



East Kentucky Power Cooperative
Materials Management Success Stories
Exploring Continuous Improvement

Presented to Rapid Fossil Group
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Forklift Safety Moment

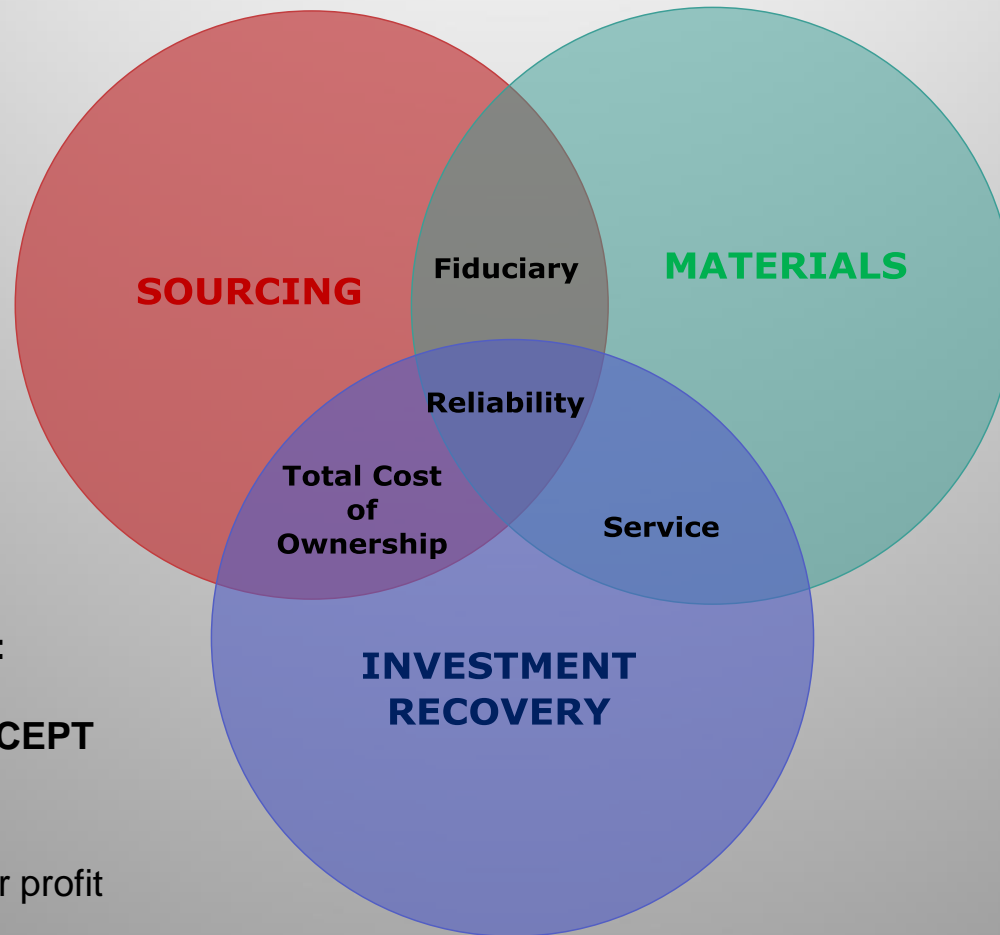


Address the number one danger in your warehouse

Featured: An idea brought to Materials Management by a new employee.

The Blue Spot safety light is being adopted in all plants at the request of our CEO after a warehouse safety walk.

