

Permit to Work (PTW)

The full lifecycle of authorising hazardous work — from request through issue and daily execution to a proper close — with an auditable, tamper-evident trail at every step.

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Not Excel, not paper — a checkpoint, not a form

In many plants the work permit still lives on paper or in an Excel sheet. OPEREX makes that same record reliable and provable — not digitised paper, but an enforced process.

Paper and Excel carry the same weaknesses: they can be edited afterwards without a trace; they cannot enforce the rules (whoever requests can also issue to themselves); they are hard to search; and in a regulatory check or an incident investigation they do not prove the process was followed.

The PTW module makes the permit part of the process — tied to the log, to maintenance and to the evidence. Every step is recorded by an append-only, hash-chained signature; a later edit breaks the chain, and the check detects it.

Tamper-evident

Every step is a hash-chained signature; a later edit breaks the chain, and the check says where. Paper and Excel can be changed at any time, unnoticed.

Enforced rules

The issuer $\neq$ requester principle and the pre-issue checkpoints are decided by the system, not by human discipline; every exception is switchable, reasoned and recorded. An Excel is only "strict" as long as everyone complies.

Auditable and protective

A searchable, time-stamped trail aligned with ISO 45001 §7.5. In an incident, that evidence protects the organisation and its responsible leaders.

The core and the policy — everything is configurable

PTW is built on a narrow, fixed core; everything else is configurable by the organisation — company-wide, per site and per permit type. The fixed core is exactly what guarantees that configuration can never undermine safety or provability.

The essence of the module — everything is configurable

The organisation shapes the process, the forms, the checkpoints and the roles to its OWN workflows and its OWN internal systems and naming — the software adapts to the company, not the other way round. The fixed core and the OPEREX standard only guarantee that this freedom cannot undermine safety or provability: a setting looser than the standard asks for a written reason, and leaves a trace.

The core — fixed (only code changes it)

- Serial number and the 12 states, with enforced transitions
- An append-only, hash-chained signature trail
- Expiry and a live validity window
- Paper fallback (an authentic PDF-of-record)
- The fixed base fields: location · description · plant · validity

Template — per permit type

- › Four main types: general · hot work · confined space · ATEX
- › Blocks and boxes, with a shared box library
- › Additional hazards, "if this, then that" rules
- › Certificates · isolation · gas testing · competence
- › Locked factory template — one-click copy

Policy — company-wide and per site

- › The checkpoint grade: Off → Warn → Block
- › A switchable lifecycle: acceptance, handover, hand-back, reasons
- › Three profiles: "Lenient", "OPEREX recommended" (the start) and "Strict"
- › A setting looser than the standard asks for a reason



The process — the full lifecycle

The permit moves through an enforced state machine: every step can only start from the allowed prior state, and every transition adds a signature to the audit trail. The states and the chain are fixed; which steps are required is decided by the policy switches — all on by default.

1 Requested

The requester has submitted the request; issuance starts here. With single-person issue (a switch, with a reason) this step is skipped — recorded in the chain and on the PDF.

2 Issued

The issuer has issued it after checking the conditions for safe work. Countersignature and the supervisor's acceptance are policy-driven steps.

3 In progress

Work is under way — work may only be done in this state and within the validity window.

4 Day-closed

The day's work is closed; it can continue the next day by extension.

5 Handed back

The performer has handed it over; the plant's take-back (the close) is still due. The hand-back step is switchable.

