Agenda

- Definition
- Implementation
- "A Day In The Life" Exercise
- LPS Supervisor Daily Activities
- Implementation Barrier Discussion
- Implementation Custom Exercise
Abnormality Management

Abnormality: A violation of standard operations

Abnormality Management: The ability to see and respond to the abnormality in a timely manner.
Steps To Implementation

- Establish the standard
- Implement Lean Production System measures
- Manage abnormality in a timely manner
Establish the Standard

3 Product Models,
3 Standard Operation Sheets

Operator A

Operator B

Operator C
<table>
<thead>
<tr>
<th>Hour</th>
<th>Target</th>
<th>Actual</th>
<th>Cumulative</th>
<th>Comments / Downtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>8–9</td>
<td>30</td>
<td>15</td>
<td>30</td>
<td>Training new work sequences</td>
</tr>
<tr>
<td>9–10</td>
<td>30</td>
<td>60</td>
<td>60</td>
<td>Operator #2 out of product</td>
</tr>
<tr>
<td>10–11</td>
<td>25</td>
<td>20</td>
<td>45</td>
<td>Line change to new model (10 minutes)</td>
</tr>
<tr>
<td>11–12</td>
<td>30</td>
<td>30</td>
<td>115</td>
<td></td>
</tr>
<tr>
<td>12:30–1:30</td>
<td>30</td>
<td>28</td>
<td>145</td>
<td>Started up late, returning from lunch (4 minutes)</td>
</tr>
<tr>
<td>1:30–2:30</td>
<td>30</td>
<td>30</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>2:30–3:30</td>
<td>25</td>
<td>25</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>3:30–4:30</td>
<td>27</td>
<td>28</td>
<td>227</td>
<td>End-of-shift cleanup (4 minutes)</td>
</tr>
</tbody>
</table>
Performance Board (SQDC)

![Image of Kaizen Newspaper]

### Issues

<table>
<thead>
<tr>
<th>Date</th>
<th>Originator</th>
<th>Kaizen Opportunity</th>
<th>Countermeasure</th>
<th>Est. Date of Completion</th>
<th>Status</th>
<th>Actual Completion Date</th>
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</table>

### Priority

<table>
<thead>
<tr>
<th>Countermeasure Complete</th>
<th>Status</th>
<th>Actual Completion Date</th>
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</thead>
</table>

### Improvement Tracking

<table>
<thead>
<tr>
<th>Countermeasure Complete</th>
<th>Status</th>
<th>Actual Completion Date</th>
</tr>
</thead>
</table>
Rapid Response

Who's job is it to help?

Who do I call?

How soon should they respond?

Issue identified!

Hr Hr

What are we working on today?

We didn't do so good yesterday.

What are we working on today?

customer experience improved
Cause & Effect Fish Bone Diagram

Identifies possible causes for a particular effect

Customers returning product

Used in conjunction with Brainstorming
Cause & Effect Categories

Manufacturing (5M’s & E)

- **Measurements**
  - Measurement devices
    - Data acquisition systems
    - Calibration
    - Discrimination
- **Materials**
  - Raw materials
  - Parts/components
- **Manpower**
  - Training
  - Personnel issues
- **Machines**
  - Equipment
    - Maintenance
    - OEE
- **Methods**
  - Standard operations
  - Non-value added activities
  - Scheduling
- **Environment**
  - Temperature
  - Humidity
  - Buildings
  - Space
Measurements

- **Availability** – Is the required gauging available?
- **Operational definition** – Are the characteristics to be measured operationally defined?
- **Sample size** – Are a sufficient number of parts being measured?
- **Repeatability** – Are gage measurements consistently repeatable?
- **Bias** – Does any gage bias exist?
Materials

• Variability – Is the variability of critical characteristics known?

• Changes – Have any process changes occurred?

• Suppliers – What is the influence of multiple suppliers?
Personnel

- **Knowledge** - Do workers have the information they need to perform at their best?

- **Proficiency** - Have workers practiced enough to become proficient?

- **Accountability** – Does management hold workers accountable for their performance?

- **Staffing** - Do you have the right number of workers in the right places at the right time?

- **Ownership** - Do workers take ownership for their part in the business/production process?
Machines

- **Capability** – Do all machines demonstrate process capability?

- **Differences** – Have comparisons between machines, spindles, stations, fixtures, etc. identified meaningful differences?

- **Tooling** – Are tool change intervals well defined and adequate?

- **Adjustments** – Are the criteria for machine adjustments clear?

- **Maintenance** – Is a preventative maintenance program in place, and is it adequate?
Methods

• **Standardization** – Are job procedures defined clearly?

• **Expectations** – Is the recovery procedure clear if the standard procedure cannot be used?

• **Operational definitions** – Are operational definitions stated in the procedures?
Environment

• **Cycles** – Do problem cycles or patterns exist?

• **Temperature** – Does temperature influence operations?

• **Testing** – Has operational performance been evaluated?
Root Cause Analysis and Countermeasures

Ask Why 5 Times
- For each cause of an issue ask why until the root cause is remaining

The Root Cause:
- Rarely obvious
- You often cannot implement a permanent countermeasure on the spot

Temporary Countermeasure or Band Aid:
- Implemented on the spot to get production up and running
- It is important **NOT** to let the band aid become the finale solution!

Permanent Countermeasure:
- A **permanent** countermeasure must be developed, using all resources, to prevent the issue from ever happening again.
- Permanent countermeasures assure continuous improvement.
Problem: Machine stops operating

1st Why: Why did it stop?
   The fuse melted

2nd Why: Why did the fuse melt?
   It overloaded

3rd Why: Why did it overload?
   Inadequate bearing lubrication

4th Why: Why was the lubrication inadequate?
   The oil pump was not drawing enough oil

5th Why: Why was the oil pump not drawing enough oil?
   The pump shaft was worn

6th Why: Why was the pump shaft worn?
   The oil was contaminated

7th Why: Why was the oil contaminated?
   No filter on the intake pump
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