



2001 Continuous Mixer and
Extruder User's Group
Picatinny Arsenal



*Continuous On-line Molding
of
TPE Rocket Propellant*

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Program Objective

- To design, fabricate, install and prove out the operation of a continuous on-line molding system for TPE rocket propellant utilizing a team approach.
- The system must maintain temperature of 250 °F, pressurize propellant to 600 psi and produce propellant that satisfies the ERGM system requirements of
 - Burn rate slope $\leq .57$
 - Burn rate @ 8000 psi = 2.2 in/sec





Team Members

- Romeo Engineering: Mr. Paul Oehler/Mr. Ron Davis
- Applied Ordnance Technology: Mr. John McDevitt
- Thiokol Corporation: Dr. Mike Dewey/Mr. Vince Mancini
- Steven's Institute of Technoloy: Mr. Jason Garrow/Dr. Sudhir Railcar
- IHDIV: Mr. Mark Michienzi





System Components

- Infeed (oven) and Outfeed Conveyor Lanes
- Remote Docking Station with
 - shuttle conveyor
 - dual horizontal metering cylinders
 - vertical stuffer cylinder
 - vacuum capability
- Three Diverter Valves (scrap, meter cyl 1, and meter cyl 2)
- Eight Rocket Motor Mold Assemblies
- Hydraulic Pump System
- Control Panel with a AB SLC 5/04 PLC
- Man - Machine Interface Control Station in Control Room





System Operation

- Insert Loading Sequence Slides
- Insert Pictures of
 - Infeed /OutFeed Conveyors
 - Docking Station and Shuttle Conveyor
 - Assembled Mold
 - Disassembled Mold Components
- Show Five Minute Video of System Operating





Accomplishments to Date

- Completed System Design and Fabrication
- Completed Inert Testing at Romeo Engineering (batch mode)
- Completed Facility Modifications at IHDIIV

- Near Term Plans
 - ➔ Complete System Installation at IHDIIV
 - ➔ Complete Inert System Testing and Obtain Approval for Live Operations
 - ➔ Complete Live Operations to Continuously Mold Rocket Motors and
 - ➔ Test Fire at Thiokol Corporation