6 Closed

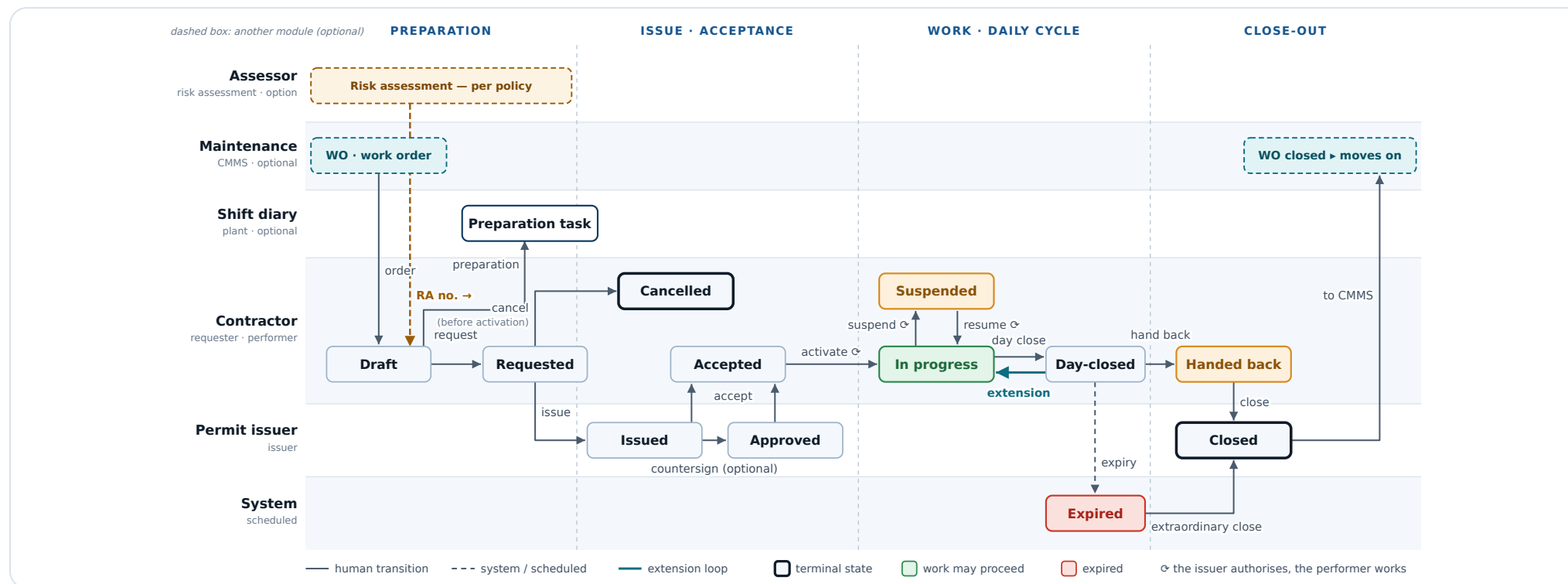
A terminal state — the permit is finally closed, auditably.

Expiry and automatic day-close are handled by a scheduled background process — without a human signature, but with an audit trail. A cancelled or expired permit remains auditable.

The next, landscape page shows the same process in one diagram: who signs which step, including the intermediate, side and optional states. →

The process — the full lifecycle in one diagram

The lanes show who acts, the columns show the phases — from the maintenance work order to the close; the work order watches the open permit (the permit never moves the work order). All 12 states are shown, side branches included.



Who is responsible

Every transition is signed by the role in whose lane it sits. By default issuer ≠ requester, enforced by the system; single-person issue is a reasoned exception.

What is optional

The maintenance (CMMS), shift diary and assessor lanes are optional; countersignature, acceptance and hand-back are policy switches. The core is complete standalone too.

What the system does

Expiry and the automatic day close are set by a scheduled process — no signature, but an audit trail. An expired permit can be extended or closed.

The diagram shows the main path. Hand-back can also start from work in progress or from expiry; a permit can be cancelled at any point until activation.



Capabilities — what is live today

All verifiable claims, not promises.

- ✓ A 12-state lifecycle, issuer $\neq$ requester by default, switchable steps
- ✓ An append-only, hash-chained signature trail, verifiable in the browser too
- ✓ Four main types; one job = one permit, other hazards as boxes
- ✓ Open permits appear in the log and in the shift handover
- ✓ A checkpoint tied to the maintenance work order, preparation tasks
- ✓ Expiry + daily cutoff, an authentic PDF in three views, paper fallback
- ✓ A live QR on the paper: shows without sign-in whether work may proceed now
- ✓ A competence gate with expiry: person and document master, xlsx/csv import
- ✓ Isolation points (LOTO / blind flange), signed certificates, time-valid gas testing
- ✓ A worker lock (one person on one open permit) and SIMOPS handling
- ✓ A last-minute risk assessment (LMRA) before work starts on site
- ✓ Adjustable checkpoints (Off / Warn / Block), three profiles; the permit status bar shows in advance what blocks
- ✓ With Operations Analytics, permit metrics reach the dashboard

