

— TECHNICAL NOTE 01 — SENSING HARDWARE

Four channels, one clamp-on *stack*.

Novek instruments rotating, pressurised and electrical assets with a small set of wireless, clamp-on sensors. **No wiring, no BMS integration, no shutdown** — fitted during normal operation. Each asset is read by more than one channel so multi-mode degradation has nowhere to hide.

CHANNEL	SENSING ELEMENT	POWER	WHAT IT DETECTS
Electrical (CT)	Clamp-on 3-phase current transformers	Self-powered (induced current)	Phase imbalance, overload, harmonic distortion, short-cycling, motor stress
Vibration	Accelerometer node on bearing housings	Long-life lithium	Bearing wear, misalignment, imbalance, looseness (ISO 10816 / 20816)
Temperature	Pipe-clamp & NTC contact probes	Long-life lithium	Delta-T drift, coil fouling, refrigerant under-charge, cable hotspots
Level	Submersible level probe	Long-life lithium	Basin / tank drawdown, make-up valve drift, process-tank anomalies

Comms: TDRA-approved LoRaWAN EU868, transmitting via dedicated 4G gateways — fully air-gapped from building IT.
Refresh: readings every 1–10 minutes by channel. **Install:** clamp-on, no rewiring, no plant shutdown — live in three weeks.

DELIBERATELY NOT

The stack favours **non-invasive, self-powered-where-possible** sensing. It does not rely on acoustic emission or inline pressure taps — nothing that requires breaking into the process or a plant shutdown to fit.

One clamp-on kit per asset, more than one signal per asset. The overlap is the point: **a fault that is quiet on one channel shows up on another.**