S05 — PM Matrix — Screen Spec (MVP)

Status: Draft (fundamentals locked)

P26-02-20

Official meter source: S07 Daily Log (meters logged daily)

Depends on: E&M; (Equipment & Machinery), S07 Daily Log

Feeds: S02 Tasks & Work Orders (T&WO;), S03 WOT Reports, S04 Inventory & Requisitions, Reports & History, VOS, Notifications

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1) Purpose

PM Matrix is the **template engine** that defines maintenance rules and generates due work.

It must:

- Hold the **maintenance template rows** (what, when, how triggered).
- Generate **PM Instances** (due occurrences) that flow into S02 as WO Requests or Tasks.
- Support **checklist-style routine maintenance reports** (daily/weekly/biweekly/monthly/etc.) curated from the PM Matrix (for management reporting and long-term storage).
- Update **Next Due** consistently across the system after completion/reporting.
- Reduce onboarding friction, with optional AI-assisted population suggestions.

Engineer-first intent:

- Keep PM Matrix as the planning/tuning screen, not the "do work" screen.
- Generate actionable items with minimal admin.
- Learn over time (classification prompts + apply to future).

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2) Definitions (critical)

A) PM Template (Matrix Row)

A rule that defines:

- Equipment/system scope
- Trigger type (time or meter)
- Interval (e.g., 7 days or 250 hours)

- Classification (WO or Task; can be unclassified)
- Safety flags (permit/tagout)
- Optional checklist steps / parts hints

B) PM Instance (Generated Occurrence)

A scheduled due item created from a template, with:

- Due date and/or due meter threshold
- Link to the PM template row
- Link to equipment/system
- Classification (WO Requested or Task)
- Instance status (Due / Completed / Skipped with reason)

C) Routine Checklist Report (Generated Forms)

Management-style check-off forms generated by frequency:

- Daily / Weekly / Biweekly / Monthly / 6-monthly / 12-monthly / 24-monthly

These are curated from PM Matrix items and stored in Reports & History.

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3) Inputs (what the user captures here)

A) PM Matrix row fields (MVP)

- Equipment/System link (E&M;)
- PM Title
- Trigger type: **Time-based** (days/weeks/months) OR **Meter-based** (hours / production)
- Interval (e.g., 7 days, 1 month, 250 hours)
- Meter type (if meter-based):

 - Hours meters (most equipment)

 - Production meters (e.g., watermaker liters/gal produced) (optional MVP if supported)

- Classification: WO / Task / Unclassified
- Estimated duration (optional)
- Parts likely? (toggle)
- Safety flags: Permit required? / Tagout required?
- References: manuals/docs links (E&M;)

B) Checklist content (optional per row)

- Checklist steps (for Task-class items)
- Acceptance/test checks (simple)

C) Routine report mapping fields (MVP)

For each PM row, assign a "Routine bucket" (one of):

- Daily / Weekly / Biweekly / Monthly / 6-monthly / 12-monthly / 24-monthly

This drives the generated checklist reports.

(A PM row may still be meter-based but can appear on a routine report as a checkbox item if management wants visibility.)

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4) Outputs (what it creates/updates elsewhere)

A) To S02 (primary work feed)

- Generates PM Instances that land in **S02** → **WO Requests** by default.
- S02 prompts the engineer to classify **WO vs Task** (and "apply to future occurrences?" updates the template).

B) To S03 WOT Reports

- PM-triggered WOT report must show **Next Due** and confirm the schedule was updated system-wide.

C) To S04 Inventory & Requisitions

- "Parts likely" flag + optional suggested parts kit can prompt requisition drafts.
- Parts usage over time supports analytics (consumption baselines).

D) To Routine Checklist Reports (management-style)

- Generates Daily/Weekly/Biweekly/Monthly/etc. checkbox forms curated from PM Matrix.
- Saved to **Reports & History** in a dedicated tab and export-ready (PDF/email later).

E) VOS counters / Notifications

- Overdue PM count, due-soon PM count.
- Overdue routine checklist count (if not ticked off).

