






IM Melt-Cast Explosive Production Facility

Insensitive Munitions & Energetic Materials Technology Symposium 2013

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Outline

- Objective
- Background
- Design
- Process Flow Diagram
- Schedule
- Major Accomplishments / Status



Objective

- Build a new melt-cast explosive production facility at Holston Army Ammunition Plant (HSAAP) to manufacture insensitive munitions (IM) explosives more effectively and efficiently.



Background

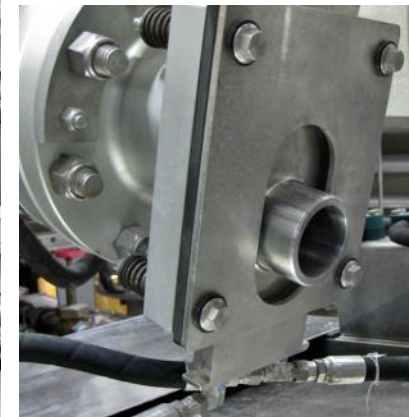
- HSAAP, a Government-owned, contractor-operated (GOCO) facility, is the qualified NTIB source of IM melt-cast explosive formulations.
- Since the 1940's, RDX or HMX is blended with molten TNT to produce various classes of melt-cast explosives known as Cyclotol and Octol, respectively.
- A new generation of melt-cast explosives has been developed and fielded to comply with DOD 5000.2-R, which requires munitions to withstand unplanned stimuli to improve the warfighter survivability.
- To maintain consistent IM quality, these explosives, IMX-101 and IMX-104, have much tighter tolerances than their predecessors.
- The modernization effort is needed to manufacture IM explosives more effectively and efficiently.
- Additionally, this effort will provide HSAAP with the capability to meet future production requirements.

Design (1/2)

- Agitated Melt Kettles
 - Reduce cycle time
- Volumetric Feeders
 - Consistent feed rate for dry components
- Modified Hold-Up Kettle Discharge Valve
 - Pneumatic slide gate valve provides better flow control of molten product onto casting belt
 - Steam jacketed to keep product molten



Melt Kettle (Top)
Feeder (Left)
Discharge Valve (Bottom)

