SAP PM MODULE

Complete Beginner's Learning Guide

Plant Maintenance | Equipment | Work Orders | Preventive Maintenance | Career Growth

Module	**SAP PM (Plant Maintenance)**
Level	**Beginner to Intermediate**
Version	**SAP ECC 6.0 / SAP S/4HANA**
Topics Covered	**10 Chapters**

Prepared for SAP Learners & Maintenance Professionals

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Chapter 1: Introduction to SAP PM

What is SAP PM?

SAP PM (Plant Maintenance) is a core module of SAP ERP that manages all maintenance activities of technical objects like equipment, machines, and plants. It helps organizations plan, execute, and control maintenance work to ensure maximum equipment availability and minimum downtime.

Why is SAP PM Important?

- Reduces unplanned equipment downtime and production losses
- Extends the life of assets through preventive maintenance
- Tracks maintenance costs at equipment and cost center levels
- Ensures compliance with safety and regulatory requirements
- Provides historical data for better maintenance decisions
- Integrates with Finance (CO/FI), Materials (MM), and Production (PP)

Types of Maintenance in SAP PM

Type	Description	Example
Preventive Maintenance	Planned maintenance at regular intervals	Monthly oil change for a machine
Corrective Maintenance	Fix after a defect is identified but before breakdown	Replace worn belt before it snaps
Breakdown Maintenance	Emergency repair after unexpected failure	Fix a pump that stopped working
Predictive Maintenance	Based on condition monitoring and sensor data	Replace bearing when vibration exceeds threshold
Shutdown Maintenance	Planned maintenance during plant shutdown	Annual plant turnaround overhaul

Chapter 2: SAP PM Organizational Structure

SAP PM uses specific organizational units to represent the technical and administrative structure of a company's maintenance operations.

Client: Highest SAP level — represents the entire enterprise group.

Company Code: An independent legal entity. Maintenance costs are tracked per company code.

Plant: The central organizational unit in PM. Each piece of equipment belongs to a plant.

Maintenance Plant: The plant where the technical object (equipment/functional location) is installed.

Planning Plant: The plant responsible for planning maintenance work. Can differ from maintenance plant.

Maintenance Work Center: The team or group responsible for executing maintenance tasks (e.g., Electrical Team, Mechanical Team).

Cost Center: Used to collect and track maintenance costs in Controlling (CO) module.

Planner Group: A group of maintenance planners responsible for work order planning.

> **Key Tip:** The Planning Plant and Maintenance Plant can be different. For example, a central planning team at HQ (Planning Plant) may plan work for equipment at a remote factory (Maintenance Plant).

Chapter 3: Master Data in SAP PM

Master data is the foundation of SAP PM. It represents the physical technical objects in your plant and their structure.

1. Functional Location (T-Code: IL01, IL02, IL03)

A Functional Location represents a physical place or position within a plant where equipment can be installed. It reflects the functional/spatial structure of your facility.

- Example: PLANT-01 > BUILDING-A > FLOOR-2 > PUMP-STATION
- Functional locations are hierarchical (parent-child structure)
- They have a category (e.g., M for mechanical, E for electrical)
- Key fields: Description, Category, Structure Indicator, Cost Center, Work Center

2. Equipment Master (T-Code: IE01, IE02, IE03)

An Equipment Master represents an individual physical asset that requires independent maintenance tracking. Equipment can be installed at a Functional Location.

View	Key Information
General	Description, category, manufacturer, serial number, year of construction
Location	Functional location, plant, cost center, room
Organization	Company code, maintenance plant, planner group, work center
Structure	Installation at functional location, superior equipment
PM Data	Maintenance work center, planner group, sort field

3. Bill of Material (BOM) – T-Code: CS01

A PM BOM (Equipment BOM) lists the components/spare parts of equipment. When a work order is created for the equipment, the BOM helps quickly identify and reserve the required spare parts from MM inventory.

4. Measuring Points & Counters (T-Code: IK01)

Measuring Points store readings from equipment (e.g., running hours, km, temperature). Counters track cumulative values (e.g., total hours run). These are used to trigger counter-based preventive maintenance plans.

Chapter 4: Notifications in SAP PM

A Notification is used to report a problem, malfunction, or maintenance request. It is the starting point for most maintenance processes in SAP PM.

