

One P&ID. Eleven minutes. Twenty findings.

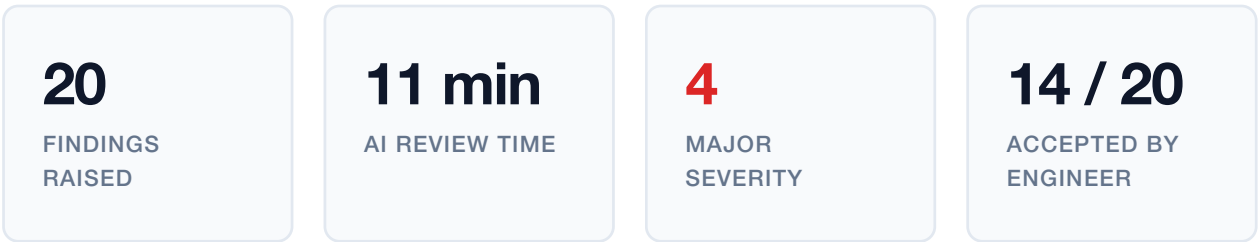
This pack shows exactly what a SpecSense supervised review delivers on a real pump-station P&ID. Every finding, register row and Rev-B closeout entry below comes from an actual reviewed deliverable — client identifiers redacted under NDA. It exists so a Principal Engineer scanning it in 90 seconds can decide whether SpecSense belongs in a review meeting.

DELIVERABLE TYPE	Piping & Instrumentation Diagram (P&ID)
PROJECT	[REDACTED] · Onshore gas processing · GCC
GATE STAGE	IFR (Issued For Review) → IFC (Issued For Construction)
DISCIPLINES COVERED	Piping · Process · Mechanical · Instrumentation · Materials
GOVERNING CODES	ASME B31.3 · API 610 · API 520 · IEC 61511 · NACE MR0175 · MSS-SP-44
TURNAROUND	AI extraction 11 min · CEng triage 47 min · Total wall-clock 48 h
REVIEWER	Kingsley Uzowulu, CEng MIMechE (21+ yrs)
VERSION	v1.0 · 2026-08-05

How to use this pack. Read as three separate artefacts: (1) the anonymised P&ID excerpt with numbered markers, (2) the full comment register, (3) the Rev-A → Rev-B closeout matrix. Each is the format your team receives on delivery. If the format works for your review meeting, book a 48-hour supervised pilot on one of your live deliverables — specsense.ai/design-partners.

The deliverable in twenty findings.

A single P&ID for a pump-station package was submitted for review at Rev C, four working days before an IFR gate. The client's in-house review had produced 6 comments. The SpecSense supervised review produced 20 candidate findings; 14 were retained after Chartered-Engineer triage and submitted to the client. 12 were accepted by the discipline lead, 4 of them classified major (potential rework or safety impact if unresolved).



What "accepted" means here. The discipline lead adjudicated every retained finding as accepted, disputed, withdrawn or unverifiable against a permission-cleared baseline. Only accepted findings enter the formal comment register. Rejected findings are logged with reason so the check library learns from each review.

How this compares to the manual baseline

Before SpecSense, this drawing consumed approximately 3.5 senior-engineer hours per revision to review manually. The supervised SpecSense pass ran in 48 hours end-to-end and required ~60 minutes of the discipline lead's time to adjudicate the register. Six of the twelve accepted findings had not been raised in the manual review — including two of the four majors.

Note. The customer-adjudicated retained-finding precision on this review was 86%. Turnaround, hours avoided and rework-cost estimates are calculated from customer baseline data and clearly labelled as estimates everywhere they appear. See the reliance boundary on the final page.

Anonymised P&ID excerpt.

Below is the redacted extract of the reviewed P&ID showing the four numbered markers referenced in the register. Client title-block, project identifiers, tag prefixes and stream data have been removed under NDA; the underlying drawing content and finding locations are preserved.