Utility Supply Chain Value Proposition



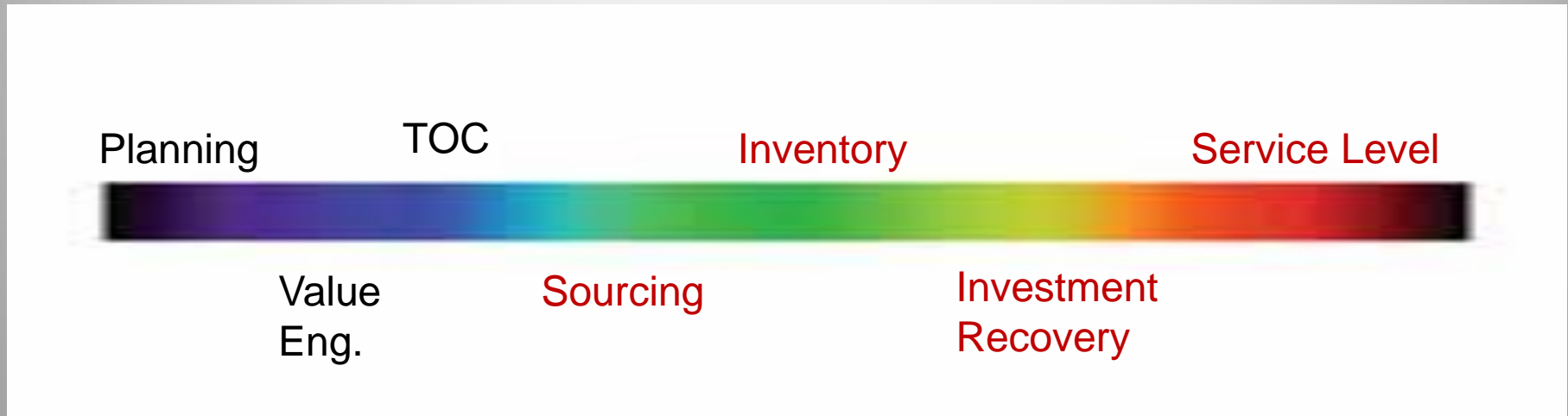
Derived from:

THE MARKETING CONCEPT

An integrated effort to serve customer needs for profit

- Philip Kotler

Supply Chain Contribution Spectrum



Some areas of Supply Chain contribution are referenced above.

Early involvement offers opportunities for value added contributions.

Our industry tends to place supply chain in a later reactive position rather than in an earlier proactive one resulting missed opportunities.

How Early Is Your SC Involved?

- Does your organization
 - involve SC in project and outage planning & budgeting?
 - share a forward (3-5 yr.) capital & O&M plan?
 - ensure SC participate in pre-outage meetings?
 - have Materials Standards Committees?
 - include SC involvement in planned system changes (i.e. when new plant parts will replace old)?

Inventory Optimization Requires Early Involvement

- Align with organizational strategy
- Involvement in project, maintenance, and budget planning sessions
- Attend outage planning meetings
- Inventory analytics
- Actively manage from conception to grave
 - planning, inbound, storage, replenishment, outbound (issue/disposition)

Materials Standards Committees

- By business unit
- Planners, operations, & supply chain membership
- Executive sponsorship
- Stock addition review/approval
- Standardize material – catalog approval *
- Address SSJ & sourcing policies
- Address key inventory/sourcing decisions
- Inactive inventory review/surplus decisions



Standards Catalog Item Approval Form.docx

Do You Know Your Inventory Carrying Costs?

