

# Standard Work



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# Standard Operations



## Definition

**A Standard Operation is a Combination of Human and Machine Carry Outs of Production in a Maximally Efficient Way, and is Composed of Three Elements :**

- TAKT Time
- Work Sequence (order of operations)
- Standard Work-In-Process

# Objectives of Standard Operations



## 1. To Make Manufacturing Rules Explicit

These rules form the core of manufacturing & management. They establish the methods for manual tasks with respect to Quality, Quantity, Cost, and Safety.

## 2. A Tool for KAIZEN

There can be no improvement in the absence of standards.  
**NORMAL** & **ABNORMAL** phenomena need to be clearly defined for repeatable operator motion and sequences.

# Elements of Standard Operations



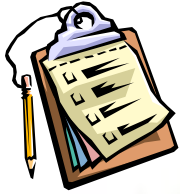
1. **TAKT Time**:= 
$$\frac{\text{Regular Available Time / Shift}}{\text{Units Sold / Shift}}$$

2. **Work Sequence** :

The order of operations in which a worker carries objects, mounts them on machines, and removes them, etc. This should be distinguished by the “Processing Sequence” according to which a product is made.

3. **Standard Work-In-Process** :

Refers to the minimum WIP needed to perform repetitive operations (parts mounted on machines, parts on conveyors, parts needing time to cure, etc.)



## Guidelines for Improving Standard Operations :

- Clarify objective, focus, and improvement needs.
- Observe the status quo and document current conditions by constructing - Table of Production Capacity by Process
  - Standard Work Combination Sheet
  - Standard Work Sheet
- Identify waste.
- Plan countermeasures and resolve problem.
- Construct new standard operation.
- Constant repetition of above steps.

# Improvement via Standard Operations

## Construction of Standard Operations :

- Sort out operations.
- Differentiate between human work and machine work.
- Determine repetitive tasks.
- Define work instructions and provide training.
- Verify and formalize standard operation.
- Continuous improvement (KAIZEN) of standard operation.

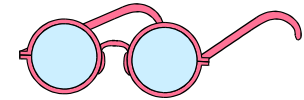
**Remember :** Always establish the status quo (current state) then attempt to identify WASTE.



# Focus of Standard Operations

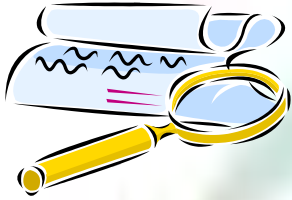
Standard Operations are the basis for any Kaizen Initiative :

When establishing Standard Operations always **THINK LEAN !**



- **Promote Flow** : Layouts, Level Production
- **Reduce Changeover Times** : SMED
- **Increase Equipment Uptime** : TPM
- **Increase Quality** : Variation/Defect Reduction
- Establish *Andons* that stop the line at the sign of any defect or quality problem.
- **Implement Measures to combat defects** : Mistake Proofing
- Include 5S in your Standard Operation.
- Build a system that makes it easy to identify problems (Single Piece Flow).

# Focus of Standard Operations



- **Inspect right after processing** : The operator who made the part should inspect it.
  - **Devise Poka Yoke devices such as** : gages, gates, deflectors, templates, adjustment eliminators..etc.
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