

Lean Manufacturing Booklet

Principles, Tools and Daily Improvement Practices

Lean Manufacturing Overview

Lean manufacturing is a management approach focused on maximizing customer value while minimizing waste. It originates from the Toyota Production System and aims to improve efficiency, quality and responsiveness.

Five Principles of Lean

Lean is based on five core principles: identify value, map the value stream, create flow, establish pull and pursue perfection.

Value

Value is defined from the customer perspective. Activities that do not contribute to customer value are considered waste.

Value Stream

The value stream includes all steps required to design, produce and deliver a product or service.

Flow

Flow means work moves smoothly through the process without interruptions, waiting or bottlenecks.

Pull System

A pull system ensures production is driven by real customer demand instead of forecasts.

Continuous Improvement

Continuous improvement encourages teams to constantly improve processes through small incremental changes.

Eight Types of Waste

Lean identifies eight major wastes: overproduction, waiting, transportation, motion, inventory, defects, overprocessing and unused talent.

5S Workplace Organization

5S improves workplace organization through Sort, Set in Order, Shine, Standardize and Sustain.

Kaizen

Kaizen promotes continuous small improvements involving all employees.

Kanban

Kanban is a visual system used to control workflow and production.

Value Stream Mapping

Value Stream Mapping visualizes process flows and highlights waste and improvement opportunities.

Standard Work

Standard work defines the best known method for completing tasks consistently.

PDCA Cycle

The Plan - Do - Check - Act cycle is used to test improvements and standardize successful results.

Root Cause Analysis

Root cause analysis techniques such as the 5 Whys help identify underlying causes of problems.

Poka Yoke

Poka Yoke methods prevent errors or make them immediately visible.

SMED

SMED focuses on reducing equipment changeover time.

Jidoka

Jidoka allows machines and operators to stop production when abnormalities occur.

Heijunka

Heijunka balances production to reduce variability and improve stability.

Andon

Andon systems visually signal operational problems so teams can react quickly.

Daily Management

Daily management practices ensure operational performance is monitored continuously.

Asakai Meetings

Asakai meetings are short daily standup meetings used to review performance and coordinate actions.

Benefits of Lean

Lean manufacturing reduces waste, improves productivity, increases quality and strengthens teamwork.

Lean Improvement Cycle

Customer Value
Identify Waste
Improve Process
Standardize Work
Continuous Improvement