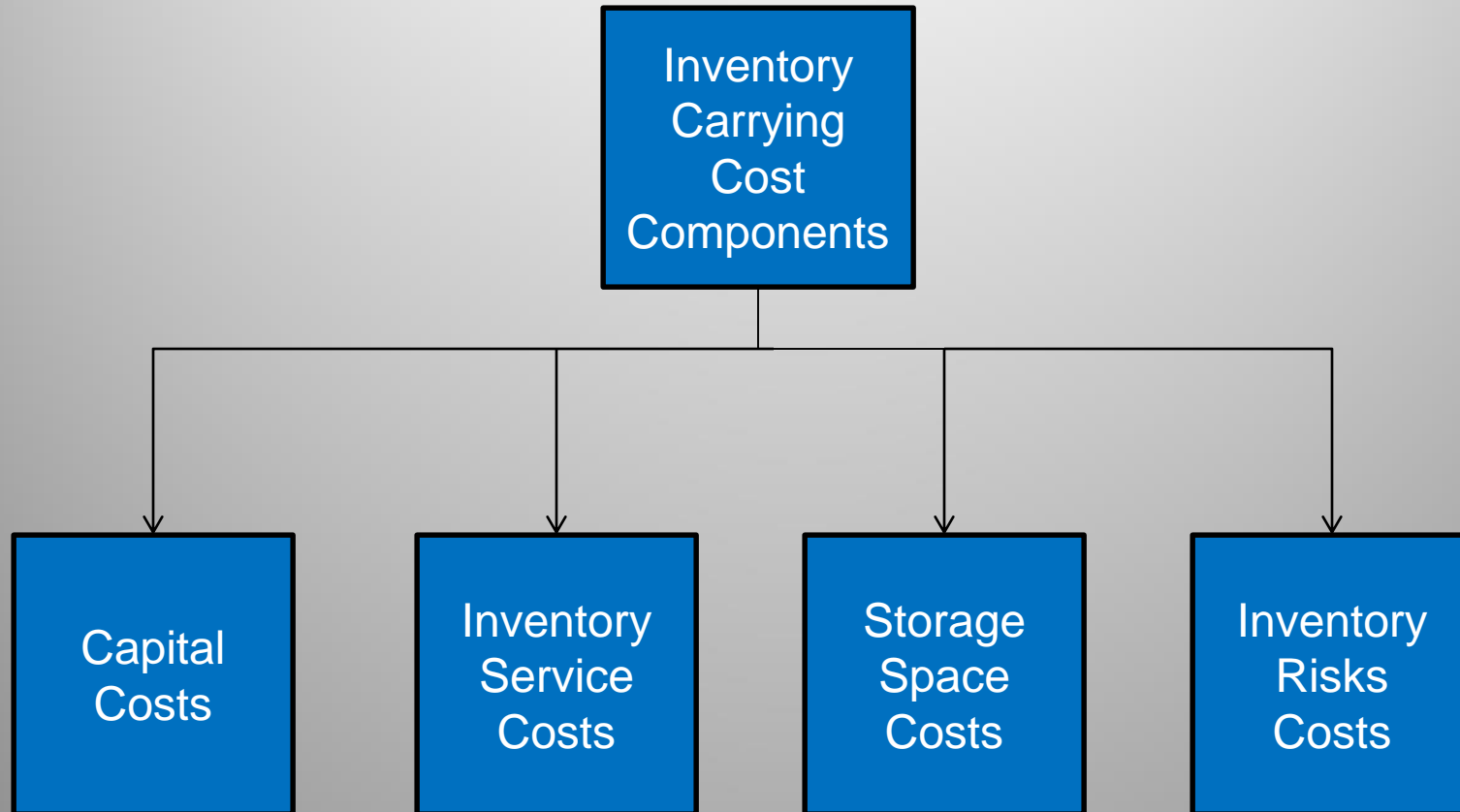
- Has your organization calculated its carrying costs or does it use an estimate?
- Does your organization consider carrying costs in making inventory decisions?

Inventory Carrying Costs Overview

- 65% of companies don't compute, they estimate
- Leading logistics experts place the cost of carrying at 18% - 55% per year (product & business dependent)
- “Rule of thumb” carrying cost = 25% of value
- Cost of capital is typically the leading cost driver in total costs
- Inventory = Money - many companies assess costs to be 2% per month

Source: Council of Logistics Management (CLM) & Other Supply Chain Studies

Components of Inventory Carrying Costs



Conventional Carrying Cost Models

Cost Component	Standard Ranges
Cost of Money	6%-12%*
Taxes	2%-6%
Insurance	1%-3%
Warehouse Expenses	2%-5%
Physical Handling	2%-5%
Clerical & Inventory Control	3%-6%
Obsolescence	6%-12%
Deterioration & Pilferage	3%-6%
Total Costs	25%-55%

* Cited studies do not account for current market (historically low) cost of money

