



The McWane

Pollution Prevention Challenge (P2C)

Who is McWane



For Generations

- Family-run Company
- Began 1921- McWane Cast Iron Pipe, Birmingham, AL
 - 28 Manufacturing Facilities located throughout US, Canada, Australia, China, Norway, Chile, South Korea
 - 18 Non-Manufacturing Facilities
- Employs 6,000 team members

McWane



For Generations

- Robust Environmental Management System (EMS)
- Utilizes various Environmental Databases to track performance
- Annual Compliance and EMS Evaluations

McWane



For Generations

- Continuous Improvement
- Engage Team Members
 - 2010 ErgoCup Competition
 - 2011 Pollution Prevention Challenge (P2C)

Program Development

- Scope of Program
 - Definition of Pollution Prevention
 - Teams – up to 8 individuals (hourly and management personnel)
 - P2C Entry Form
 - Names of Team Members
 - P2 Category (Source Reduction, Material Substitution, Reuse or Other)
 - Title
 - Brief Description of P2 Project
 - Implement and Measure P2 Project
 - Presentation to panel of judges

Time Line

- February 15, 2011:
 - Announcement of McWane Pollution Prevention Challenge (P2C).
- Feb 15 - Mar 1, 2011:
 - Webinars will be held to discuss specifics of the P2C.
- Feb 15 – May 2, 2011:
 - Facilities decide on projects & team members (and begin work on projects)
 - Facilities submit application forms (forms will be provided by Corporate).

Time Line

- Nov 1, 2011:
 - Completed project submission to corporate for judging
- November 15, 2011:
 - Make presentation via WebEx to Judging panel.
- December 1, 2011:
 - Announce the winners of the P2C.

P2C Entries

- 2011
 - 29 entries/11 plants
 - 13 P2C projects met all qualifications
- 2012
 - 42 entries/13 plants



Judging Process

- Part 2

Judging

- 3 of the 13 entries submitted final entries
- Consultants/State Agency Personnel
- Environmental Managers from McWane nonparticipating sites utilizing SharePoint

Judging

- Innovation
 - The entry represents newly created ideas/solutions, devices or processes
- Simplicity
 - The solution is simple and straightforward and potentially applicable to other locations.
- Cost Savings
 - The entry provides an attractive Return on Investment (ROI).

Judging Criteria

- Environmental Benefit
 - The solution significantly reduces or eliminates pollution.
 - Results must be quantifiable
- Presentation Quality
 - The problem, solution, and benefits are clear.

Internal Prizes

- 1st Prize - \$1,000 per member
- 2nd Prize - \$500 per member
- 3rd Prize - \$250 per member

Lessons Learned

- We should have considered all 29 entries in P2C Challenge
- We should not have restricted projects that were already in the development/implementation stage (1/1/11)
- Communicated more frequently with plants about project status, offered more assistance with implementation

Questions?



Manchester Tank - Elkhart

Pollution
Prevention
Challenge
(P2C) - Facility
Implementation


Encouraging & Selecting Projects

- What do employees or department heads complain about?
- Past projects that “failed” or stopped short of completion
- Current year objectives & targets
- You will probably need to “identify” a few areas for each department
- You likely have a project champion just waiting for a reason to act

Encouraging & Selecting Projects (cont.)

- Our facility has an Environmental Management System (EMS), we've spent countless hours on the Aspects and Impacts list. Why not use it?
- One A&I metric is Pollution Prevention (potential). Higher number = higher potential
- E-mailed one or two possible options to each department head

Use Your Aspects & Impacts



| Aspects/Activities/Products/ Services | Impacts | Location | Public Health | Environmental | Pollution Prevention | Environmental Risk | Economic Impact | Total CR x L x F x C |
|---|-------------------------|----------|---------------|---------------|----------------------|--------------------|-----------------|----------------------|
| Aluminum Forming - Chemicals (Draw Oil, Cleaner) | Water Discharge | Plant 2 | 1 | 1 | 3 | 1 | 1 | 112 |
| Material Handling - Packaging (shrink wrap, sleeves, wood, cardboard, etc.) | Resource Consumption | Ship/Rec | 0 | 0 | 2 | 1 | 1 | 32 |

Two Projects Identified

- Aluminum Forming
 - Dry lubricant (food grade polyethylene) replacement for mineral oil draw lubricant
 - Past failure of this project due to high cost of application equipment
- Packaging
 - Pet peeve of the Warehouse Manager
 - Not previously addressed within a “system”

Project Implementation – Aluminum Dry Lube

- Re-quoted equipment
- Involved suppliers
- Road trip (July, 2011)
- Internal justification
- PO issued (June, 2012)
- Status – 8 to 10 weeks from delivery
- Won 3rd place - \$250 / team member

