



Line Balancing

? What is It

Line balancing is a method used to stabilize all the work content across all the stations or processes.

🕒 When

- Apply it only after the process is “under control”.
- Looking for ways to reduce **8 Wastes**.
- To **optimize** throughputs and crews, thus reduce cost per unit.

🎯 Goals

- **Eliminate** or **reduce** “Waste”, mostly waiting, overproduction, WIP inventory.
- To ensure operator are not **overburdened** (Muri).
- **Match products** with the production demand.

📊 How

Objectives:

Workload	Bottleneck	Workstations	Cost	Idle Time
Manage the workloads among assemblers.	Recognize the location of bottleneck.	Decide number of workstations.	Decrease production cost.	Assigning task to each workstation in such a way that there is little idle time .

Steps:



$$\text{Cycle time (CT)} = \frac{\text{Available time}}{\text{Desired output}}$$

$$\text{Number of work stations (WS)} = \frac{\sum \text{Task time}}{\text{Desired actual time}}$$

🎩 Hints

- Conduct a **Process Observation** analysis to understand the AS-IS process.
- Develop a **Process Map** to support a better approach to Line Balancing.
- Combine Line Balancing with **Added Value Analysis** and focus on eliminating or minimizing NVA/ENVA tasks **before** line balancing.

📄 Example

$$\begin{aligned} \text{Idle time} &= (0.48 - 0.42) + (0.48 - 0.36) + (0.48 - 0.42) \\ &= 0.24 \text{ min} \end{aligned}$$

$$\text{Percentage Idle time} = \frac{0.24}{4 \times 0.48} = 12.5\%$$

