

The measurement-evidence record

A sensor can work exactly as designed and still support no defensible maintenance decision. Nine fields decide whether a condition signal is evidence about a named failure mechanism or a datasheet feature that happens to be trending.

RECORD Nine fields, written before anyone quotes a price

- 01 Required function and failure mode.** Function, functional boundary, mode, mechanism, operating context, consequence context — so an asset name cannot hide unlike mechanisms.
- 02 Candidate signal.** The physical quantity or observation, and the reason it may change as the mechanism develops.
- 03 Measurement contract.** Technique, location, direction or orientation, operating state, acquisition method, settings, and the conditions that make an observation valid.
- 04 Data-quality controls.** Calibration or verification status, mounting or sampling integrity, range, resolution, clipping or contamination checks, timestamps, context completeness.
- 05 Detection and confirmation rule.** Baseline or comparator, criterion, persistence requirement, confirmation method, and the competent reviewer — so one number or image cannot become a diagnosis.
- 06 Warning evidence.** Relevant observations, exposure basis, variability, misses, invalid observations, and the limits on transfer.
- 07 Failure and uncertainty modes.** Confounders, blind spots, shared dependencies, monitoring-system failure, state-dependent misses, alternative explanations.
- 08 Response path.** Review, diagnosis, decision authority, parts, access, isolation, work window, execution, return-to-service controls.
- 09 Governance and status.** Applicable law, OEM requirements, controlled procedures, protective functions, decision owner, approvers, review triggers, evidence status.

ASK The record produces one of three states — and one trap

- **SUPPORTED FOR THIS CONTEXT**
Relevant evidence exists within the stated conditions and transfer limits. An evidence classification, not permission to alter an operating or maintenance requirement.
- **CONTROLLED TRIAL**
Plausible, with local measurement performance, warning evidence, confirmation or response performance still to be established under approved change control.
- **NOT DEMONSTRATED**
The physical link, measurement contract, data quality, warning evidence, confirmation, response path or approval basis is incomplete. A legitimate result, not a failure of nerve.
- **Has it been quiet, or has it been blind?**
Silence does not promote a signal. A quiet trend can equally mean an insensitive measurement, an invalid operating state, a missed observation, or a channel that died last Tuesday.

THE BOUNDARY THIS CARD CARRIES

Technical suitability and economics are separate judgements, and neither validates the other. This card selects no monitoring technology, establishes no diagnosis, sets no alarm or protection value, prescribes no inspection or route interval, and authorises no installation, testing, maintenance or continued operation.