



NDT SCREENING · PERMANENT SENSOR WRAPS · HELIX HORIZON SOFTWARE

Continuous Health Monitoring of Critical Assets

Non-intrusive screening, permanently installed sensor wraps, and software that puts every reading on a 3D model of the real asset — so integrity decisions run on data, not on the calendar.

SHOWN: PEC SCREENING IN HELIX HORIZON — CAPILANO RIVER HATCHERY (DFO) · HLX-2026-001

THE PROBLEM

Periodic inspection is a snapshot.

Pipelines, vessels, and process assets are still checked on a schedule. Between visits, no one is reading the asset — and degradation develops unseen. Four questions worth asking of any integrity program:

What does an hour of downtime cost?

Unplanned downtime costs a typical Canadian industrial business roughly C\$242,000 per hour (ABB, Value of Reliability survey).

What sets your inspection interval?

Usually the calendar and the code — not the measured condition. A slow year and a bad year get the same interval.

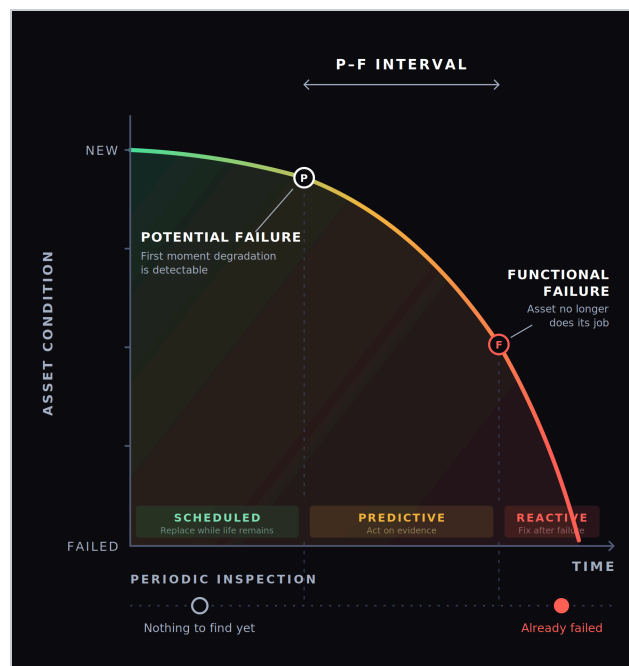
How do you know mitigation is working?

Inhibitor programs and coatings are judged on spot readings taken months apart, at points that may miss the damage.

What happens between visits?

Damage grows in the gaps where nobody is watching. Too often, the first unambiguous signal is the failure itself.

One operator we work with reports C\$3.5M of downtime on a single two-week inspection cycle, repeated every three years — the cost of getting a snapshot, before anything is even repaired.



The P–F curve. Periodic inspection samples it a few times; failures start in the gaps. Continuous monitoring reads the curve itself.



What the gaps hide: coating disbondment and active corrosion on an in-service line.

C\$242k
COST PER HOUR OF
UNPLANNED DOWNTIME

US\$14.3B →
98.2B
PREDICTIVE MAINTENANCE
MARKET, 2025–2033

27.9%
PREDICTIVE MAINTENANCE
CAGR

US\$25.3B
ASSET INTEGRITY MGMT.
MARKET, 2025

Sources: ABB Value of Reliability survey; Grand View Research predictive-maintenance outlook; Fortune Business Insights asset-integrity-management report (North America ≈ 28% of market). Operator downtime figure as reported to HELIX.

THE HELIX APPROACH

Screen. Monitor. Decide.

One path from a first scan to continuous visibility — each step stands on its own, and each one makes the next more valuable.

1

Screen — one visit, four methods

A HELIX crew screens the asset in service: pulsed eddy current (PEC) wall-response screening, eddy current array (ECA) surface-discontinuity screening, and LiDAR + photogrammetry 3D capture. You receive the inspection report, the processed datasets, a point-of-interest register, and a 3D model in HELIX Horizon with every result registered to it.

2

Monitor — wrap the sections that matter

Where screening finds areas worth watching, a patent-pending HELIX sensor wrap installs permanently and monitors wall loss continuously — temperature-compensated readings streaming into the same asset model.

