# Technical Documentation: Maintenance Head Dashboard KPIs

This document outlines the KPIs displayed on the Maintenance Head dashboard in a make-to-order manufacturing ERP system. These KPIs offer real-time visibility into equipment reliability, preventive maintenance, resource allocation, and failure trends. Each KPI includes its definition, suggested dashboard visual format, and calculation logic with examples.

## 📋 KPI Cards

### Machine Uptime %

Definition: Percentage of time machines were operational vs total available time.

Visual Representation: KPI Card (Percentage).

Calculation Logic / Example:

Uptime % = (Total Available Time – Downtime) / Total Available Time × 100  
Example: (720 - 48) / 720 = 93.3%

### Total Downtime (hrs)

Definition: Cumulative machine downtime (planned + unplanned) this month.

Visual Representation: KPI Card (Numeric).

Calculation Logic / Example:

Sum of all downtime entries  
Example: 62 hours

### Planned Maintenance Compliance

Definition: Percentage of scheduled preventive maintenance completed on time.

Visual Representation: KPI Card (Percentage).

Calculation Logic / Example:

Compliance % = (PMs done on-time / Total Scheduled PMs) × 100  
Example: 43/50 = 86%

### Breakdown Incidents (MTD)

Definition: Number of distinct machine breakdowns logged this month.

Visual Representation: KPI Card (Count).

Calculation Logic / Example:

Example: 7 breakdowns in July

## 📊 Chart-based KPIs

### Downtime by Reason

Definition: Breakdown of downtime causes such as electrical, mechanical, etc.

Visual Representation: Donut or Pie Chart.

Calculation Logic / Example:

Group downtime logs by category  
Example: Electrical – 40%, Mechanical – 35%

### Downtime Trend Over Time

Definition: Visualizes total downtime over last few months.

Visual Representation: Line Chart.

Calculation Logic / Example:

Monthly sum of downtime hours  
Example: Jan – 50h, Feb – 60h, Mar – 48h

### MTTR & MTBF Trend

Definition: Tracks Mean Time to Repair and Mean Time Between Failures.

Visual Representation: Dual Line Chart.

Calculation Logic / Example:

MTTR = Total Repair Time / No. of Breakdowns  
MTBF = Uptime Hours / No. of Breakdowns  
Example: MTTR = 2.5h, MTBF = 90h

### Breakdowns by Machine

Definition: Highlights machines with highest breakdown frequency.

Visual Representation: Horizontal Bar / Pareto Chart.

Calculation Logic / Example:

Count breakdowns per machine  
Example: M1 – 5, M2 – 3

### Maintenance Workload by Technician

Definition: Shows how many maintenance jobs each technician completed.

Visual Representation: Bar Chart or Heatmap.

Calculation Logic / Example:

Group tasks by technician  
Example: Tech A – 12 jobs, Tech B – 9

## 📁 Drill-Down or Report-Based KPIs

### Open vs Closed Maintenance Requests

Definition: Tracks unresolved vs completed requests.

Visual Representation: Stacked Bar Chart.

Calculation Logic / Example:

Count requests by status  
Example: Open – 8, Closed – 36

### Spare Parts Usage

Definition: Tracks quantity and value of spare parts consumed.

Visual Representation: Line Chart or Table.

Calculation Logic / Example:

Sum usage records over time  
Example: Bearings – ₹12,000 in June

### Repeat Failures

Definition: Machines that experienced repeated breakdowns within short intervals.

Visual Representation: Table or Line Chart.

Calculation Logic / Example:

List machines with multiple failures in < 30 days  
Example: M4 – 3 failures in July

### Maintenance Cost by Machine

Definition: Shows cost of maintenance activities per machine.

Visual Representation: Bar Chart.

Calculation Logic / Example:

Sum of labor + material cost per machine  
Example: M1 – ₹15,000

### PM vs BM Ratio

Definition: Ratio of Preventive Maintenance to Breakdown Maintenance jobs.

Visual Representation: Pie or Column Chart.

Calculation Logic / Example:

PM:BM Ratio = Count of PM Jobs / Count of BM Jobs  
Example: 30 PM : 10 BM → 3:1