



# SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

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## DEPARTMENT OF AEROSPACE ENGINEERING

### 19MEE304 Total Quality Management

#### Topic: 5S Principles

#### 1. Introduction to 5S

- **Definition:** A workplace organization method that improves efficiency, safety, and productivity.
- **Origin:** Developed in Japan as part of **Toyota Production System (TPS)**.
- **Purpose:** Eliminates waste, improves workflow, and creates a clean and organized workspace.
- **Key Benefit:** Reduces time spent searching for tools, materials, and equipment.

#### 2. The 5S Methodology

##### 1. Seiri (Sort - 整理)

**Objective:** Remove unnecessary items from the workplace.

**Steps:**

- Identify and classify items as **necessary or unnecessary**.
- Discard, recycle, or relocate **unneeded items**.
- Keep only **essential tools, parts, and materials** at workstations.

✦ **Example (Automotive Industry - Toyota):**

- Old and damaged tools are removed from production lines.
- Only frequently used tools are kept within reach of assembly workers.

##### 2. Seiton (Set in Order - 整頓)

**Objective:** Organize essential items for easy access and efficiency.

**Steps:**

- Assign **fixed locations** for tools and materials.
- Use **labels, color coding, and shadow boards** to organize items.
- Ensure **ergonomic placement** to reduce unnecessary movement.

### ✦ Example (Manufacturing - Boeing):

- Tools and parts are arranged in **shadow boards** to ensure quick access.
- **Kanban system** is used to maintain stock levels.

## 3. Seiso (Shine - 清掃)

**Objective:** Maintain cleanliness in the workplace.

**Steps:**

- Clean machines, workstations, and floors regularly.
- Conduct **preventive maintenance** to reduce breakdowns.
- Encourage **daily cleaning habits** among employees.

### ✦ Example (Pharmaceutical - Pfizer):

- Regular sanitization of **production areas** prevents contamination.
- Employees follow **cleanroom protocols** for hygiene compliance.

## 4. Seiketsu (Standardize - 清潔)

**Objective:** Create a system for maintaining the first three 5S steps.

**Steps:**

- Establish **standard operating procedures (SOPs)** for organization and cleaning.
- Train employees on 5S **best practices**.
- Implement **visual management tools** (signboards, color codes).

### ✦ Example (Electronics - Intel):

- **Workstations are standardized** to maintain uniformity in assembly lines.
- **Checklists** ensure daily adherence to cleanliness and organization.

## 5. Shitsuke (Sustain - 躰)

**Objective:** Develop a culture of continuous improvement and discipline.

**Steps:**

- Conduct **regular audits and inspections** to reinforce 5S principles.
- Encourage **employee involvement** and suggestions for improvement.
- Recognize and reward teams for **consistent 5S implementation**.

### ✦ Example (Retail - Amazon Warehouses):

- Workers are **trained on workplace organization** during onboarding.
- Monthly **5S audits** ensure consistency across storage areas.

## 3. Benefits of 5S Implementation

- ✓ **Reduces waste** (less searching time, reduced motion, minimized defects).
- ✓ **Improves safety** (fewer hazards, organized workspaces).
- ✓ **Enhances productivity** (optimized workflow and reduced downtime).
- ✓ **Boosts employee morale** (clean and efficient working conditions).
- ✓ **Strengthens company reputation** (higher quality, better efficiency).

## 4. Industry Case Studies

### 1. Toyota (Automotive)

- Implemented **5S in production lines** to streamline assembly.
- Reduced **part retrieval time** by 30%.

### 2. Boeing (Aerospace)

- Used **5S shadow boards** for tool organization.
- Improved **tool accessibility and reduced misplaced tools**.

### 3. Nestlé (Food Processing)

- Adopted **clean-as-you-go (CAYG)** policy to ensure hygiene.
- Reduced **cross-contamination risks** in packaging lines.

## 5. Challenges in 5S Implementation

- ✗ Resistance to change from employees.
- ✗ Initial time investment for organizing the workplace.
- ✗ Lack of **consistent monitoring and reinforcement**.
- ✗ Requires **top management support** for long-term success.

## 6. Conclusion

- **5S is a foundation of Lean Manufacturing and Kaizen.**
- It **eliminates inefficiencies** and enhances workplace discipline.

- Industries adopting **5S** experience improved productivity, safety, and quality.