



TACOM
Life Cycle Management Command



Integration of Commercial Technology at Anniston Army Depot

Presented by:

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New Commercial Systems

- ▶ **Molten Salt Bath Cleaning System**
- ▶ **DC Electric Assembly Systems**
- ▶ **Air / Electronic Gauging Systems**



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CoS Army
Superior Performance in
Depot Maint Excellence

ANNISTON ARMY DEPOT
WEAPONS • COMBAT VEHICLES • AMBULATORS

BRONZE & SILVER

ISO
9001:2000
14001:2004
18001:2007

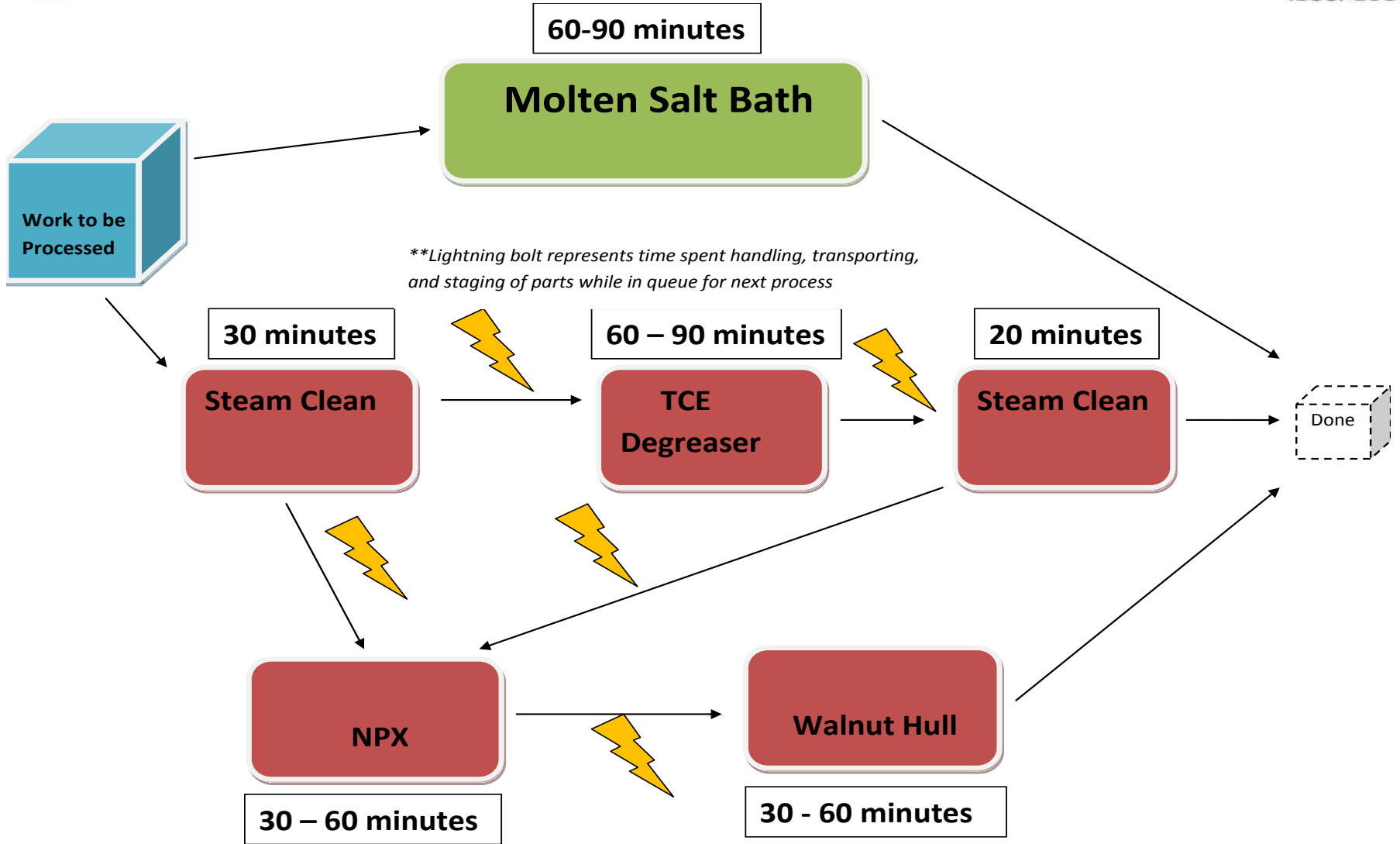
Molten Salt Bath Cleaning System



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Cleaning Process Comparison

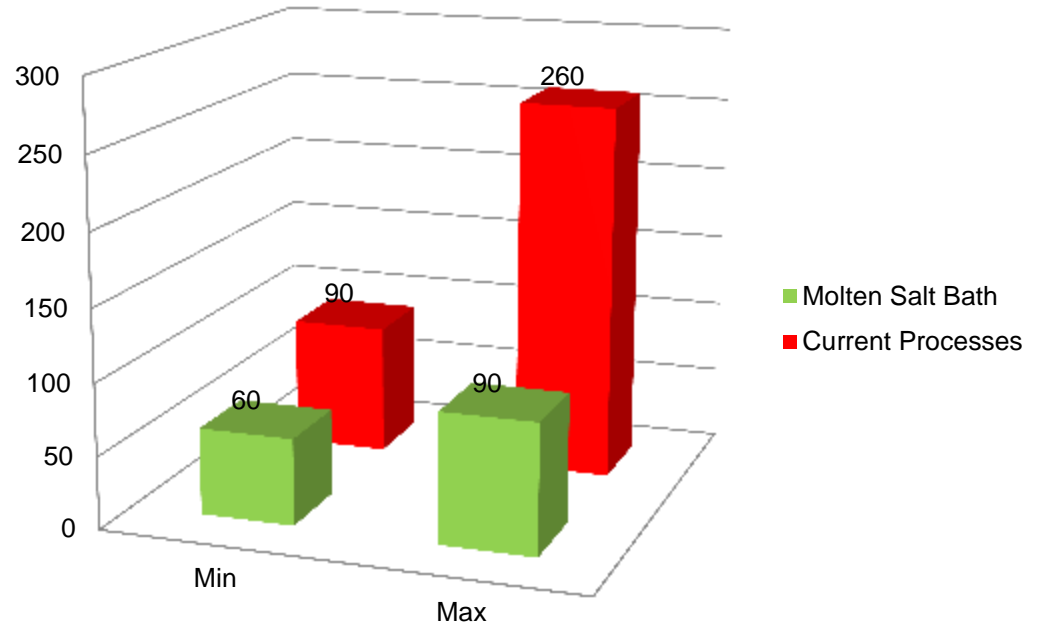




Process Times

