Trelleborg Sealing Solutions Fort Wayne
Job Shop
Presenter: Steve Volz
Date: 6/6/2013
Agenda

- About Trelleborg
- Job Shop Challenges and Strategy
- Job Shop Lean Tools Used
- Future
Trelleborg History

- 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
Trelleborg Sealing Solutions Fort Wayne

- Manufacturing Plant - $30 Million in annual sales
  - 190 hourly and 40 salary
  - Manufacture PTFE and Elastomer Seals
- Shared site with R&D, Marketing, Aerospace Group
- Fort Wayne is also home to our Logistics Center
Job Shop 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
Our Job Shop Process

- 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
Job Shop Lean Strategy

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

Diagram:

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

8 Wastes:

- DEFECTS: Any process, product, or service that fails to meet specifications.
- OVERPRODUCTION: Producing more than needed.
- WAITING TIME: Nonproductive time when waiting for work, machinery, or other breakdowns.
- ON UTILIZED TALENT: When people are not consulted for their ideas on improving methods.
- TRANSPORTATION: Inefficient method for moving a product from its origin to its destination.
- INVENTORY: An inventory above the minimum required to meet immediate needs.
- MOTION: Wasted motion by people or machines that does not add value to the part.
- EXTRA PROCESSING: Doing more work than is valued by the customer.
The vision explained

**Running**

*The need for urgency*

**Together**

*Trelleborg working together as a team*

**4**

*Common objectives*

1. Safety
2. Quality
3. Delivery
4. Efficiency

**Manufacturing Excellence**

*The processes, structure, discipline and approach to making & sustaining improvements*
The Roadmap – “How we will get there”? 

Sequence of implementation
Job Shop Lean Tools Used

**5S**
- Major effort in 2012 to have all associates participate in 5S events
- Developed 5S Committee made up of Leads, Supervisors, and Salaried associates to defined standards for the plant
- Layered 5S audits (daily, weekly, monthly)
- Most areas at 80% or better 5S scores

**Takt time**
- Customer demand level loaded to 10, 20, & 30 day planning buckets
- Hour-by-hour attainment to takt is tracked and monitored
5S Audit Scores by Area

Score

Jun-12 | Jul-12 | Aug-12 | Sep-12 | Oct-12 | Nov-12 | Dec-12 | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13

Target

BU1 Average | BU2 Average | BU3 Average | Salaried Average | Support Average | Plant Average
## Improvement Form – Cell 3 Allen Wrenches

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Action</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many Allen wrenches at work stations</td>
<td>Sort, Set, Standardize tools</td>
<td>Defined standard color code for tools. Only needed tools at workstation.</td>
</tr>
</tbody>
</table>

**Before**

![Image of many Allen wrenches at work station]

**After**

![Image of organized Allen wrenches with defined color code]

<table>
<thead>
<tr>
<th>Team Members</th>
<th>Completion Date</th>
<th>Improvement Sign off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brent B., Karen S., Kevin O., Greg B., Dean O., Tim B.</td>
<td>1/20/12</td>
<td>S. Volz - 1/20/12</td>
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### Improvement Form – Cell 3 Allen Wrenches

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<td>Many Allen wrenches at work stations</td>
<td>Sort, Set, Standardize tools</td>
<td>Removed unneeded tools from workstations.</td>
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#### Before

- 36 wrenches/set
- 1 Standard set
- 1 Metric set

#### After

Use 3-5 wrenches per work station

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5S Daily Checklist

5S Committee approved new simplified 5S audit sheet for daily auditing in areas.
### 5S Daily Checklist

<table>
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<tr>
<th>Item</th>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Floors, Walls &amp; Surface</td>
<td>No Dirt, Dust, Oil, Material Shavings</td>
<td>Clean</td>
</tr>
<tr>
<td>Break rooms</td>
<td>Microwave, Fridge, Tables, Chairs</td>
<td>Clean up food waste, spills, trash</td>
</tr>
<tr>
<td>Shared Areas</td>
<td>Correct Locations, No Dirt, Dust, Oil, Material Shavings</td>
<td>Clean</td>
</tr>
<tr>
<td>Unneeded Items</td>
<td>Remove</td>
<td>Red Tag Items. Relocate to appropriate area</td>
</tr>
<tr>
<td>Audit Items</td>
<td>Work on/Complete Audit Opportunities</td>
<td>See Continuous Improvement</td>
</tr>
</tbody>
</table>

- Leads to fill out score for previous shift and put on score sheet
- Add comments to help communicate findings
Job Shop Lean Tools Used

- **SMED Machining**
  - All CNC areas have been through SMED activities
  - Necessary hand tools are easy to access on tool board
  - CNC programs can be downloaded via the network
  - Kanban for standard cutting tools
  - Tool setup plates

- **SMED Molding**
  - Raw material staged
  - Quick release fittings
  - Tools stored in area
  - Staggered work method
Visual Management

- Walkabout boards for all Manufacturing areas
  - Safety, Quality, Delivery, 5S, Lead time

- Digital displays are used to communicate information
  - Work order status in cells
  - HR and Safety information
  - Continuous Improvement activities
Visual Management

- Maintenance Tool Boxes
- Fire Extinguisher
Visual Management

- **Value Stream Maps**
  - Define process steps, information flow, and material flow.
  - VSM maintained for every cell
  - Tool for identifying opportunities for improvement
Lead time Improvement

Velocity vs. OTD

- Velocity (Days)
  - 10.0
  - 9.0
  - 8.0
  - 7.0
  - 6.0
  - 5.0
  - 4.0
- OTD
  - 100%
  - 98%
  - 96%
  - 94%
  - 92%
  - 90%
  - 88%
  - 86%
  - 84%
  - 82%
  - 80%

Graph showing the relationship between velocity and on-time delivery (OTD) from Jan-11 to Apr-13.
Future

- **Focus on transactional improvements**
  - Reduce paper work
  - Streamline information flow

- **Reduce manual data entry through automation**
  - Bar coding

- **Flexibility to adjust processes to market conditions**
  - Cross train across functions
For More Information Checkout

- Made to Order Lean
  - Greg Lane

- Lean in the Job Shop
  - David Dixon
Thank You

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Change Agent Manager

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