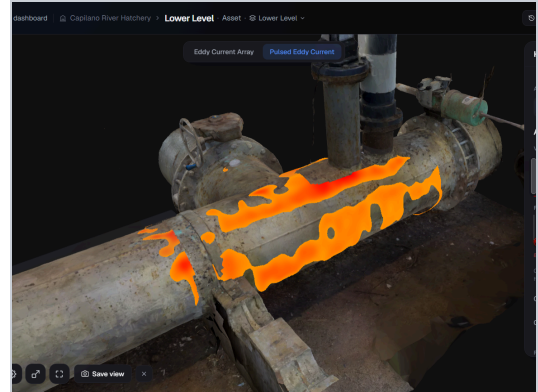
3

Decide — trend, forecast, act

Horizon holds every reading at its physical location, trends the rate of change, and produces a probabilistic wall-thickness forecast against your acceptance criterion — so repairs are scheduled on evidence.

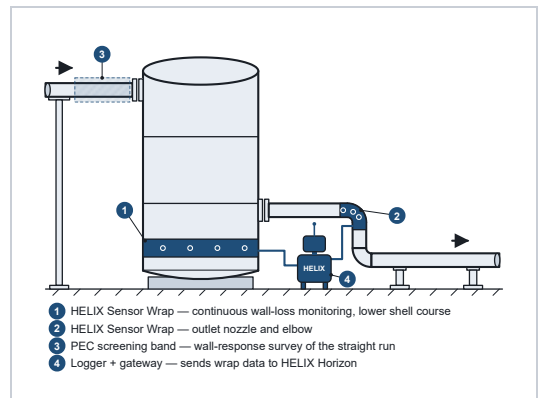
Why this is different

Incumbent screening is point-in-time: campaign crews, shutdown windows, and single-point gauges that watch one spot in one modality. HELIX covers an area of the asset, in more than one modality, and keeps watching after the crew leaves. Because the wrap is tileable and one-size across pipe diameters, deployments scale without per-project engineering — and without scarce certified inspection labour on every visit.



Screening results as a health map on the asset (Capilano River Hatchery). Colours are relative to this scan — they mark the lowest and highest readings shown, not safe/unsafe limits.

Where HELIX fits first: high-consequence, hard-to-inspect assets — constrained-access plants, small-diameter lines, and aging infrastructure where scaffolding, insulation stripping, or shutdowns make conventional campaigns expensive.



Representative monitoring positions on a tank and its lines. Illustrative, not a site drawing.

THE SERVICES

Screening — four methods on one visit

HELIX PEC — wall-response screening

Handheld pulsed eddy current screening through coatings and insulation — no surface prep, no bare metal, no couplant.

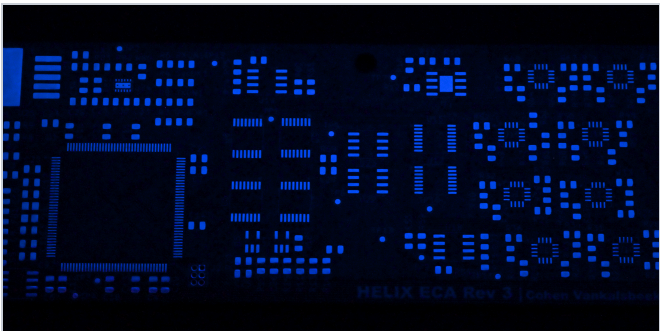


HELIX PEC screening on an in-service line — no insulation removal.

Summary	
System	HELIX PEC-Rev1 (deployed units PEC-1a, PEC-1b)
Measurement	Decay constant τ (ms) of the transient eddy-current response, reported as relative apparent-wall response
Probe	Concentric coil — 90 mm excitation, 40 mm read
Footprint	~90 mm; each reading is a footprint average
Material	Ferromagnetic metal; comparisons valid within consistent material and geometry
Reference framework	ISO 20669:2017 (reference only)

HELIX ECA — surface-discontinuity screening

Eddy current array screening for surface-breaking and near-surface discontinuities, through paint.



HELIX ECA Rev 3 array electronics.

Summary	
System	HELIX ECA-Rev3 (deployed unit ECA-1a)
Array	32 elements — 16 transmit / 16 receive
Operating frequency	150 kHz
Detects	Surface-breaking and near-surface discontinuities (e.g. weld-toe cracking)
Output	Reports indications; does not size defects
Validation	Engineered cut, void, and wrinkle test panels with matching scan heatmaps
Reference frameworks	ISO 15548-1/-2/-3; ISO 20339:2017; ASTM E3052-21; ISO 17643:2015 (reference only)

Honest limits. PEC is footprint-averaged: it responds to ferromagnetic deposits as if they were wall and does not resolve isolated pitting. PEC values are relative (τ -based), not absolute thickness, unless a material reference exists. ECA reads the surface and near-surface only.