Notification Types

Type	Code	Purpose
Malfunction Report	M1	Report an equipment breakdown or malfunction
Maintenance Request	M2	Request preventive or planned maintenance
Activity Report	M3	Document completed maintenance activities

Notification Lifecycle

1. Create Notification (IW21 / IW22 / IW26)
2. Describe the problem, assign equipment/functional location
3. Assign tasks and priorities
4. Convert to Work Order (IW34) OR close if no WO needed
5. Set notification status: Outstanding > In Process > Completed

Key Fields in a Notification

- Notification Type – M1, M2, or M3
- Functional Location / Equipment – The affected technical object
- Malfunction Start/End Date – When problem started and was resolved
- Priority – Very High, High, Medium, Low
- Breakdown Indicator – Marks if machine was stopped
- Problem / Cause / Action Codes – Catalog entries describing the issue

Chapter 5: Work Orders (Maintenance Orders)

A Maintenance Order (Work Order) is the central document in SAP PM. It is used to plan, execute, and track all maintenance activities including labor, materials, and costs.

Work Order Types

Order Type	Code	Description
Preventive Maintenance Order	PM01	For planned/scheduled maintenance tasks
Corrective Maintenance Order	PM02	For corrective work based on notifications
Breakdown Maintenance Order	PM03	Emergency repairs after unexpected failure
Refurbishment Order	PM04	Refurbish repairable spare parts
Maintenance Request	PM05	Simple requests without detailed planning

Work Order Processing Steps

Step	T-Code	Action
Create	IW31	Create work order with equipment, order type, work center
Plan	IW32	Add operations, components (materials), costs, dates
Release	IW32	Release order to allow execution (status: REL)
Execute	IW41	Confirm labor hours (Time Confirmation)
Goods Issue	MIGO / IW31	Issue spare parts from warehouse to order
Technical Completion	IW32	Mark order technically complete (status: TECO)
Settlement	KO88	Settle actual costs to cost center or asset
Business Completion	IW32	Final close of the order (status: CLSD)

Chapter 6: Preventive Maintenance (PM Plans & Items)

Preventive Maintenance (PM) in SAP ensures that maintenance tasks are carried out regularly and automatically based on time or performance/counter criteria.

Key PM Objects

Task List: A list of maintenance operations/tasks. Can be Equipment Task List (IA01), Functional Location Task List (IA11), or General Task List (IA05).

Maintenance Item: Links a technical object (equipment/FL) to a Task List. Created in IP04.

Maintenance Plan: Contains one or more maintenance items with scheduling parameters. Created in IP01 (single cycle) or IP02 (strategy-based).

Scheduling: Run IP10 to schedule the plan. SAP generates maintenance calls on due dates.

Order Generation: Maintenance calls automatically create work orders for execution.

Types of Maintenance Plans

Plan Type	Description	Example
Single Cycle Plan	One cycle — trigger by time or counter only	Every 3 months OR every 500 hours
Strategy Plan	Multiple packages with different frequencies	Weekly inspection + Monthly lubrication + Ann…
Multiple Counter Plan	Triggered by multiple counters (AND/OR logic)	Every 1000 km OR every 12 months

> **Best Practice:** Always link a Task List to the Maintenance Plan. This ensures that when a work order is auto-generated, it already contains all planned operations and required materials, saving planner time.

Chapter 7: Corrective & Breakdown Maintenance

Corrective and breakdown maintenance are reactive processes triggered by equipment failures or identified defects. SAP PM provides a streamlined process to handle these urgently.

Breakdown Maintenance Process

1. Operator detects breakdown and creates a Notification (IW21) with Breakdown Indicator checked
2. System records malfunction start time; equipment availability time stops
3. Maintenance planner creates an urgent Work Order (IW31 - PM03)
4. Work Order is immediately released (no detailed planning needed for emergency)
5. Technician executes the repair and confirms time (IW41)
6. Spare parts are issued via Goods Issue (MIGO)
7. Notification is updated with root cause analysis
8. Work Order is technically completed (TECO) and settled

Mean Time Between Failures (MTBF) & MTTR

SAP PM tracks equipment downtime through notifications with the Breakdown Indicator. This data helps calculate key maintenance KPIs:

KPI	Formula	Meaning
MTBF	Total Uptime / Number of Failures	Average time equipment runs before failing
MTTR	Total Repair Time / Number of Repairs	Average time to repair a broken equipment
Availability	(Total Time - Downtime) / Total Time x 100%	Percentage of time equipment is available
OEE	Availability x Performance x Quality	Overall Equipment Effectiveness

Chapter 8: Integration with Other SAP Modules

SAP PM is tightly integrated with several other SAP modules. Understanding these integrations is essential for a complete implementation.

