Innovative Methods and Activities for Equipment Management, Focusing on Waste Elimination

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The Seven Types of Waste in TPM

Proclaiming the New 5S

The Fundamentals of Instant Maintenance

Improving Setup Operation
LEAN TPM’s Viewpoint

Toyota’s Seven Types of Waste
- Overproduction (WIP)
- Idleness
- Transport
- Machining (Method)
- Inventory
- Motion
- Defect

The Seven Types of Waste in TPM
1. Minor, medium, major stoppages
2. Lengthy setup times
3. Manual rework, defects, faulty products and low yield
4. Planned downtime
5. Incomplete 2S application
6. Overproduction by large equipment
7. Equipment problems at production startup

Eight Pillars for TPM
- FOCUSED IMPROVEMENT
  - Measurement of losses, problem solving, reliability improvement, SMED.
- AUTONOMOUS MAINTENANCE
  - Reset base level, inspection standards 5S, setting standards.
- PLANNED MAINTENANCE
  - Downtime reduction, initialization of condition based maintenance.
- TRAINING AND SKILLS DEVELOPMENT
  - Technical skills requirements, know-how.
- INITIAL PHASE MANAGEMENT
  - Check of specifications, technical evolutions.
- QUALITY MAINTENANCE
  - Reduction of defects, operating standards.
- ADMINISTRATIVE WORK IMPROVEMENT
  - 5S in offices, 5S in warehouses.
- SAFETY & ENVIRONMENT
  - Improve efficiency of administrative tasks, management for zero accident and zero pollution.

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Three Pillars for Lean TPM

- New 5S
- Instant Maintenance
- Improved Setup Operations

**New 5S**

Five S
1. **Organization**
2. **Orderliness**
3. **Cleanliness**
4. **Standardized cleanup**
5. **Discipline**

Jive S
1. Store things
2. Stick to rules
3. Superficially clean
4. Switch to new things / items
5. Serve reluctantly

**Result Oriented**
- Implementing 2S first
- The 1st goal is SWIP
- The 2nd goal is Zero Searching

**Process Oriented**
- Workers don’t gain anything from 5S
- 5S campaigns become goals in themselves

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Instant Maintenance

Instant maintenance is a technology for restoring equipment to its former state within three minutes of a breakdown.

• 1st - Reduce MWT (Mean Waiting Time)
• 2nd - Reduce MRT (Mean Repairing Time)

Improved Setup Operations

• A “well-done” setup can demonstrate the effectiveness of TPM
• Reduce / Eliminate seven causes of Lengthy setup times
  1. Pre-setup without standard
  2. Replacement of jigs and molds without standards
  3. Work processing diagrams without standards
  4. Blade replacement without standards
  5. Programming without standards
  6. Machines without positioning standards
  7. Cleanup without standards

Set-up is:

The time from the last good piece of Batch A to the first good piece of Batch B.
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THE END

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