EKPC Variable Inventory Carrying Costs

EKPC Cost Component	EKPC Calculated Cost
Cost of Money (Weighted)	4.40%
Insurance	0.33%
Property Taxes - Inventory	1.16%
Inventory Adjustments	0.93%
Surplus (includes obsolescence)	2.50%
Theft, Breakage, Other Shrinkage	0.10%
Rented Space & Equipment	0.00%
Utilities	N/A
Total Variable Carrying Costs	9.42%

EKPC Carrying Cost Comparison

Cost Component	Standard Cost Ranges	EKPC Calculated Costs
Cost of Money	6%-12%*	4.40%
Taxes	2%-6%	1.16%
Insurance	1%-3%	0.33%
Warehouse Expenses	2%-5%	9.62%
Physical Handling	2%-5%	
Clerical & Inventory Control	3%-6%	0.54%
Obsolescence	6%-12%	2.50%
Deterioration & Pilferage	3%-6%	0.10%
Total Costs	25%-55%	18.65%

* Cited studies do not account for current market (historically low) cost of money

What Are Your Inventory Control Best Practices?

- Inventory Management & Control
 - Stock additions
 - Inventory analysis
 - Cycle counts
 - Nomenclature & data integrity
 - Alternate sourcing
 - Assured/Vendor Stocking Programs
 - VMI
 - Inactive inv. review & investment recovery
 - Returns to stock
 - Value added service levels

