Time for an Upgrade in US Propellant Manufacturing

Teaming for Performance

Alliant Techsystems and Rheinmetall Nitrochemie

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Presenter:

ATK

RHEINMETALL NITROCHEMIE

Operational Environment & Tactical Transformation

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Operational Environment

WW II

Volume (Quantity over Quality)

Large number or formations

Area denial

Area targeting

Enemy: Large State Actors

10% of the population in Uniform

Korea / Vietnam

Increased investment in technology

Enemy: Soviet Sponsored States

Gulf War

Introduction of precision weapons

Stand down of Armor units

Expectation of quick victories

Enemy: Rouge States

Increase in simulation

GWOT

Precision

Point Targets
Elimination of Collateral Damage

Reduced reliance on Artillery
Reduced reliance on Armor

Increased reliance on drones

Enemy: Rouge States and Non State Actors

Less than 1% in Uniform

Propellant Requirement

Large volumes
Not Sensitive to Variation

Lower volumes
Consistency

Sensitive to Variation
Repeatable

Bringing Advanced Propellants to the US DOD Market

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Combining Nitrochemie's Advanced Technology with ATK's High Volume Manufacturing to Provide our DOD Customers with Key Requirements

Combining Nitrochemie's modern world class propellant production capabilities with the US Army's propellant production facility

Reducing the Footprint

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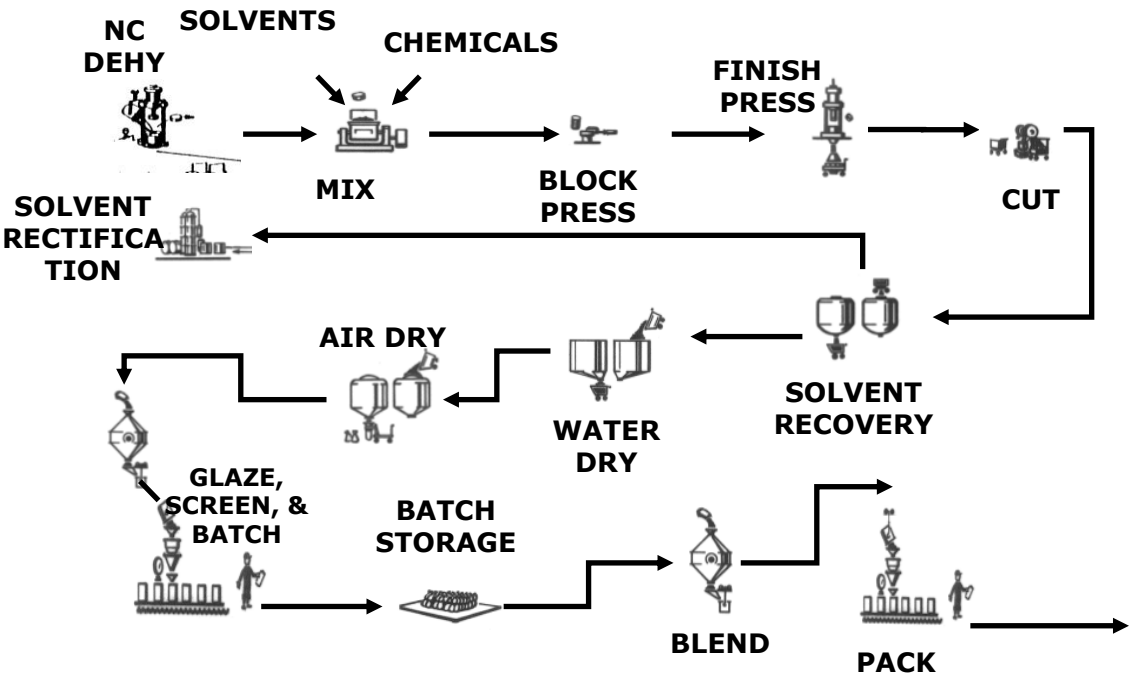
Maintaining the current US GOCO infrastructure is costly: electricity, steam, water, roads, buildings, equipment

By reducing the footprint, one can also reduce the environmental and utility impact

By implementing advanced safety technologies, energetics processing can be consolidated and co-located

Modernization Goals: safe, flexible, scalable, environmentally responsible with low operating costs, high quality product



Safe, Clean, Reproducible, Efficient

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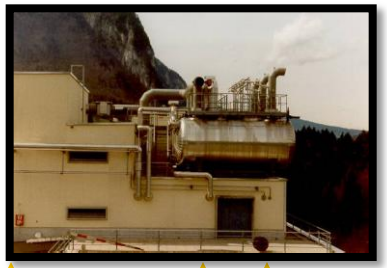