Process Time (minutes) Molten Salt Bath vs Current Processes

| Process | Process Time (minutes) | |
|-------------------|------------------------|-----|
| | Min | Max |
| Current Processes | 90 | 260 |
| Molten Salt Bath | 60 | 90 |



Please note the time for Current Processes does not include time spent handling, transporting, and staging parts for the next process



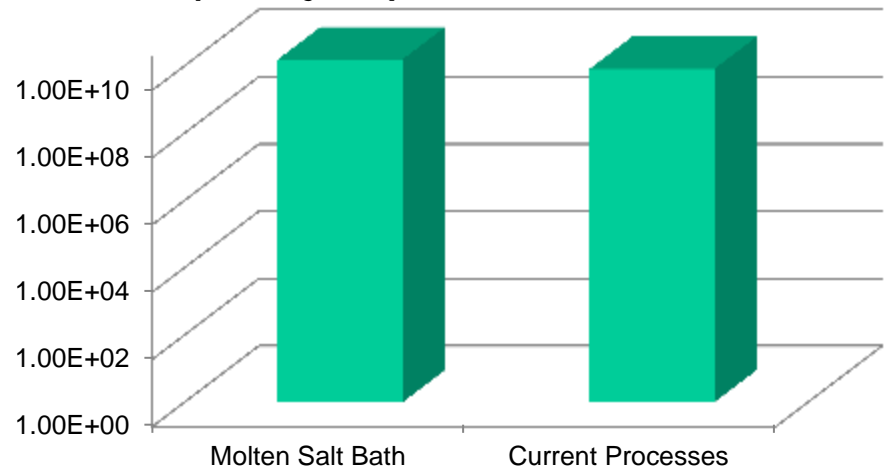
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Energy



| Process | BTU/day | BTU/yr |
|------------------|----------|----------|
| Molten Salt Bath | 5.27E+07 | 1.58E+10 |
| TCE Degreaser | 3.02E+06 | 9.06E+08 |
| Steam Clean | 2.42E+07 | 7.26E+09 |
| NPX | 1.50E+04 | 4.50E+06 |
| Walnut Hull | 3.50E+04 | 1.05E+07 |
| | | 8.18E+09 |