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5) Layout (tabs / sections / subviews)

A) Top-level tabs

1) **Matrix Table**

2) **Routine Reports Setup**

3) **History / Analytics (MVP-light)**

4) **Import / AI Assist (optional MVP)**

B) Matrix Table view

Each row shows:

- Equipment, Title
- Trigger (time/hours/production)
- Interval
- Last done, Next due
- Classification (WO/Task/Unclassified)
- Routine bucket
- Status badge (OK / Due soon / Overdue)

Actions:

- Edit row
- View history
- Disable row
- Force-generate (admin only; rarely used)

C) Routine Reports Setup

- Configure which routine frequencies are enabled (Daily/Weekly/etc.)
- Configure due windows (e.g., daily due by 18:00)
- Preview generated report forms

5.5 Compliance (Due & Expiring) (PM Tab)

Compliance lives as a **tab inside PM Matrix** for anything that is due, expiring, or must be carried out.

What it tracks (inputs)

- **Compliance item name** (required)
- **Category**: Class / Flag / Safety / Fire / Radio / Environmental / Medical / Other
- **Trigger type**:

 - Date-based expiry (certificate expiration)

 - Interval-based (monthly/quarterly/annual)

 - Hours-based (optional where relevant)

- **Due date / Next due date** (required for date/interval)
- **Interval** (if interval-based): 1m / 3m / 6m / 12m / 24m (configurable)
- **Responsible role** (default: Engineer)
- **Severity** (simple): Info / Important / Critical *(for DOS surfacing later)*
- **Linked evidence** (file links stored in Archive)

Behaviors (rules)

- **Due states**: Due soon → Due now → Overdue
- Completing an item requires:

 - completion date/time

 - completed by (user)

 - optional notes

 - optional evidence upload

- On completion:

 - system writes a **Compliance Record** into **Archive → Compliance Records**

 - system updates **Next Due** based on trigger rules

- Overdue items trigger notifications (can be muted only with reason → Activities Log).

Outputs

- Compliance completion generates:

 - Archive record (read-only evidence entry)

 - DOS counters (due/overdue counts) via aggregates

6) Rules & behaviors (automations + triggers)

A) Meter source of truth

- **Daily Log (S07)** is the official source for meter readings.
- PM meter-based scheduling updates when S07 logs new meters.

B) Generation engine (MVP)

- Run a daily job:

 - Create PM Instances when within "Due Soon" window or due.

 - Update table badges and VOS counters.

- Anti-duplication:

 - Only one active due instance per template row per cycle.

C) Classification policy (locked)

- PM Instances land in **S02 → WO Requests** by default (including unclassified).
- S02 must prompt classification on first review and ask "apply to future occurrences?"

D) Completion / next due updates

- If the PM instance was completed via WO:

 - Next due updates on WOT report submission (S03).

- If completed as Task:

 - Next due updates when the task is completed (S02 tasks completion).

E) Skips / overrides (MVP)

- PM instance can be skipped but requires:

 - Reason + user + timestamp

 - Optional next review date

- Skips are logged to Reports & History.

F) Routine checklist report generation

- For each frequency (Daily/Weekly/Biweekly/Monthly/6m/12m/24m):

 - Generate a checklist form containing all PM rows assigned to that bucket.

- Forms are ticked off as the period progresses (daily as day progresses, etc.).
- If not completed by due window:

 - Escalate daily (badge + notification)

- Mute requires override password + reason (audit)

G) Production meters (watermaker) (optional MVP)

- If enabled, allow a meter type "Production" (e.g., L produced).
- Scheduling can trigger on production thresholds similar to hours.

H) AI Assist (optional MVP)

- AI can suggest PM rows by:

 - Parsing uploaded manuals / OEM schedules (documents in E&M;)

 - Suggesting default intervals, parts likely, and routine bucket

- Engineer must review and approve suggestions (no silent auto-import).

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7) Links to other screens

- **S07 Daily Log** (meters source)
- **S02 T&WO;** (generated instances and classification prompt)
- **S03 WOT Reports** (PM-triggered reporting + next due)
- **S04 Inventory & Requisitions** (parts hints and procurement)
- **E&M;** (equipment metadata + manuals/docs)
- **Reports & History** (stored routine checklists + PM compliance logs)
- **VOS / Notifications** (overdue/due soon counters)

MVP notes (scope control)

- Focus on hours-based triggers first; add production meters if time permits.
- Routine checklist reports are simple checkbox forms, export-ready later.
- AI Assist is "suggest + review", not "auto-write".