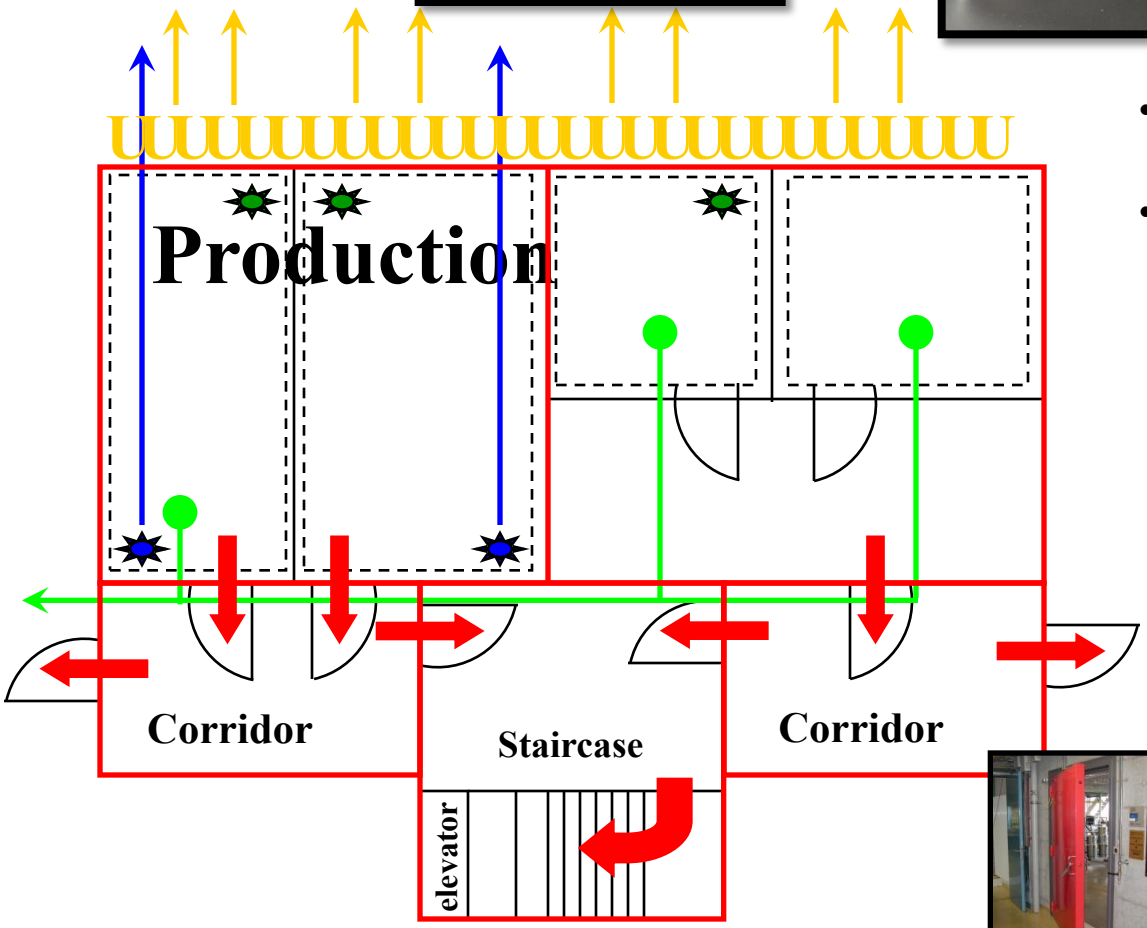

- Separate operator from product
- No detonation
  - Separation of production rooms from infrastructure
  - Light walls
  - Fast acting fire detection and deluge
  - Solvent detection and emergency ventilation
  - Ventilation of rooms and at source

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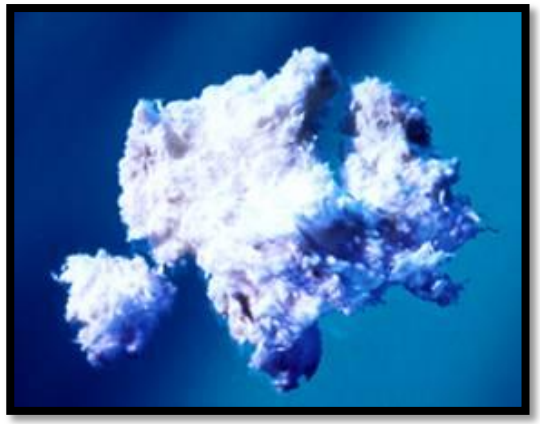
Nitrocellulose Improvements

