OpsPilot

Isolation Certificate — User Manual

Hazardous Energy Isolation (LOTO) · AI Engineering Co-Pilot

What this guide covers — what an isolation certificate is, how the OpsPilot module builds one, what to have ready, and the safety-critical document you receive.

Safety-critical document. Failure to correctly identify and control all hazardous energy sources can result in serious injury or fatality. The OpsPilot output is a draft for competent site review and approval — never a substitute for verified site isolation.

1. What is an isolation certificate?

An isolation certificate is the formal record that every hazardous energy source feeding a piece of equipment has been identified, isolated, locked, tagged and verified at zero energy before work begins — and that there is a defined sequence to safely de-isolate afterwards. It is the document that protects the worker with their hands inside the machine.

2. What the OpsPilot module does

Role	Responsibility
🎯 **Senior Isolation Authority / AI Coach (OpsPilot)**	Guides you through every energy source, every isolation point, stored-energy controls, verification methods, lock and tag requirements and the de-isolation sequence. It challenges vague answers and marks anything unverified as SITE VERIFICATION REQUIRED.
👷 **Isolation / Performing Authority (you)**	Provide the ground truth — equipment tag numbers, the physical isolation points, the energy sources and the site-specific rules. Without accurate site information the certificate cannot be completed.

3. How it works — the 9-phase process

#	Phase
1	Equipment and work scope
2	Isolation boundary — upstream, downstream, all connected paths
3	Hazardous energy identification — all 10 energy types
4	Isolation method and point selection — per energy source

#	Phase
5	Stored energy release and control
6	Verification and try-out — prove zero energy
7	Lock, tag and personnel control
8	Associated permits and SIMOPS
9	De-isolation and reinstatement

4. What you will be asked — have this ready

- The equipment (with tag numbers) and the scope of work.
- Every energy source feeding it — electrical, mechanical, hydraulic, pneumatic, process, thermal, gravity, stored and more (10 types).
- The physical isolation points, and the upstream, downstream and connected paths.
- The site-specific isolation rules and lock/tag standards.

Tip — the energy source you forget is the one that hurts someone. Walk every connected path; don't isolate from memory.

5. What you receive — the output

A complete, formal Isolation Certificate (Word) — energy sources, isolation points and methods, stored-energy controls, the verification (prove-zero-energy) method, lock/tag/personnel control, associated permits and SIMOPS, and the de-isolation sequence — ready for competent site review and approval, with any unverified item flagged SITE VERIFICATION REQUIRED.

6. Worked example (illustrative)

Isolating a pump for internal work. Electrical energy: rack out and lock the breaker at the MCC and lock the local isolator. Process energy: close and lock the suction and discharge valves; consider whether a single valve is positive isolation or whether spades/blanks are needed. Stored energy: relieve trapped pressure and confirm the rotating mass has stopped. Verification: prove-dead at the motor terminals and confirm the gauges read zero. Each lock and tag is recorded, and the de-isolation sequence reverses it in a controlled order. Anything the performing authority can't physically confirm is marked SITE VERIFICATION REQUIRED rather than assumed.

7. Getting the best result

- **Find every energy source.** Electrical is obvious; stored pressure, gravity and a back-feed from a connected line are the ones that catch people.
- **Verify, never assume.** Prove zero energy physically — a closed valve or open breaker is not proof on its own.
- **Question single-valve isolation.** For hazardous media, one valve may not be positive isolation.

- **Treat the flags seriously.** SITE VERIFICATION REQUIRED means a competent person checks it before work — it is not optional.