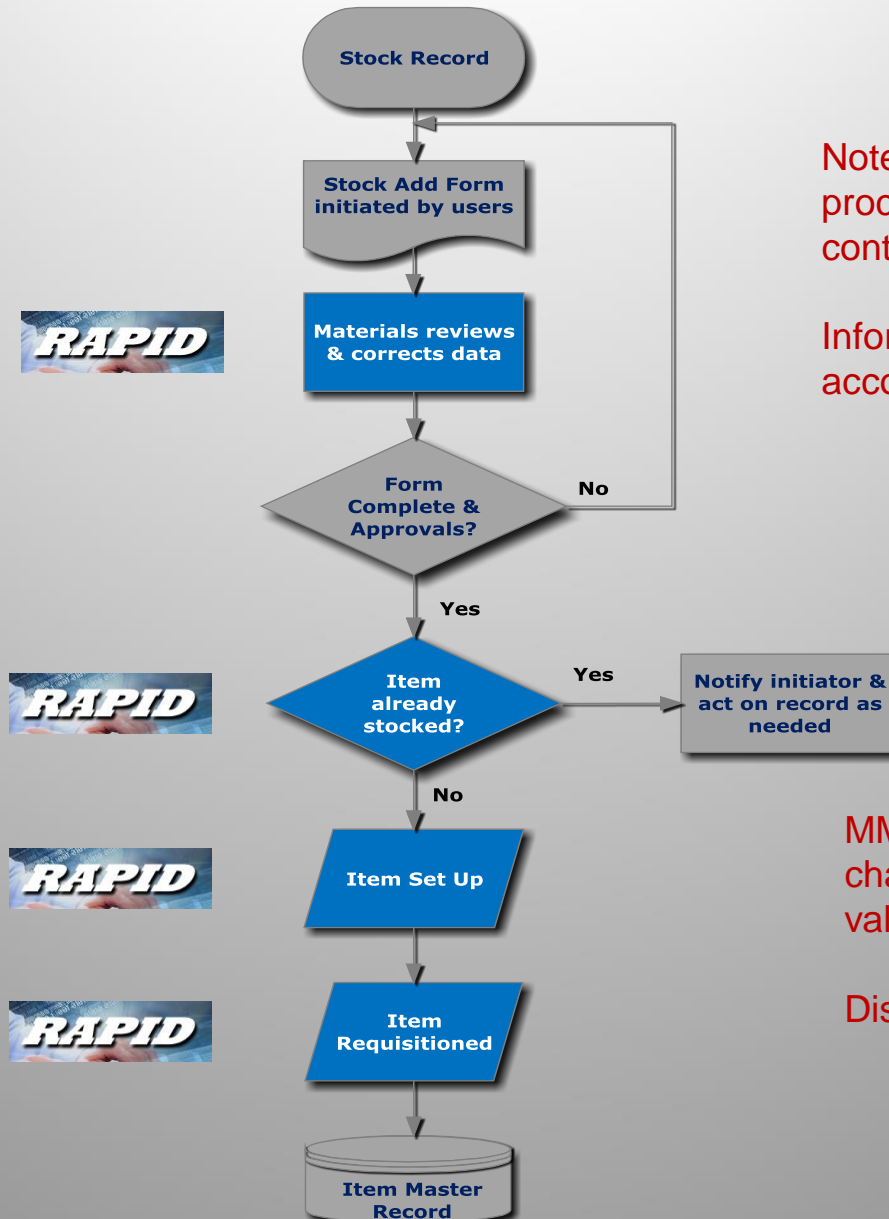
Inventory Additions

- Stock Additions

Gatekeeping is needed

- Formal process & vetting (MSC)
- Replacement analysis
- Information accountability (where used, system qty., duplicates, substitutes)
- Data integrity (nomenclature stds.)
- Supplier qualification

Stock Add Process w/Rapid Resource



Note: A formal stock add process is an excellent inventory control mechanism.

Information quality and accountability are critical.

MM involvement & healthy challenge in the process is a value add.

Discuss challenge points

Inventory Analysis & Control

- Establishing stock levels

Plan rather than stock for periodic known peaks

- Usage forecast/history
- Usage frequency
- Usage patterns
- Seasonality
- Price
- Lead-time
- Std. Packaging
- Remember EOQ
- Consumable/Spare mgmt. methods

Min/Max Reviews

- At replenishment
- Management by walking around
- Leverage cycle count observations
- Usage analysis
 - Along with tools like EOQ
- Ongoing specific project basis & goals
 - Slow movers and/or high volume items
 - By where used (category/family)
 - By planner

Strategic Materials Management

- Stock level & value containment

Team up for alternate sourcing opportunities - a dollar saved is a dollar that doesn't go to inventory which saves another 20% or more

Identify prospective obsolete systems and related surplus and obsolete parts

Use SMEs and MSCs

- Standardization
- Sourcing/Alt. sourcing
- Vendor stocking, assured stocking, etc.
- Repairable program
- Consignment/vending
- Inactive inventory review & action (stockroom audits)

Inventory Accuracy

- Goal:

Accuracy \geq 98%

Inventory accuracy is a key to
plant reliability assurance

- Housekeeping
- Marking/labeling
- Location mgmt.
- Bulk/non-bulk storage
- Nomenclature
- UOM precision
- Cycle counts
- Receipt/issue practices (including off-hours)

Inventory Count Accuracy

- Cycle counts
- Root cause analysis
- Goals
- Written work practices
- Methodology
 - (A,B,C, frequency)
 - Critical Items
- Technology
 - Bar coding

Month: **4**
 Week: **15**

Cycle Count Reporting - 2016

YTD	Count	Variance	% Correct	Sys Qty	Count Qty	Delta Qty	Delta Qty %	Sys Value	Count Value	Delta Value	Delta Value %
COOP	2,158	28	98.7%	42,923	42,958	35	0.1%	2,999,913	3,024,596	24,683	0.8%
SMITH	1,058	1	99.9%	13,935	13,934	(1)	0.0%	2,676,292	2,675,838	(454)	0.0%
SPUR	6,431	126	98.0%	60,593	60,263	(330)	-0.5%	7,170,557	7,159,201	(11,356)	-0.2%
WIN	2,949	751	74.5%	672,442	669,658	(2,958)	-0.4%	7,455,494	7,627,766	165,690	2.2%
Total	12,596	906	92.8%	789,893	786,813	(3,254)	-0.4%	20,302,256	20,487,401	178,563	0.9%

Inventory Data Integrity

- Nomenclature format (top down description), spelling, punctuation
- Complete technical description (all elements)
- MFR (prime & alternates)
- MPN (complete & accurate)!



Rapid is a valuable resource developing & checking inventory nomenclature & data integrity!!