Project Implementation – Shipping

- Multi-pronged approach
- Lots of data tracking
- Involved local customers
- Involved production & sales staff
- Benefits were immediate
- Won 1st Place - \$1,000 / team member

The Winning Team



Project Recognition

- Gift cards distributed mid-December
- It's fun to pass out \$10,000!
- Re-cap of projects at plant-wide meeting
- Picture and brief summary on the McWane intranet home page for the winning project

Lessons Learned

- P2C is a great way to use your EMS as a project driver
- Constant attention from the team (during the competition) and management (through periodic updates) is a good way to make sure a project doesn't get "lost"
- Environmental Manager is in a good position to pull on the shop floor and push the upper management
- 1 year is not typically enough time....

2012 Pollution Prevention Challenge - Elkhart

- ◉ Energy Reductions – Roofing & Lighting
- ◉ Welding Flux Elimination – TRI Chemical
- ◉ Weld Line Consumables (2013....)
- ◉ Pallet Re-Design (No P2)
- ◉ Storm Water Toxic Reductions (2013...)
- ◉ Aluminum Girthseam Welder (2013....)



Manchester Tank & Equipment Elkhart, Indiana

Shipping Department
Pollution Prevention
Challenge (P2C) - 2011

Pollution Prevention (P2)

- Is reducing or eliminating waste at the source by modifying production processes, promoting the use of non-toxic or less-toxic substances, implementing conservation techniques, and re-using materials rather than putting them into the waste stream.
- This project's focus is on modifying production processes and re-using materials

MTE-Elkhart Facility Background

- Started production in 1976
 - Currently: 151 Employees, 200,000 sq.ft.
- Elkhart, Indiana = “RV Capital of the World”
- Products Include:
 - 1# to 100# LP (propane) Cylinders
 - 15# to 250# Refrigerant Cylinders
 - Fire Suppression Cylinders
 - Steel and Aluminum Forklift Cylinders
 - Distributor for ASME Cylinders – MTE-Quincy
- Member – Indiana Partners for Pollution Prevention since 2007

P2 Opportunity

- The facility routinely adjusts pallets, OSB spacers and cardboard sheets from inventory that are “lost”. These costs are not accurately captured in the bill of materials (BOM) for our products.
- Local delivery customers in the Recreational Vehicle (RV) industry had been asking us to take back packaging.
- The packing slips for customer orders (shipper) have large gaps or un-needed data that is wasting paper.
- Container-loads of cylinders are using a large amount of rolled corrugated packaging.

Examples of packaging

Pallets Returned from
Customers



Sleeves



Examples of packaging

Sleeves on Cylinders



Returned Sleeves



Examples of packaging

Raggle Sticks



Rolled Corrugated



P2 Opportunity (continued)

- Several customers were taking multiple small orders every few weeks instead of a full skid once per month. This occurs with local deliveries (our trucks) and LTL shipments (contract freight).
- Many customers are not taking advantage of our freight carriers resulting in many small LTL shipments with a wide variety of trucks coming on and off the property (inefficient).

Shipping Department Team

- Beth Acosta – Shipping Manager
- Alberto Preciado – Shipping Leadperson
- Michael Love – Material Handler
- Douglas Perez Tijerino – Driver
- Tom Perrin – Material Handler
- James Phelps – Material Handler
- U. Belio Calderon – Inspector/Tester
- Bob Mangas – Sales Manager

Shipping Department P2 Goals

- Reduce the amount of paper used / wasted on shippers
- Implement more efficient local delivery process
- Begin process of switching customers to our preferred LTL carriers
- Begin reclaiming and re-use of pallets, OSB spacers, wood, sleeves from vendors & local delivery RV customers
- Improve BOM accuracy for packaging items
- Evaluate options for container load packaging

P2 Shipping - Timeline

- May –
 - Assemble team and discuss options
 - Begin packaging BOM audits
 - Start asking local customers about returnable packaging
- June -
 - Tracking of data underway
- July – October
 - Processes being integrated

Reduce the amount of paper used / wasted on shippers

- Reduced header notes for 10 large customers allowing a sales order to print on a single page instead of 2 to 4 pages.
- Corrected 9/2011
- Will prevent 8,325 pages of paper from being used.
- 95.58 pounds annually

Correcting Multi-Page Shippers

Extra Header Notes, 3-Pages

FAX TEST CERTS TO DIANE
STEPHENSON 205-661-4171
DSTEPHENSON@AMEREX-FIRE.
COM

ALL COLLECT SHIPMENTS TO
TRUSSVILLE AL OR BROWNS
VILLE TX USE SAIA 1ST
CHOICE OR ABFS 2ND CHOICE
LTL UP TO 16' AND/OR
OVER 12,000# GET A QUOTE
PHONE TRAFFIC DEPARTMENT
FOR TRUCKLOAD INSTRUCTION
205-655-5749 ATTN:JEANNIE

QUINCY SHIPPING - TAKE
PHOTOS OF TANKS LOADED
ON TRUCK BEFORE
SHIPMENT. E/M TO
TOM SCHILSON AND BUD
DEROY.