Marker legend

#	TAG	FINDING TITLE	SEVERITY	ZONE
1	P-101A	NPSH margin insufficient at rated flow	MAJOR	B-3
2	V-101	PWHT callout missing on drawing	MINOR	C-4
3	LT-101	SIL-2 redundancy not shown	MAJOR	D-2
4	6"-PL-1001	Flange class verification required	INFO	B-4

Full retained-findings register.

Every retained finding cites its clause and drawing zone. The register is supplied as PDF and Excel on delivery; the Excel version is column-mapped to your project's existing register format on request. This excerpt shows the eight retained findings out of twenty candidates; the remaining four accepted and eight withdrawn/rejected entries are in the full deliverable.

#	TAG	DISCIPLINE	FINDING	CLAUSE	SEVERITY	STATUS
F-001	P-101A	Piping	NPSH margin insufficient at rated flow	API 610 §6.1.14	MAJOR	Accepted
F-002	V-101	Mechanical	PWHT callout missing on drawing	ASME B31.3 §304.5.1	MINOR	Accepted
F-003	LT-101	Instrumentation	SIL-2 redundancy not shown; single transmitter on safety loop	IEC 61511-1 §11.5	MAJOR	Accepted
F-004	6"–PL-1001	Piping	Flange class verification (Class 300 at 200°C)	MSS-SP-44 §5.3	INFO	Accepted
F-005	PSV-101	Process Safety	Sizing case not stated on tag; blocked outlet vs fire not specified	API 520-I §5.2	MINOR	Pending
F-006	6"–PL-1002	Materials	NACE class annotation absent on H2S-service line	NACE MR0175 §7.1	MINOR	Rejected
F-007	TG-101	Instrumentation	Tag numbering inconsistency (TG vs TI convention)	ISA-5.1 §4.4.3	INFO	Accepted

#	TAG	DISCIPLINE	FINDING	CLAUSE	SEVERITY	STATUS
F-008	V-101	Mechanical	Corrosion allowance not shown on vessel	ASME BPVC VIII-1 UG-25	INFO	Accepted

What "traceable" actually looks like.

Every retained finding carries evidence, clause citation and recommended action. This is what a Principal Engineer sees when they open the register on their reviewer workstation.

F-001 · NPSH margin insufficient at rated flow

MAJOR · API 610 §6.1.14

Evidence. Calculated NPSHa = 2.1 m against manufacturer NPSHr = 2.8 m at rated flow of 340 m³/h. Margin negative, meaning the pump will cavitate under design conditions. Suction line: 6" carbon steel, 12.4 m total run, three long-radius elbows and a 4" strainer, static suction lift 1.8 m. Calculation extracted from Line List LL-101, Rev C, and cross-checked against P&ID line PL-1001.

Location. PID-001.1 · Rev C · Zone B-3 · pump suction side of P-101A.

Recommended action. Either (a) upsize suction line from 6" to 8" NPS, which drops line loss to ≈0.4 m and yields NPSHa ≈ 3.1 m with 0.3 m margin, or (b) lower pump elevation by 1.2 m (requires civil rework). Option (a) is cheaper if pipe rack space allows; discipline lead confirmed (a) at debrief and issued RFC revision to Piping.

F-003 · SIL-2 redundancy not shown

MAJOR · IEC 61511-1 §11.5

Evidence. Level transmitter LT-101 shown as a single element on the safety-instrumented function protecting vessel V-101 against overfill. The Safety Requirements Specification (SRS-V101-01, Rev B) specifies SIL-2 with hardware fault tolerance HFT=1, requiring 1oo2 voting. The current drawing does not achieve that architecture.

Location. PID-001.1 · Rev C · Zone D-2 · V-101 level protection.

Recommended action. Add a second, physically independent level transmitter (LT-101B, different tapping) with 1oo2 voting in the SIS logic solver, OR update the SRS with a formal justification for lower HFT (extremely unlikely to be accepted for hydrocarbon service). Discipline lead confirmed second transmitter approach at debrief; issue raised on next Rev.