Alternate Sourcing

- Materials management is on the front lines
 - closest SC resource to the customer
 - eyes and ears of the operation
 - know customer challenges
 - see opportunities
 - see and touch parts every day
 - OEM made vs OEM supplied
 - stockroom audits and reverse engineering coordination

Returns to Stock

- Threshold = max inclusive of open orders
- Generally, no returns above 1 yr. usage
 - Case by case exceptions (critical, outage, etc.)
- Material condition acceptable for issue
- Returns put on FIFO issue priority
- Regular returns are sign of problems
 - “Returns By Planner” report to management
- At 20% carrying cost, 5 yrs. buys it again

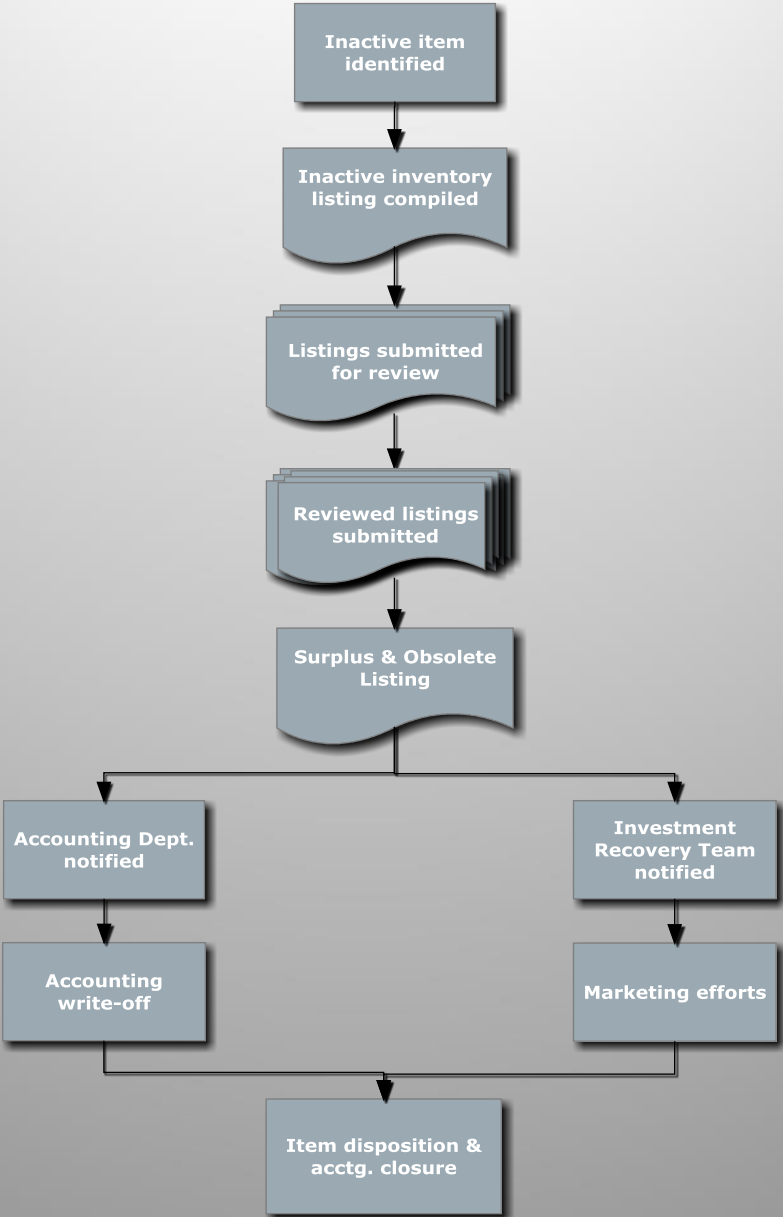
Managing Returns to Stock

- Returns

Thou shalt not inflate inventory with poor planning and over ordering!

