factor
- Large Batch = Large Exclusion Zone
- Must Use Low Catalyst
• Mix via Acoustic Energy
• No Mix Blades
• Macro and Micro Mixing
• All Ingredients Up Front
• Up to 100 g Acceleration
Benefits for the Energetics Industry

- Mix Cycle, minutes
- More Thorough Mix
- Better Product Tensile Strength
- Mix in the Item
- Scalable Process
- Can Use Higher Catalyst
Lab RAM Mixing

Resodyne
ACOUSTIC MIXERS
COST REDUCTIONS

• Reduce Number of Processing Steps

• Energy Costs Reduced
  • Smaller Building Footprint
  • No Steam Heat Required

• Reduce Material Costs Due to Less Waste

• Allows for Explosive Molding Versus Machining
INCREASED SAFETY

- Reduced Explosive Arc
  - Smaller batches with less explosive.
- No mix blades = No pinch points
- Remote Operation Capability
• Elimination of Explosive Machining Reduces Scrap

• Less Clean-Up
  • Reduction of Waste & Solvents
  • Reduction in Downstream Waste at Processing Facility

• Reduced Energy Consumption
  • Shorter Mix Time Requires Less Power
  • Acoustic Mixing Creates Mix Heat Avoiding Need for Heated Mix Vessels.
Faster

Safer

Flexible

Better Mix Quality

Just Cooler
• Used to Mix High Viscosity PBXN-110 for Booster Rings in BLU-109

• $1000/each Savings for PBXN-110 Booster Rings

• Equipment/Facility Payback was 6 Months
Future of RAM – 55 Gallon

DOD’s Ammunition Experts
PBX Simulant Processing using Continuous Acoustic Mixing (CAM)

Resodyne™
Acoustic Mixers
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brad Black</td>
<td>Director of Quality</td>
<td>(918) 420-7604</td>
<td><a href="mailto:bradley.d.black.civ@mail.mil">bradley.d.black.civ@mail.mil</a></td>
</tr>
<tr>
<td>Treaver Price</td>
<td>Supervisory Chemist</td>
<td>(918)-420-6009</td>
<td><a href="mailto:treaver.price.civ@mail.mil">treaver.price.civ@mail.mil</a></td>
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