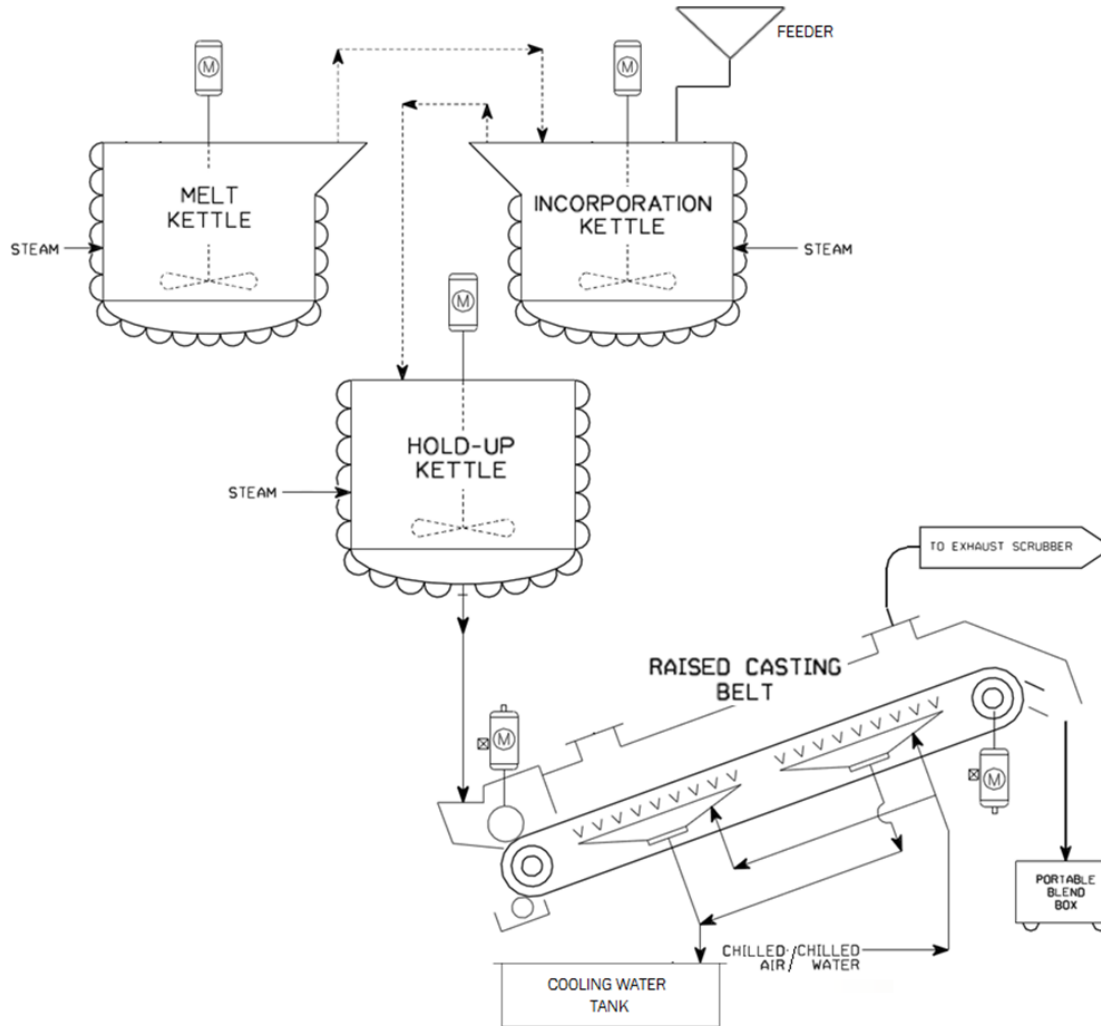


Design (2/2)

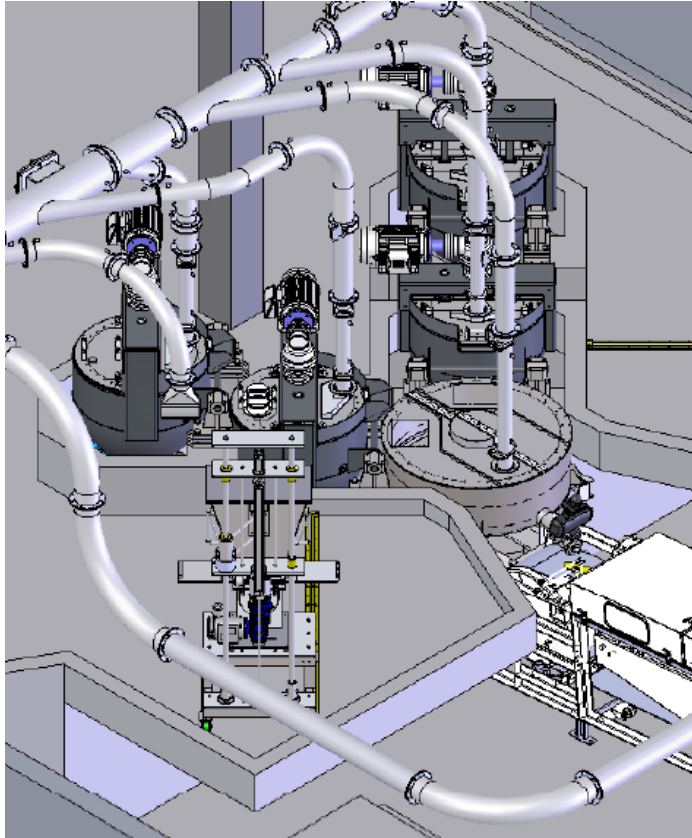
- **New Casting Belt System**
 - Variable-speed belt controls cooling rate
 - Water and air cooling capability
 - Enclosed casting belt eliminates water exposure
 - Chiller system controls cooling water temperature
 - Recycle cooling water to reduce waste
- **Improved Ventilation System**
 - Reduce operators exposure
 - Consistent room temperature
- **Plastic Sheeting**
 - Cover walls and ceiling to prevent contamination