Why this matters commercially. Two majors caught before IFC gate. Rework cost of a construction-phase discovery on either finding is estimated by the client at £20k–£45k plus schedule impact. Total supervised-pilot cost: £750, credited to first project pack. Precision on this review: 86% retained findings accepted.

Where general LLMs stop. Where SpecSense continues.

On the following revision (Rev C → Rev D), SpecSense reads the updated P&ID and every accepted finding is tracked to a closeout state: **closed**, **partial** or **open**. Comments cannot "disappear between revisions." This is the single feature a general-purpose LLM cannot reproduce, because it has no memory of the prior review.

#	TAG	FINDING	SEVERITY	REV C → D	EVIDENCE
F-001	P-101A	NPSH margin insufficient	MAJOR	Closed	Suction upsized 6"→8". Recalc shows NPSHa 3.1 m, margin 0.3 m ✓
F-002	V-101	PWHT callout missing	MINOR	Closed	PWHT note added, references WPS-115 ✓
F-003	LT-101	SIL-2 redundancy not shown	MAJOR	Partial	LT-101B added but voting logic still shows 1oo1 in cause & effect △
F-004	6"-PL-1001	Flange class verification	INFO	Closed	Rating verified in updated piping class spec PMS-A1B-R2 ✓
F-005	PSV-101	Sizing case not stated	MINOR	Open	No change on Rev D drawing; comment re-raised ✗
F-007	TG-101	Tag numbering inconsistency	INFO	Closed	Renamed TI-101 on Rev D ✓
F-008	V-101	Corrosion allowance not shown	INFO	Closed	3.0 mm CA added per project spec ✓

What this means for a Principal Engineer. You walk into the IFC gate meeting with a one-page matrix showing every retained finding from the previous revision and its closeout state. Nothing is lost between revisions. Partial and open findings are prioritised for the final Rev-D → IFC pass.

What is signed and what is not.

SpecSense supervised reviews are signed by a named Chartered Engineer with matching discipline credentials. The reliance boundary is explicit: the client retains design authority; SpecSense assists the review, it does not certify design.

NAMED REVIEWER	REVIEW TYPE
Kingsley Uzowulu	Supervised P&ID review · IFR gate
CEng MIMechE · 21+ years · Piping / Mechanical / Civil / Structural	One deliverable · 48-hour turnaround · Signed comment register
DELIVERABLES RECEIVED BY CLIENT	SIGNATURE DATE
Marked-up PDF · Comment register (PDF + Excel) · Rev-A→B closeout matrix · 30-min technical debrief transcript · Reviewer declaration	[REDACTED · sample pack]
	Real deliverables carry timestamp, signature and PII register

Reliance boundary. SpecSense provides review assistance only. The client retains full design authority and professional responsibility for the deliverable. SpecSense findings are recommendations to the client's Discipline Lead; acceptance, rejection or modification of any finding remains a client decision. Where a supervised review sits outside the named reviewer's personal-remit disciplines (Process, Instrumentation), a contract Chartered Engineer with matching credentials countersigns. Full reliance-boundary terms are agreed in writing before every pilot; see the standard SOW at specsense.ai/security.

How to see this on your own deliverable

Two paths. Both start with one of your live P&IDs (or isometric, datasheet, HAZOP register) and end with a signed comment register in 48 hours.

- **Design partner (free).** First 10 named partners with a real IFR/IFC gate 30–90 days out, decision-maker at debrief, and permission to publish anonymised aggregate results. Eligibility: specsense.ai/design-partners.
- **Standard supervised pilot (£750).** Flat fee, fully credited against first project pack if you convert within 30 days. Book: specsense.ai/pricing.

Questions? A 30-minute technical call with the founder — no sales script, no follow-up sequence.
cal.eu/ku-automation/specsense-intro