Maintenance Improvements: 5S, Energy Excellence, and eMaint

Presenter: Steve Volz
April 14, 2016
## Agenda

| Introduction | 1) Name  
2) Company  
3) Title  
4) What you hope to learn today? |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Trelleborg Overview</strong></td>
<td>Review of Trelleborg and the type of seals that are manufactured in the plant.</td>
</tr>
</tbody>
</table>
| **2. 5S** | Visual Management in Maintenance  
1) PM board  
2) Red Tag, Repair, & Engineering Projects  
3) TPM and 5S boards |
| **3. Energy Excellence** | Focus on energy savings activities. Current projects include:  
1) Compressed air  
2) Lighting  
3) Entry doors and Overhead doors |
| **4. eMaint** | Conversion from Mpulse to eMaint CMMS |
| **5. Plant Tour** | 1) Elastomer production  
2) PTFE production  
3) Maintenance Department |
1. Trelleborg Overview

- Global company headquarters in Trelleborg, Sweden
- 15,500 Employees world wide in 40 countries
- $3.4 Billion in annual sales
- 5 Business Divisions
  - Trelleborg Coated Systems
  - Trelleborg Industrial Solutions
  - Trelleborg Offshore & Construction
  - Trelleborg Sealing Solutions
  - Trelleborg Wheel Systems
  - Trelleborg Vibracoustic (Joint Venture)
- For more information please go to our website http://www.trelleborg.com/en/
1. Trelleborg Sealing Solutions Fort Wayne

- Manufacturing Plant - $30 Million in annual sales
  - 190 hourly and 35 salary
  - Manufacture PTFE and Elastomer Seals
- Shared site with R&D, Marketing, Aerospace Group
1. Production Challenges

- Coordination of transactional steps before manufacturing work can begin
  - Quoting, part setup, contract review, work order release

- Little to no forecasting available
  - Planning window is 4-6 weeks

- High product variety
  - 60,000+ active part numbers

- Low part repeatability
  - Every day is something new

- Where is the bottleneck?
  - A moving target
1. Process Flow

- Our 2 main process flows are PTFE and Elastomer
- Below is a high level process flow for PTFE
  - PTFE products range in sizes from 1/16” – 14’ in diameter
  - The average velocity through our production process is 5 days

- Receive Raw Materials
- Blend Compound
- Isostatic Molding
- Sintering
- CNC
- 2nd Operations
- Package
- Ship
2. Lean Strategy

- Where do you start?
  - The basics 5S & 8 Wastes

1. SORT (Organization)
   - Needed from not needed

2. SET (Orderliness)
   - Determine best location & label

3. SHINE (Cleanliness)
   - Keep clean & working order; inspect & maintain tools, equipment & workplace

4. STANDARDIZE (Routine Clean Up)
   - Define what is needed to maintain the first 3 S’s

5. SUSTAIN (Discipline)
   - Support & Enforce the foundation; react to abnormal conditions

D
- DEFECTS: Any process, product, or service that fails to meet specifications.

O
- OVERPRODUCTION: Producing more than needed.

W
- WAITING TIME: Nonproductive time when waiting for work, machinery, or other breakdowns.

N
- ON UTILIZED TALENT: When people are not consulted for their ideas on improving methods.

T
- TRANSPORTATION: Inefficient method for moving a product from its origin to its destination.

I
- INVENTORY: An inventory above the minimum required to meet immediate needs.

M
- MOTION: Wasted motion by people or machines that does not add value to the part.

E
- EXTRA PROCESSING: Doing more work than is valued by the customer.
2. Maintenance 5S Journey

Visual Management in Maintenance

1. Started with formal events in 2012 and now department performs ongoing 5S activities
2. Standardized tool boxes
3. Iterative approach to organization
4. Crib item review and controlled access
5. PM visual management board and weekly list
6. Define area for Red Tag, Repair, & Engineering Projects
7. Maintenance Gemba Meetings 2 times/week
8. Freed up space for air compressor system
2. Maintenance PM Management

Visual Management in Maintenance

PM bin for each Maintenance Associate
2. Maintenance Red Tag, Repair, & Engineering Projects

Visual Management in Maintenance

Blue Tag - Engineering Projects

Yellow Tag - Repair

Red Tag - Disposition
2. Maintenance Excellence Boards

Visual Management in Maintenance

5S Board

TPM Board
Energy Excellence

Why was it needed?

1. Program focused on minimizing resources needed or consumed.
2. Formal Energy Team started in February 2016.
3. Baseline Audit Completed
4. 3 Focus areas:
   - Compressed Air
   - Lighting
   - Entry Doors and Overhead Doors
Energy Excellence

Compressed Air

- Installed Air Loop
- Fixed 47 air leaks for $25K annual savings
- Relocated compressed air unit to Maintenance area
- Upgraded system including (compressor, dryer, tanks)
Energy Excellence

Lighting

- Currently have 32 W T8 lighting 5+ years
- Trial LED lighting 4K, 5K, and 6K
- Select 12W LED bulb
- Implement in May/June 2016
Energy Excellence

Doors

- Entry doors are rusted and not sealing
- Overhead doors have very low R value
- Some overhead doors have low spots causing water to come into the plant
- Obtain quotes for entry and overhead doors
4. Maintenance Software

Why did we need to change?

1. Mpulse system was 10+ years old and software installed on only 1 computer

2. Computer past due for upgrade, old operating system not supported by IT

3. Tribal knowledge of Mpulse system
   - Off shift employee administrating system
   - Manual entry of data into system

4. Not easy to monitor status of work
   - Late PMs
   - Work orders taking months to close out
4. Time for a New Maintenance Software

Where are we at in our rollout?

1. Evaluated Facility Dude, Mpulse, eMaint
2. Launched eMaint in August 2015
3. Reviewed asset records
   - Maintenance, Accounting, Engineering
4. Released work request link
   - Feedback from users
5. Reviewing PMs
   - 300+ tasks to review
4. TSS Fort Wayne eMaint Rollout

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>1Q</td>
<td>1Q</td>
</tr>
<tr>
<td>2Q</td>
<td>2Q</td>
</tr>
<tr>
<td>3Q</td>
<td>3Q</td>
</tr>
<tr>
<td>4Q</td>
<td>4Q</td>
</tr>
</tbody>
</table>

- Kickoff Project
- Evaluate CMM S
- Launch eMaint
- Asset Review
- Work Request
- PMs
- Reporting
- Inventory

Planned Timing
Phase Completed
4. eMaint Rollout Lessons Learned

What did we learn?

1. Every functional department was maintaining their own list of assets with own reference.
2. Data in current system needed to be validated before entering into new system.
3. Dedicate a data entry resource to create and update system records.
4. Utilize software support resources.
5. Phase rollout to allow adjustment time.
5. Plant Tour

90,000 sq ft manufacturing space
Thank You

Contact Information:

Steven Volz
Change Agent Manager, Purchasing Manager, & Facilities Manager

steven.volz@trelleborg.com