Continuous Improvement
5-S and 5 "Wastes"

Lecture IX (b)

[Chapter 3 in textbook]

The 5-S "Process"

Japanese to English "s" term

Seiri – sort (sift/separate/organize)
Determine what is necessary and what is unnecessary. Get rid of the unnecessary
Seiton – systematize (straighten)
Have a place for everything and everything in its place
Seiso – sweep (scrub/shine)
Keep the workplace clean
Seiketsu – sanitize (standardize)
Cleanliness
Shitsuke – self-discipline (sustain)
Follow the above procedures

The 5-S "Process"

English Translation for the "s" terms

Seiri – eliminate what is not needed
Seiton – orderliness/tidiness
Seiso – purity/cleanliness
Seiketsu – cleanliness
Shitsuke - discipline

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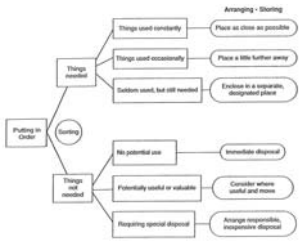

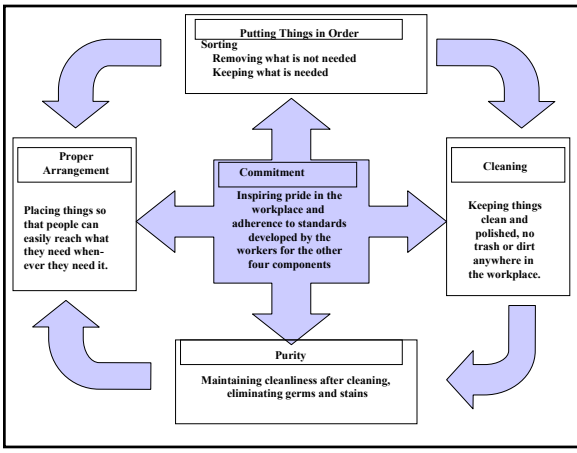

Reasons for 5-S Effectiveness

We feel good when the place where we work every day is clean

We can avoid the hassle of searching for things

We can eliminate time wasted in handling

We can get along fine without buying unnecessary supplies.

Reasons for 5-S Effectiveness (cont.)

We can reduce our defect rate by detecting problems earlier

Preventative maintenance will be better because equipment inspection will be easier

We can reduce the amount of machine downtime and increase the operation rate

We can create more usable space

Reasons for 5-S Effectiveness (cont.)

Passageways can be kept clear and maintained better

Even small spaces can be used better.

We can do just as well without new equipment we thought we had to have

We will be able to spot abnormalities just by looking

Reasons for 5-S Effectiveness (cont.)

Good housekeeping will help eliminate accidents and injuries

We want to show an attitude of pride and caring about the place where we work

Improved personal relations and promotion of harmonious feeling among people who work together

Reasons for 5-S Effectiveness (cont.)

If 5-S goes well, anyone will be able to understand the situation at a glance

5-S is something everyone can do together

Total productivity is bound to increase

"7" Wastes – "Muda"

A "waste" of any kind relates to

"quality" of the process or product

"7" Wastes – "Muda"

Overproduction

(producing more than customer needs "right now")

Due to forecasting, long set-ups, "just-in-case" for breakdowns

"7" Wastes – "Muda"

Transportation

(movement of material that does not add value)

Due to batch production, push production, storage, functional layout

"7" Wastes – "Muda"

Motion

(movement of people that does not add value)

Due to poor workplace design/disorganization, poor work methods, missing items

"7" Wastes – "Muda"

Waiting

(idle time due to material, information, people or equipment not being ready)

Due to push production, work imbalance, centralized inspection, lack of communication

"7" Wastes – "Muda"

Processing

(effort that adds value from the customer's viewpoint)

Due to processing delays, push system, design thrown "over the wall," not listening to customer

"7" Wastes – "Muda"

Inventory

(more materials, parts or products on hand than the customer needs right now)

Due to lack of flow, long set-ups, long lead-times, poor quality, paperwork system

"7" Wastes – "Muda"

Defects

(work containing errors, rework, mistakes or lack something necessary)

Due to process failure, wrong part, batch proc., inspect-in quality, incapable process

The 7 Wastes	*Definition*	*Examples*	*Causes*	*Countermeasures*
Overproduction	***Producing more than the customer needs right now***	• *Producing product to stock based on sales forecasts* • *Producing more to avoid set-ups* • *Batch process resulting in extra output*	• *Forecasting* • *Long set-ups* • *"Just in case" for breakdowns*	• *Pull system scheduling* • *Heijunka – level loading* • *Set-up reduction* • *TPM*
Transportation	***Movement of product that does not add value***	• *Moving parts in and out of storage* • *Moving material from one workstation to another*	• *Batch production* • *Push production* • *Storage* • *Functional layout*	• *Flow lines* • *Pull system* • *Value Stream organizations* • *Kanban*
Motion	***Movement of people that does not add value***	• *Searching for parts, tools, prints, etc.* • *Sorting through materials* • *Reaching for tools* • *Lifting boxes of parts*	• *Workplace disorganization* • *Missing items* • *Poor workstation design* • *Unsafe work area*	• *5S* • *Point of Use Storage* • *Water Spider* • *One-piece flow* • *Workstation design*
Waiting	***Idle time created when material, information, people, or equipment is not ready***	• *Waiting for parts, prints, inspection, machines, information or machine repair*	• *Push production* • *Work imbalance* • *Centralized inspection* • *Order entry delays* • *Lack of priority* • *Lack of communication*	• *Downstream pull* • *Takt time production* • *In-process gauging* • *Jidoka* • *Office Kaizen* • *TPM*
Processing	***Effort that adds no value from the customer's viewpoint***	• *Multiple cleaning of parts* • *Paperwork* • *Over-tight tolerances* • *Awkward tool or part design*	• *Delay between processing* • *Push system* • *Customer voice not understood* • *Designs "thrown over the wall"*	• *Flow lines* • *One-piece pull* • *Office Kaizen* • *5P* • *Lean Design*
Inventory	***More materials, parts, or products on hand than the customer needs right now***	• *Raw materials* • *Work in process* • *Finished goods* • *Consumable supplies* • *Purchased components*	• *Supplier lead-times* • *Lack of flow* • *Long set-ups* • *Long lead-times* • *Paperwork in process* • *Lack of ordering procedure*	• *External kanban* • *Supplier development* • *One-piece flow lines* • *Set-up reduction* • *Internal kanban*
Defects	***Work that contains errors, rework, mistakes or lacks something necessary***	• *Scrap, Rework, Defects, Correction, Field failure, Variation, Missing parts*	• *Process failure* • *Mis-loaded part* • *Batch process* • *Inspect-in quality* • *Incapable machines*	• *GembaSigma* • *Pokayoke* • *One-piece pull* • *Built-in quality* • *3P* • *Jidoka*

Continuous Improvement Philosophy

By defining incremental improvement as an operation practice, employees not only find it easier to change, but they expect it and they are responsible for generating and implementing it.

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