ANY SHIPMENTS GOING TO
WAREHOUSE IN BROWNSVILLE,
TX MUST BE MARKED AS
FOLLOWS:
FREIGHT COLLECT - 3RD PTY
BILL TO AMEREX CORP,

SHIP VIA: SAIA

WAYBILL NO: 04081711100129

CONTINUED ON NEXT PAGE

Condensed Header Notes, 1-Page

FAX TEST CERTS TO DIANE
STEPHENSON 205-661-4171
DSTEPHENSON@AMEREX-FIRE.
COM

ALL COLLECT SHIPMENTS TO
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LTL UP TO 16' AND/OR
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PHONE TRAFFIC DEPARTMENT
FOR TRUCKLOAD INSTRUCTION
205-655-5749 ATTN:JEANNIE
TRACKING #
NO PRO # LEFT

| | | | | |
|----|----|------------------------|-------|----|
| 50 | EA | 10489TC | 30.00 | 50 |
| | | 14.46# WC 400.5 CU.IN | | |
| | | CYL | | |
| | | 4BWM24 4BW350 NO PAINT | | |
| | | AMEREX 11350 | | |
| | | 11350 | | |

HIP VIA: SAIA

WAYBILL NO: 04082311082546

Implement more efficient local and LTL delivery process

MTE – Elkhart Delivery Truck (through Q3)

- 2010
 - 95,703 cylinders delivered
 - 1,659 gallons of diesel used
- 2011
 - 90,771 cylinders delivered
 - 1,736 gallons of diesel used
- Comparison shows 10% normalized increase in fuel consumption vs. 2010

LTL - Carriers

- Combined 42 separate sales orders into 14 shipments
- Begin training our customers...
- Communication with customers and customer service to reduce the amounts of:
 - Packaging
 - Paperwork (customs, etc.)
 - Time

Begin process of switching customers to our preferred LTL carriers

- Investigate the possibility of creating a message on the invoice stating:
 - "If you would have used our carrier, you would have saved \$XX.XX on your freight costs."
- We were not able to implement this idea within the P2C timeline, but will continue working on this as a possibility.

Begin reclaiming and re-use of pallets, OSB spacers, wood, sleeves from vendors & local delivery RV customers

Returned Cardboard
Spacers



Returned Pallets Now
Re-Used



Making small steps like re-using boxes gets EEs started off right!

Shipping RV Hoses



\$avings =

- Small, easy steps get everyone on the same page for accomplishing bigger tasks.
- We were able to re-use 248 boxes in six months.
 - 248 pounds
 - \$322.40

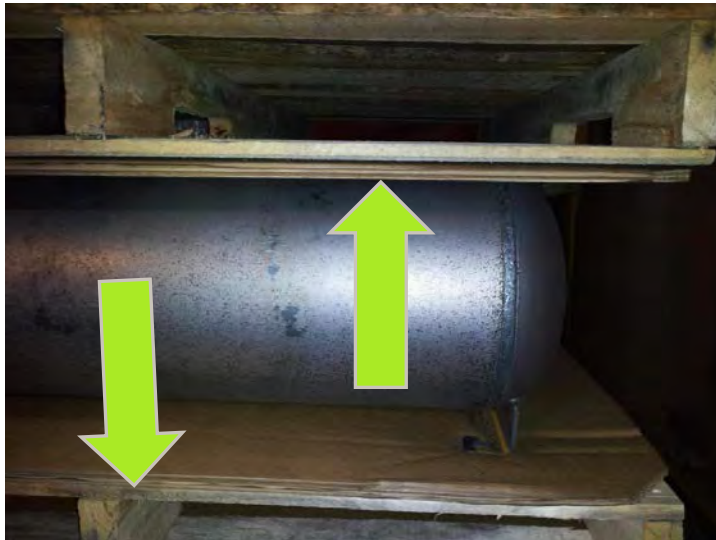
Improve BOM accuracy for packaging items

- Reviewed the packaging of 59 different product numbers
- Made 48 Bill of Material corrections
- One packaging example saved 68 pounds and \$27.81 per assembly!
 - Mistakenly using 9 OSB spacers instead of 9 cardboard pads