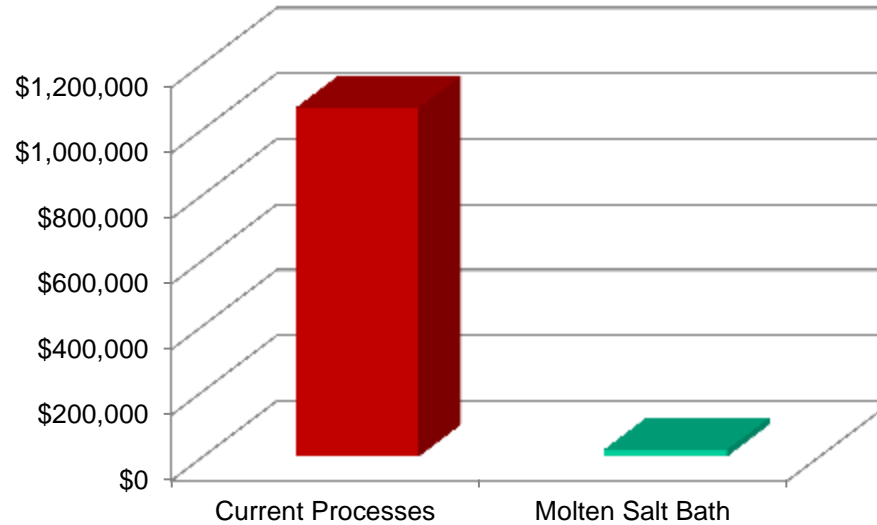
Energy Requirements (BTU/year)





Raw Materials

Annual Raw Materials Cost



| Current Processes Raw Materials | Annual Cost |
|---------------------------------|--------------------|
| NPX | \$989,000 |
| TCE | \$28,000 |
| Kitchen Mate | \$23,000 |
| Walnut Hull | \$25,000 |
| TOTAL | \$1,065,000 |

| Molten Salt Bath Raw Materials | Annual Cost |
|--------------------------------|-----------------|
| Salt | \$12,000 |
| KGC Brightener | \$9,000 |
| TOTAL | \$21,000 |

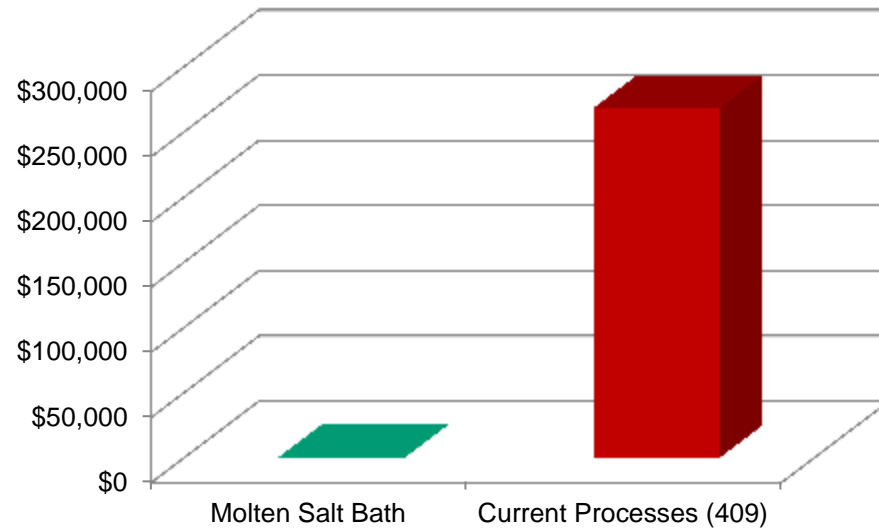


Hazardous Waste Costs

| Process | B. 409 Annual Hazardous Waste Costs |
|--------------------|-------------------------------------|
| NPX | \$179,667 |
| Walnut Hull | \$48,000 |
| TCE | \$10,720 |
| Sludge/Filter Cake | \$30,000 |
| TOTAL | \$268,387 |

| Process | Annual Hazardous Waste Costs |
|------------------|------------------------------|
| Molten Salt Bath | \$528 |

Annual Hazardous Waste Costs





Quality Improvements



- ▶ **Elimination of Process Variability**
- ▶ **Reduction of Retained Contaminates**
- ▶ **Elimination of Parent Material Loss**
- ▶ **Improved Overall Cleanliness**
- ▶ **Improved Worker Environment**