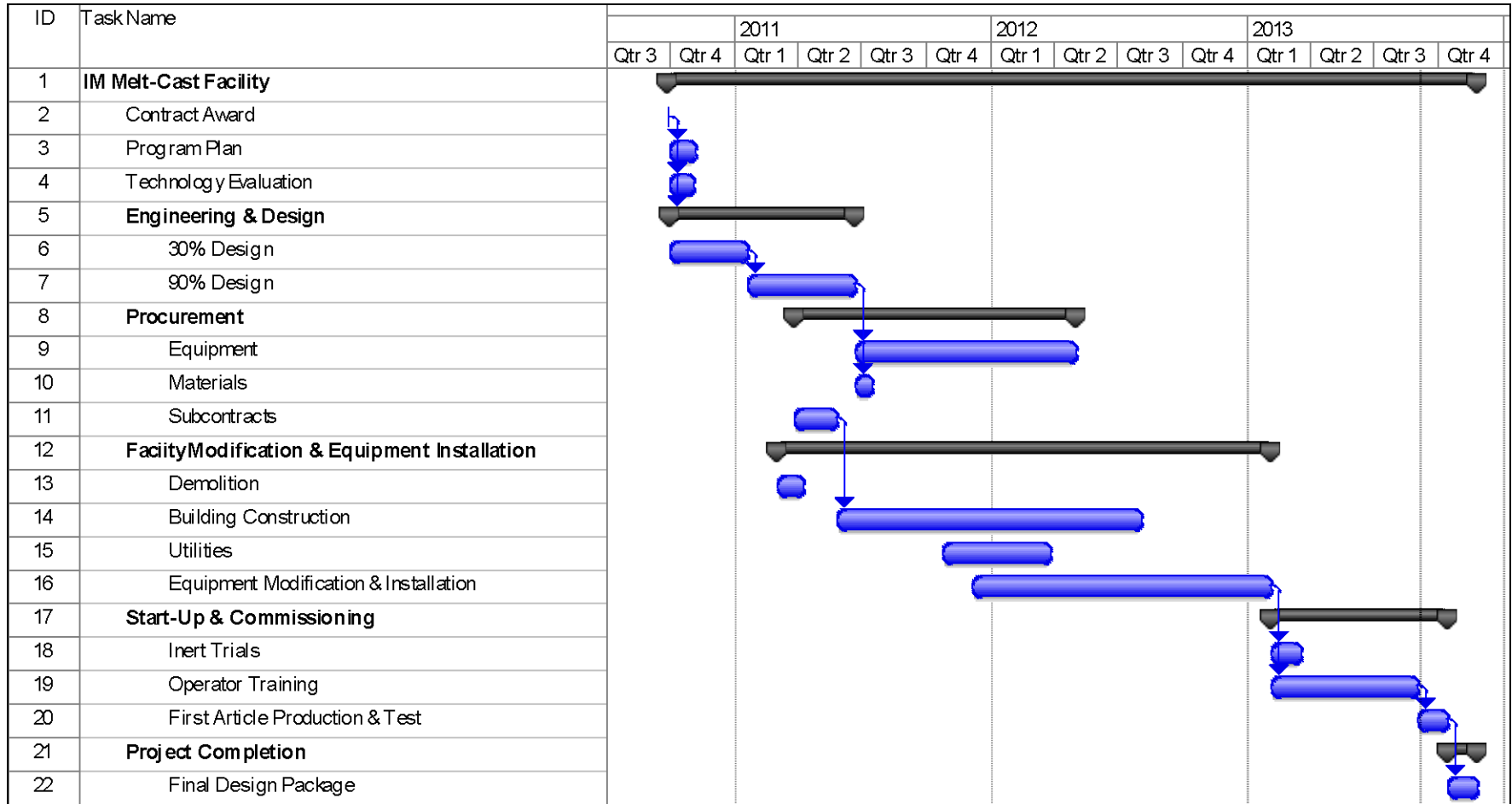
Process Flow Diagram



Equipment



Schedule



Major Accomplishments / Status

- Completed Tasks
 - Engineering & design
 - Facility modification
 - Equipment procurement & installation
 - Mechanical, electrical & interlock check-out
 - Inert trials
 - Operator training
- Planned Activities
 - First article production & testing