An optional upfront step: the risk assessment ("step 0")

By policy — for the organisation or per site — a standalone, numbered risk assessment can be put ahead of permitting. From its answers the organisation's rules prescribe the permit and its mandatory items: the main hazard decides the type, and the other hazards go onto the same permit as boxes. Once approved it cannot be changed; it pre-fills a permit draft in one step, and a mandatory item can only be removed with a written reason. It warns under "OPEREX recommended", is required under "Strict" and off under "Lenient" — and it is not the on-site LMRA.

Every capability listed is a code-backed, verifiable claim — the interface never states more than the system actually does.

Configuration — blocks, checkpoints, templates

The permit form is composed per permit type in the template editor. Your own templates are freely editable; on a locked factory template the kit list can be extended, and everything else is tailored on a one-click copy.

Blocks and boxes

The sections of the form (checklist, multi-select, fields, text, gas testing, LMRA) are boxes on a canvas ($\frac{1}{3} \cdot \frac{1}{2} \cdot \frac{2}{3} \cdot$ full width), with a checkpoint simulator. Items answer with a — / Yes / No / N.A. control and can be circled on paper; from the shared box library one box can go onto several templates.

Additional hazards

Yes/no questions about the nature of the work — when ticked, they open the linked conditional block (e.g. hot work, confined entry, work at height) and can enforce conditions (minimum headcount, a watcher).

Rules

Conditional requirements: "if this, then that is required" — linking a question's answer to an item, block, field, or a minimum headcount (with a rule map and a trial run on the risk-assessment template).

Prerequisites

Which certificates (isolation, fire, entry, area handover, decontamination), isolation methods and measured gases (O_2 / LEL / H_2S / CO / Tox) are required — per type, as boxes.

Roles and signatures

Process roles are formed from permissions; the organisation creates its own roles and assigns operations in a permission matrix. Who signs the permit — per type.



Security and compliance

The module is built so compliance is a demonstrable fact, not a promise — and so the interface never claims more than the code actually does.

- An append-only, hash-chained signature on every transition: the database refuses edits and deletions, and each new signature also binds the previous one, its sequence number and its time — a later rewrite breaks the chain.
- Every day, a per-organisation fingerprint of the signatures and approvals is stored off-server, chained — so a rewrite of an already recorded day inside the database can still be detected.
- The QR code on a printed permit points to the organisation's own address: without signing in, it tells whether work may proceed on it right now and whether the paper is the latest version — with no personal data.
- Evidence check: the permits and assessments of the accessible sites in one run, with a CSV and PDF report.
- Issuer $\neq$ requester by default, as a code-level principle; single-person issue is a switchable exception — with a reason, recorded in the chain and on the PDF.
- A canonical PDF-of-record for every issued permit (paper fallback); an auditable, searchable trail aligned with ISO 45001 §7.5 ("documented information").
- Per-organisation data isolation enforced at the database level (RLS); EU data residency (GDPR).
- Deployment as a separate dimension: shared cloud, dedicated, or air-gapped.

Compliance is then not a promise: in a regulatory check or an incident investigation, the searchable trail — on which a later rewrite can be detected — proves the process was followed. The limits are stated in the "Digital fingerprints" technical brief.



Adoption and contact

The module is ready with these capabilities. Adoption follows the organisation's maturity — it can start with the "OPEREX recommended" profile or a reasoned, lighter setting, and tighten as the process is learned.

1

Templates

Set up your own permit types and the checkpoints tailored to them.

2

Policy

The checkpoint grades company-wide or per site; start with the "OPEREX recommended" profile.

3

Pilot

Live at one site with real work — then tighten step by step.

We'll show you OPEREX on your own operational processes, no strings attached.