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Challenges Addressed



Previous Operation

- ▶ Air Tool Assembly Overtorque
- ▶ Assuring All Bolts Torqued
- ▶ Only Final Torque Audited
- ▶ Manual Data Recording
- ▶ Minimal Audit Data Traceability

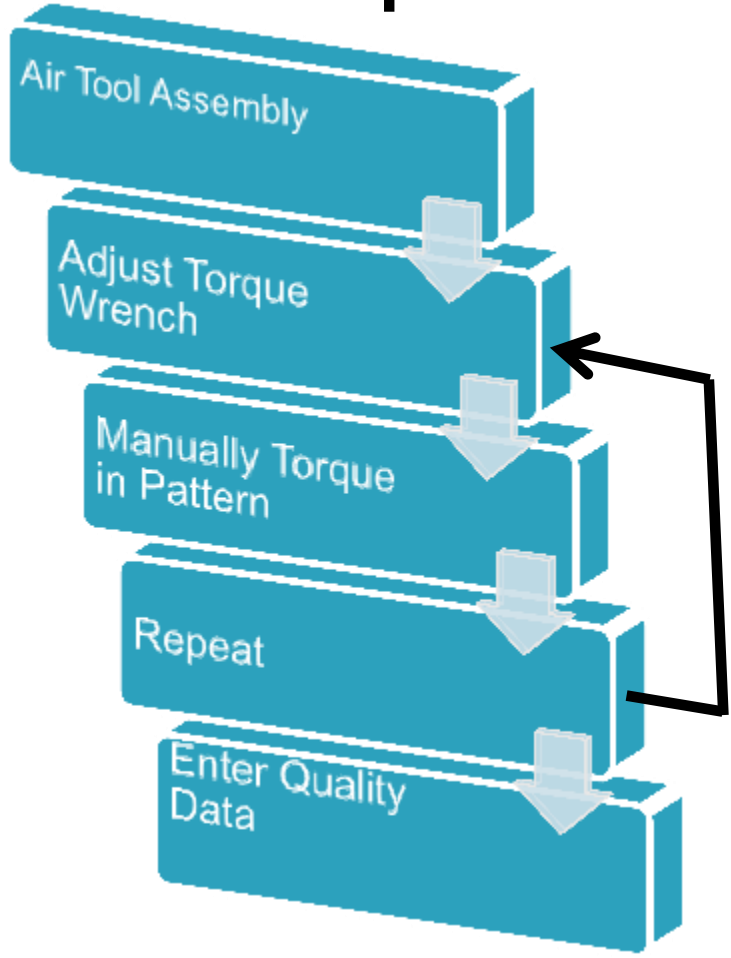
Current Operation

- ▶ Assemble and Torque With One Tool
- ▶ Automatic Group Bolt Count
- ▶ Multi Step Torque Sequence
- ▶ Automatic Database Entry
- ▶ Assembly Details via Database Query

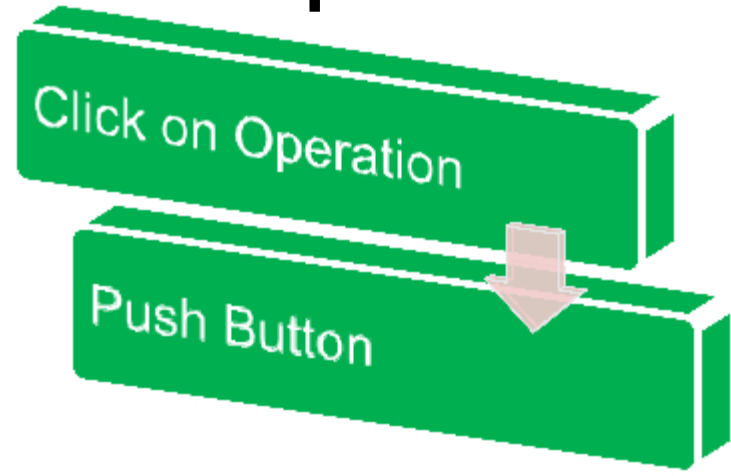


Assembly Process Comparison

Previous Operation



Current Operation





Improvements Realized



- ▶ **87%-96% Reduction in Cycle Time**
- ▶ **Practically Eliminated Crossed Thread Rework**
- ▶ **Identification of Non-Conforming Fasteners (real life \$3.2M single incident cost avoidance potential)**
- ▶ **ZERO torque related failures since installation**



Recognizable Users



Automotive



Heavy Truck



Engines



Tier 1 Auto & Agriculture



Machine Builders:



Other Vehicles/Aerospace



Government:



Food & Beverage:



Other Known Brands:





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Air / Electronic Measurement Systems

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Challenges Addressed



Previous Operation

- ▶ **Mic Readability and Interpretation**
- ▶ **Lack of Data for Statistical Analysis**
- ▶ **Manual Calculations for Taper and OOR**
- ▶ **Yearly Calibrations**
- ▶ **Manual Data Recording**

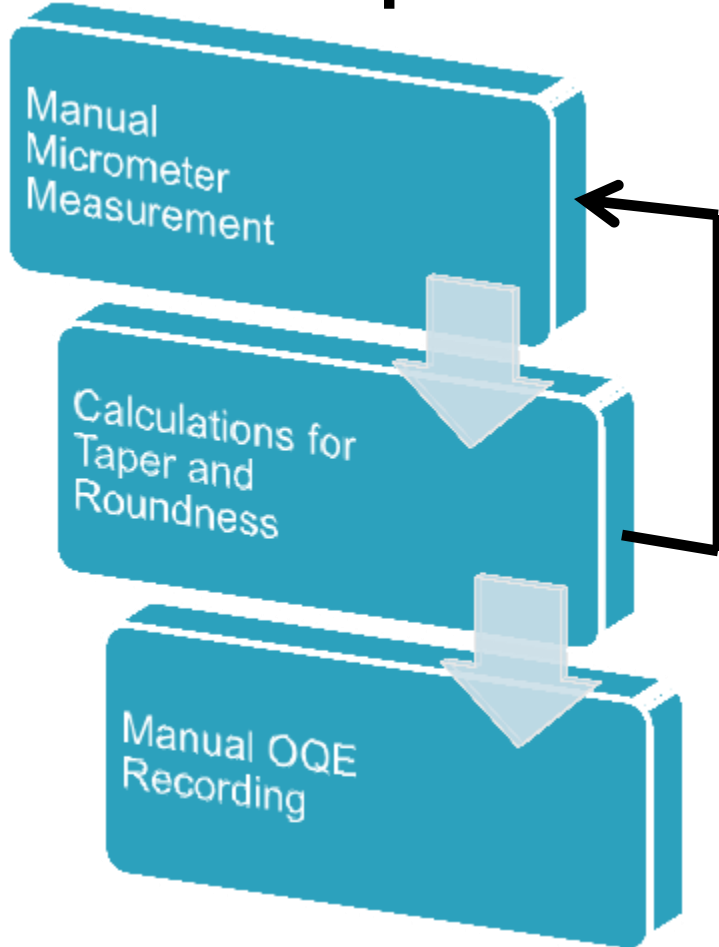
Current Operation

- ▶ **Graphic Display and User Independence**
- ▶ **Easy Statistical Analysis from History Files**
- ▶ **Automatic Calculations for Taper and OOR**
- ▶ **Daily Calibrations**
- ▶ **Automatic Database Entry**

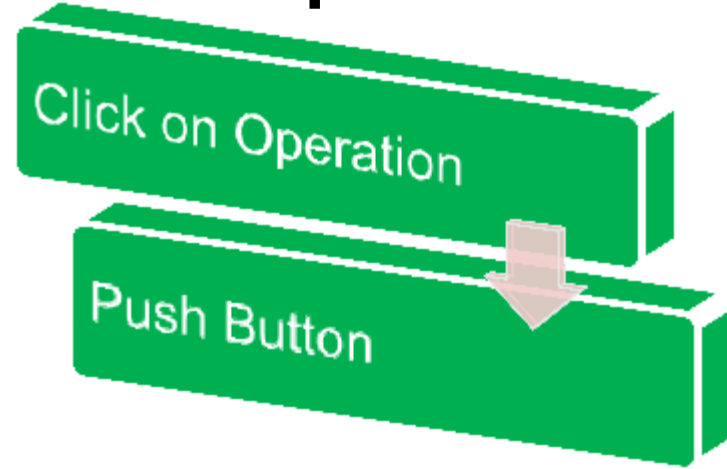


Measurement Process Comparison

Previous Operation



Current Operation





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Improvements Realized



- ▶ **Up to 98% Reduction in Cycle Time**
- ▶ **Improved Data Accuracy**
- ▶ **Improved Component Inspection**
- ▶ **Higher Quality End Item for Customer**



Recognizable Users

Timken Bearing

Tier 1 Automotive Manufacturers

Heavy Duty Truck and Equipment Manufacturers

Artificial Joint Manufacturers