- Accept only new or like new
- Accept qty. up to max and/or one year use
- Identify responsible parties
- Mgmt. reporting
- RTV or Investment Recovery
- Root cause analysis

Inactive Inventory Review Process





The 7 Rs of Investment Recovery

When utilizing these seven options for disposition, (from highest value returned to lowest value received) companies will realize increased revenue and make significant contributions to the environment. Adapt this to a sustainability message within your organization.

1. **REUSE** – A portion of the two to five percent of idle/surplus equipment can be reused internally through investment recovery programs. In addition to keeping salvageable equipment out of the landfills, reusing existing equipment instead of purchasing new reduces capital, depreciation, taxes and insurance costs.
2. **RECYCLE** – Disposal costs and hazardous waste can be reduced with recycling. By converting oils, spent cleaning fluids and valuable chemicals, income is generated as well as resources reserved.
3. **RECONDITION** – Rebuilding assets, such as instrumentations, valves, pumps and motors, to be put back into service or used as a backup is more economical than purchasing new. Toner printing cartridges can be rebuilt and refilled, disposable clothes and gloves reconditioned and cleaned and pallets repaired and rebuilt.
4. **RESELL** – As used equipment and excess inventory markets which resell unwanted idle/excess equipment become more prevalent, finding new sales outlets for old assets reduces losses and increases income.
5. **RECLAIM** – Spent solvents and chemicals, lube and quench oils and other chemicals can be reclaimed and reused. Recovering precious metals from x-ray, photo and plating operations further reduces waste, preserves natural resources and improves operating costs.
6. **RETURN** – Unwanted new equipment, spare parts, materials and supplies can be returned to the manufacturer or vendor for future credits or hard cash.
7. **REMOVE** – Removing excess/idle assets lowers the tax base and increases returns on capital.

EKPC Investment Recovery

- Produced > \$2 million in sales first three years
- \$ straight to bottom line
- \$1 in IR = \$20 in new revenue
- Formal process
- No additional resources, three people part time
- Rapid is a key resource for inventory sales
 - 56.82% recovery on surplus boards and other successes

Investment Recovery Notable Sales

Knuckle Boom Truck Sold at
J.J. Kane Auction for \$52K



Surplus elevator
structure \$80K



Investment Recovery Notable Sales

Used 11N2 turbine parts at Smith Station sold for \$27K.



In the past this would have been thrown in the metal dumpster and EKPC would have received pennies on the dollar. Watch those metals – VAM, etc.!

Early Wins in 3rd Quarter

1750 HP Motor at Dale
Station Sold for \$16K



24" HDPE Pipe at Cooper
Station Sold for \$60K



Supplier Leverage & TOC

D8R Dozer \$85K Trade in Value



Caterpillar IT28F & Kawasaki 90ZV-2
Wheel Loaders \$100K Trade in Total



Cost Avoidance



* Demolition of 7 barns - Cost avoidance of \$50K, \$3K cash – EPA impact

Service & Value Added Practices

- Contract for value (team with Sourcing)
- Batch P.O.s & billing
- Material condition maintenance (motors)
- Stock rotations (rubber goods, bearings, etc.)
- Safety – Sling inspections (RFID tags)
- Supplier/parts quality
- Kitting (outage kits, job trailers, etc.)
- Staging

Use Industry & Professional Resources

- Collaboration
- FOMIS, RAPID, UPMG, EPRI, ISM, APICS, Platts
- Market intelligence
- Supplier audits & performance meetings

Summary

- Supply Chain/Materials has great opportunities to create value from the planning stages to Investment Recovery
- Share common goals & be involved early
- Inventory management balances risks and costs
- Inventory management is strictly governed by defined policies, procedures, and regulatory requirements
- Challenges exist:
 - inventory growth, inventory optimization, and inventory accuracy
 - parts obsolescence and stranded inventory with aging units
- Risks are present:
 - supplier quality and emerging counterfeit parts.
- Best practices:
 - internal and external collaboration
 - supplier relationship management
 - shared KPI metrics and Shared Performance Objectives
 - inclusion of your inventory staff in planning and budget processes.

Questions & Discussion



Thanks from your friends in Kentucky

