Module: Autonomation
Element: Andon Systems
Aims & Objectives

Target Audience: Operation Management

Purpose of Module: To explain what an Andon system is, and what are its links to performance improvements

Aims & Objectives:
- What are the benefits of an Andon system
- Explain the different types of Andon and appropriate uses
- Behaviours required to support Andon
- How to maintain the system
- Explain the importance of a robust escalation procedure
- How to set-up an Andon system
Agenda

• Current understanding of Andon
• What is Andon?
• Different forms of Andon
• What Andon does and doesn’t do
• Pre-requisites & features of an Andon System
• Types of Andon
• Examples of Andon
• Escalation Procedure
• Setting up an Andon System
• Guidelines
Current understanding of Andon
What is Andon

Andon is a tool for exposing abnormalities within the production process.
What is Andon?

Andon is an information tool which provides instant, visible and audible warning to the Operations team that there is a abnormality within that area.
An Andon can take many different forms from simple indicator to complex control boards. All of them give ‘real time’ status of the performance of the given area.
What an Andon system does..

- Andon allows timely corrective actions by alerting personnel when abnormal conditions occur.
- Allows Shop floor T/L’s to spend less time and effort monitoring the situation, and more time solving abnormalities.
- Allows Operation teams to monitor equipment and personnel more effectively.
- It can act as a 2 way communication device e.g. When indicator returns to green; this tells everybody it’s ‘back to normal’
What an Andon system doesn’t do

It doesn’t:-

- Solve Abnormalities
- Prevent all defects from being passed forward
- Replace good verbal communication between work group
- Remove the need for rectification or Customer protection
Andon will not SOLVE Abnormalities, it can only highlight them

The Natural Workgroup

Andon can only be effective if the team leader is backed up by an issue resolution procedure
Features of an Andon system

- **Visible/Audible** - Can be seen and/or heard by entire workgroup and workgroup leader
- **Concise/Understandable** - Primary three conditions (OK, Abnormality, Process stop)
- **Timely/Responsive** - Real-time data
- **Pertinent** - Only shows status of workstations in a particular area
- **Complete** - Provides a complete picture of the overall status of the entire area to enable prioritisation and coordination of corrective efforts
Types of Andon system

The 2 main types of Andon are activated manually by the operator/ Team leader by either:

i) pressing static button

ii) pulling a cord

It can be used to highlight either production or maintenance concerns.
Fixed Position Stop

- Used by operators to gain assistance
- Once activated the line will stop at a predetermined position
- Can be used in sub assembly
- Attend button lights, whilst awaiting assistance (main board also activated)
- Attend button turned off when Abnormality solved (main board also de-activated)
Moving Line stop

- Cords often used on a moving line (7 wastes)
- Highlights concern at a specific workstation (Team Beacon)
- Andon turned off by pulling cord for a second time (Team Leader or Cell Leader)
- If Andon is not turned off, process will stop at the end of the cycle
Types of Andon Trigger

- **Manual**
  Operator pushes button or pulls a cord
  - Material call example
  - Quality check, change over, etc.

- **Automatic**
  A limit switch on a conveyor or on a chute monitoring movement of parts
  - Limit switch may monitor time and count the number of parts passing through. (takt time)
  - Andon can be activated by an error proofing device
  - Separate the man from the machine, freeing up the operator to add value else where (Machine shop)
Examples of Andon Boards

Simple Andon System
# Escalation Procedure

Andon criteria

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>ACTION</th>
<th>WHO</th>
<th>NAMED RESPONSE</th>
</tr>
</thead>
</table>
| RED       | We will not complete our process on time | T/L turns light on and contacts PUM; PUM calls : Eng / Log / QA / PUM or Recovery Team | PUM | Eng……………
|           |        |              |                | Log…………… |
|           |        |              |                | QA……………  |
|           |        |              |                | Other………..|
| AMBER     | An issue has arisen; It is threatening process completion; We need outside help | Op turns light on; T/L calls : Eng / Log / QA / PUM or Recovery T/L Ref: SLA | TEAM LEADER | TEAM LEADER |
| GREEN     | We are on plan; There are no issues | No Action | No Action | No Action |
Stage 1
Once an abnormality is identified, it is escalated to the next level to eliminate it.
If the next level cannot eliminate it, then raise it to the Shift Leader.
Stage 2
Once all effort to solve the problem have been exhausted at Shift Leader level, the problem is escalated to the highest level to avoid the line stopping.
Setting up an Andon system

**WHO** - Operations Team

**WHAT** - Operations team must determine what production conditions need to be monitored, and what Andon system meets their needs.

**WHERE** - Divide the operation into several processes stations and assign each a process number or code and owner.

- Usually a small team per process number or code
- Post process numbers or codes at line side stations

**WHY** - To enable Operation teams to expose abnormalities with their process, to help them eliminate them.

**WHEN** - The Andon system should only be installed after a robust escalation procedure has been implemented

**HOW** - Document what the characteristics of the production line are and gather data history for the line

- Establish Andon Procedures
- Audit procedure
Appropriate use of the Andon is fundamental in highlighting Abnormalities.

Ultimately we want to eliminate abnormalities from occurring

• Removing the causes of Abnormalities and not just responding to the effects.
• By analysing data and frequency of Andon pulls by operator, the workgroups can identify and focus on improving, abnormality / bottleneck areas.
Guidelines

• Andon systems should be thought out and appropriate in design to be effective.
• Andon systems should be implemented when and only when an appropriate support system and escalation procedure is in place (Service Level Agreements, problem solving process etc.)
• Andon signals should be simple and easy to understand
• Avoid spending too much money on a ‘State of the art’ Andon System, prove the system out with a simple manual system to judge it’s worth
Guidelines

- Ensure the Andon system is visible / audible from every corner of the workplace, to the relevant work area.
- Once established, monitor closely the response times from the support functions and Andon pulls.
- Andon systems don’t solve abnormalities, it only highlights them in time to rectify the situation quickly.
Opportunities

Where do you think Andon Systems could be used?