SAP Module	Integration Point	Example
SAP MM (Materials)	Spare parts procurement and goods issue to work orders	Reserve bearings from stock for PM work order
SAP CO (Controlling)	Cost settlement of work orders to cost centers or orders	Maintenance costs posted to equipment cost center
SAP FI (Finance)	Asset accounting, depreciation, and cost posting	Capital repair posted to fixed asset
SAP PP (Production)	Equipment availability for production planning	PM shutdown blocks production resources
SAP QM (Quality)	Inspection at completion of maintenance work	Quality check after pump overhaul
SAP WM (Warehouse)	Spare parts storage and bin management	Picking spare parts from specific storage bin
SAP HR	Work center assignment and labor cost settlement	Technician hours charged via HR cost rates

Work Order Cost Flow

When a work order is created and executed, costs are collected in the order. At settlement, actual costs are transferred to the Cost Center (CO) or Fixed Asset (FI-AA). This gives management full visibility of maintenance spend per asset.

Chapter 9: Important SAP PM Transaction Codes

T-Code	Description	Category
IL01 / IL02 / IL03	Create / Change / Display Functional Location	Master Data
IE01 / IE02 / IE03	Create / Change / Display Equipment	Master Data
IA01 / IA02 / IA03	Create / Change / Display Equipment Task List	Master Data
IA05 / IA06	Create / Change General Task List	Master Data
IK01 / IK11	Create Measuring Point / Counter	Master Data
IK21 / IK31	Enter Measurement Document / Counter Reading	Master Data
IW21 / IW22 / IW23	Create / Change / Display PM Notification	Notification
IW28	Display Notifications (List)	Notification
IW26	Create Activity Report	Notification
IW31 / IW32 / IW33	Create / Change / Display Maintenance Order	Work Order
IW38	Change Work Orders (List)	Work Order
IW41	Enter PM Order Confirmation (Time)	Work Order
IW3D	Display Work Order List	Work Order
IP01 / IP02	Create PM Plan (Single Cycle / Strategy)	Preventive PM
IP04	Create Maintenance Item	Preventive PM
IP10	Schedule Maintenance Plan	Preventive PM
IP19	Maintenance Plan Overview (Scheduling)	Preventive PM
IW13	Display Material Where-Used in PM	Reports
IH08	Display Equipment List	Reports
KO88	Settle Maintenance Order Costs	Costing

Chapter 10: Career Path & Certification Guide

SAP PM Career Roadmap

0-3 Months	Understand plant maintenance concepts, SAP navigation, organizational structure
3-6 Months	Master notifications, work orders, preventive maintenance plans
6-12 Months	Practice on SAP trial system, learn PM configuration (SPRO)
12-18 Months	Get certified, apply for junior SAP PM consultant positions
2-3 Years	Work on real implementations, gain industry domain knowledge
3-5 Years	Senior Consultant / PM Lead / Solution Architect roles

SAP PM Certifications

Certification	Exam Code	Level
SAP Certified Associate - SAP S/4HANA Asset Management	C_TS413_2021	Associate
SAP Certified Professional - Asset Management	P_PM_300	Professional

Industries Using SAP PM

- Oil & Gas – Pipeline maintenance, refinery equipment
- Manufacturing – Machine and production line maintenance
- Utilities – Power plant, water treatment equipment
- Pharmaceuticals – GMP-compliant equipment maintenance
- Automotive – Assembly line robot maintenance
- Mining – Heavy equipment and conveyor systems

Job Roles in SAP PM

Job Role	Experience	Avg. Salary (India)
SAP PM Junior Consultant	0-2 years	4 - 7 LPA
SAP PM Functional Consultant	2-5 years	8 - 16 LPA
SAP PM Senior Consultant	5-8 years	16 - 28 LPA
SAP PM Solution Architect	8+ years	28 - 50 LPA

Free Learning Resources

- SAP Learning Hub: learning.sap.com (free beginner PM courses)
- SAP Help Portal: help.sap.com (official SAP PM documentation)
- YouTube: Search 'SAP PM Tutorial for Beginners'
- Udemy: Affordable SAP PM courses with practical exercises
- SAP Community: community.sap.com (blogs, forums, Q&A;)
- ERPPREP.com: SAP PM mock tests and practice questions

Key Takeaways

✓ SAP PM is highly in-demand in manufacturing, oil & gas, utilities, and pharma industries.

✓ Master the Work Order lifecycle — it is the heart of SAP PM.

✓ Understand both Preventive and Breakdown Maintenance processes thoroughly.

✓ Learn PM integration with MM (spare parts) and CO (cost settlement).

✓ Practice on SAP IDES or trial system to build hands-on confidence.

✓ SAP S/4HANA Asset Management is the future — start learning it early.

✓ Domain knowledge (industry-specific) greatly increases your consultant value.

Best of luck on your SAP PM journey!
Practice daily, stay curious, and keep learning.