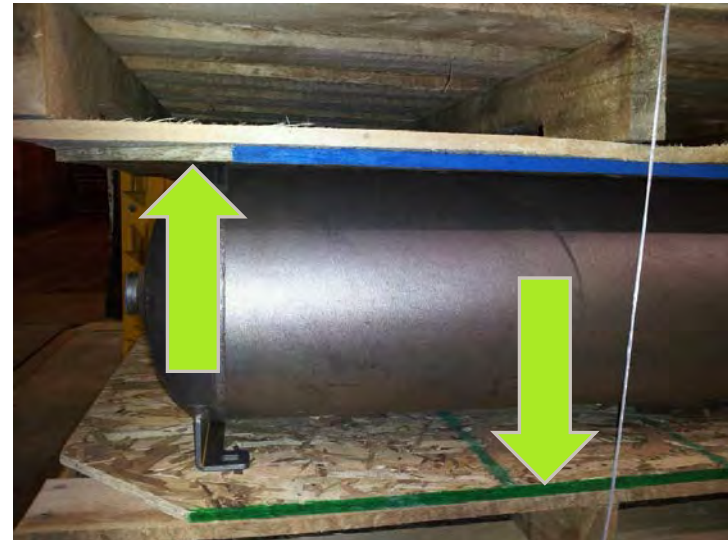


Improve BOM accuracy for packaging items

2 Sheets of Cardboard - Correct



2 Sheets of OSB - Incorrect



Evaluate options for container load packaging

- Investigated options besides using single-faced corrugated rolls:
 - 30# Kraft Paper
 - 50# Kraft Paper
 - Dimpled Kraft Paper
- Single-faced corrugated was the least expensive option at this time.
- No change implemented.

Loose Loading of Cylinders

Single-Faced Corrugated Used Between Cylinders



Corrugated

Summary of Successes

- ◉ Reduce Paper Used on Shippers
 - ◉ Future annual reduction of \$83/95#
- ◉ More Efficient Local Delivery
 - ◉ Increased consumption of diesel: 77gal/532#
- ◉ More Efficient LTL Delivery
 - ◉ Started working with foreign customers to combine multiple small orders into single full-pallet quantities.
- ◉ Switching Customers to Our LTL Carriers
 - ◉ Not yet implemented

Summary of Successes (cont.)

- Begin reclaiming and re-use of pallets, OSB spacers, wood, sleeves from vendors & local delivery RV customers
 - May – November = **\$23,619 / 63,098 #**
 - Annualized = **\$47,238 / 126,195 #**
- Improve BOM accuracy for packaging items
 - Jan - November reductions = **\$18,397 / 58,536 #**
 - Annualized = **\$20,069 / 63,858 #**
- Evaluate options for container load packaging
 - Existing single-face corrugated is best option

Total Shipping Dept. P2C Progress

- 2011 YTD (started in May, 2011)
 - Savings of \$42,015.76
 - **\$18,396.91** in reduced adjustments to inventory
 - **\$23,618.85** in reclaimed or re-used packaging
 - Reductions of 121,634 pounds
 - **58,536 lbs.** in reduced adjustments to inventory
 - **63,098 lbs.** in reclaimed or re-used packaging
- 2011 Annualized (compared to 2010)
 - Savings of \$67,307.06
 - **\$20,069.36** in reduced adjustments to inventory
 - **\$47,237.70** in reclaimed or re-used packaging
 - Reductions of 190,053 pounds
 - **63,858 lbs.** in reduced adjustments to inventory
 - **126,195 lbs.** in reclaimed or re-used packaging

Pollution Prevention

- 2011 Year To Date (compared to 2010)
 - Savings of **\$45,273.47**
 - Reductions of **162,886 pounds**
- 2011 Annualized (compared to 2010)
 - Savings of **\$70,908.71**
 - Reductions of **237,521 pounds**
 - 2011 production volume is 11.8% greater than 2010
- 2012 Annualized (compared to 2011)
 - Additional Savings of **\$33,465.97**
 - Additional Reductions of **89,267 pounds**
 - Detailed tracking of packaging only in 2012
 - Project benefits have continued!

P2 Applicability @ Other Sites

- Reclaiming Previously Used Packaging @ Customer Sites
 - This may be a unique opportunity to MTE – Elkhart and would depend on proximity to your customers.
- Correcting Bill Of Material
 - This should be applicable at any facility and this portion of the project accounted for 44% of the dollar savings and 48% of the weight.

Questions?

- Please Contact:
 - Beth Acosta, Shipping Manager
 - beth.acosta@mantank.com
 - 574-295-8200 x216
 - Steve Jacobson, Environmental Manager
 - steve.jacobson@mantank.com
 - 574-295-8200 x240