

## Overall Equipment Efficiency OEE

The Overall equipment efficiency OEE is a Key Performance Indicator or KPI use to evaluate how effectively a manufacturing process is utilized. Basically, the OEE is a ratio which compares the Actual production with the theoretical maximum production capacity.

### Calculation of OEE

It's a combination of 3 main ratios:

Availability, Performance and Quality for a given period of time (day, week, month...)

$$\text{OEE} = \text{Availability ratio} \times \text{Performance ratio} \times \text{Quality ratio}$$

### Availability ratio of OEE

- Availability ratio = Actual production time / Theoretical production time

- Actual production time (hours) = Theoretical production time (hours) – Downtime (hours)
- Theoretical production time (hours) = Number of working hours
- Downtime (hours) = Number of hours where machines are down

### Performance ratio of OEE

- Performance ratio = Cycle time x Actual Production/ Actual Production time

- Cycle time (hours/item) = 1 / Maximum production capacity (items/hour)
- Actual Production = Quantity of manufactured items (including rejected products)

### Quality ratio of OEE or Yield

- Quality ratio or Yield = (Actual Production - Rejected Production)/ Actual Production

- Rejected Production (items) = Quantity of manufactured items that didn't reach quality requirements

→ Try our online [OEE Calculation tool](#)