- Current US manufacture of NC up to a month
- By implementing pressure boiling, process times can be reduced by 70% with a similar reduction in utilities
- Ability to handle alternative pulp sources – various tree types, various nitration levels



Automated, Instrumented Mixing and Blocking

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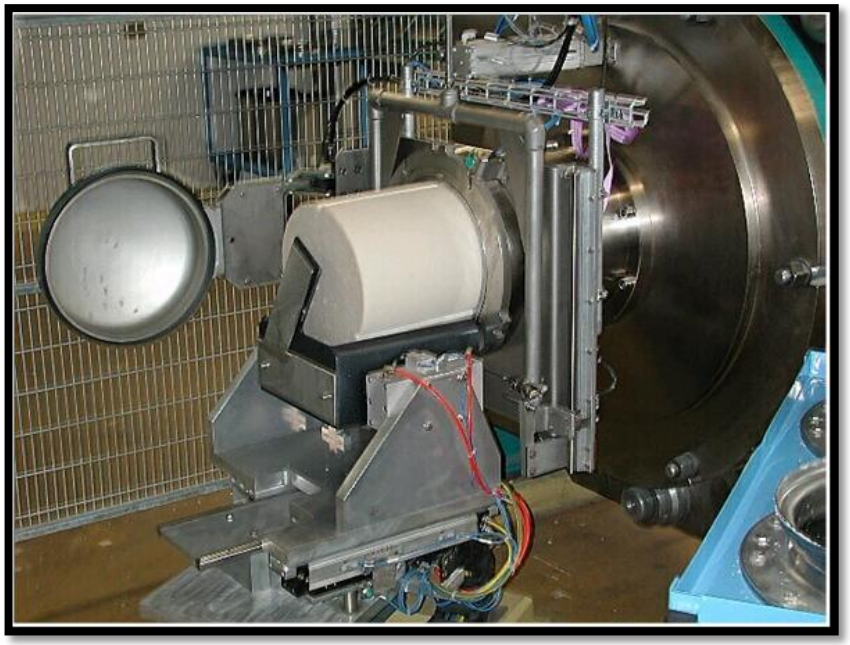
- Bar coding to prevent formulation errors
- Sealed mixing capability and robot addition of ingredients
- Advanced safety controls
- 80% reduction in man hours



Solvent Equilibration and Pressing

Strand Collection and Cutting

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- **Introducing automation and high speed cutting reduce labor costs by 80%**

Reduction in Costs - Finishing

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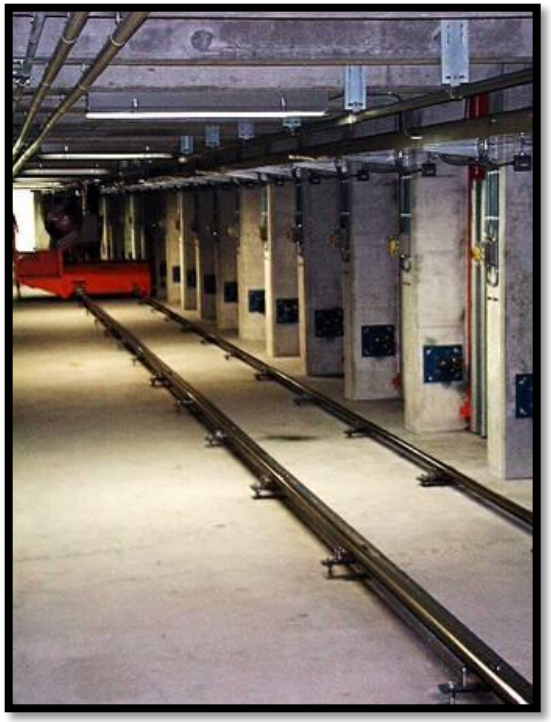

Modernization is on the horizon for the US Industrial Base

A successful modernization effort will focus on :

- **Reducing the foot print and upgrading the infrastructure**
  - Maintaining the level of safety and security
- **Designing low cost/low labor processes**
  - Operations that are scalable and flexible
- **Implementing modern environmental practices**
- **Building a facility that manufactures a high quality product at a competitive price in the market**

Thanks and Questions?

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Thanks for your attention!

Questions???

For Sales and Technical Assistance, please contact the program offices:

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