Screening, not certification. HELIX screening prioritizes where to look next; it does not certify to any code scheme. Fitness-for-service remains a regulated engineering assessment carried out by your engineers. Individual technical specifications (HLX-SPC series) are available on request.

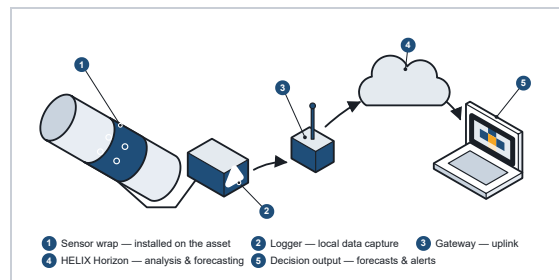
THE PRODUCT

HELIX Sensor Wrap — monitoring that stays on the asset

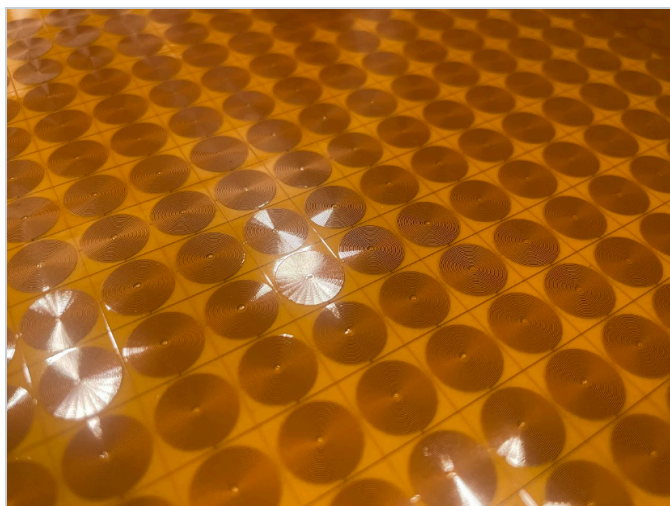
The HELIX wrap is a patent-pending flexible sensor sheet that installs permanently on a pipe or vessel and monitors it in real time — the same area coverage as a screening visit, running continuously.

- **Tileable, one size across assets** — the same wrap tiles across pipe diameters and asset types, with no per-deal sensor engineering.
- **Flexible-PCB construction**, designed for roll-to-roll manufacture.
- **Continuous wall-thickness / wall-loss monitoring** with co-located temperature sensing to compensate every reading.
- **Feeds HELIX Horizon**: readings land on the 3D asset model and drive the probabilistic wall-thickness forecast.

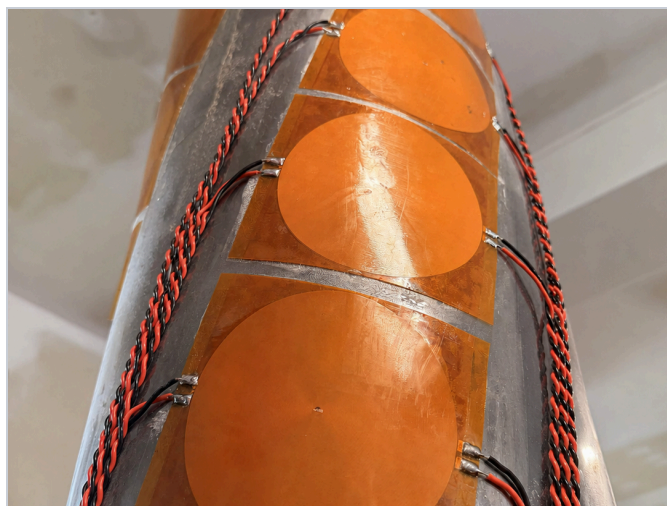
The installed wrap trades range for permanence: its wall-thickness range is narrower than the handheld instrument, and readings require the wrap's co-located temperature compensation. Certifications: contact HELIX.



From wrap to decision: logger and gateway carry every reading into HELIX Horizon.



Spiral-coil sensing elements on the flexible substrate.



Sensor wrap conformed to a pipe section.

LIVE WRAP PILOT — PUBLISHED FIGURES

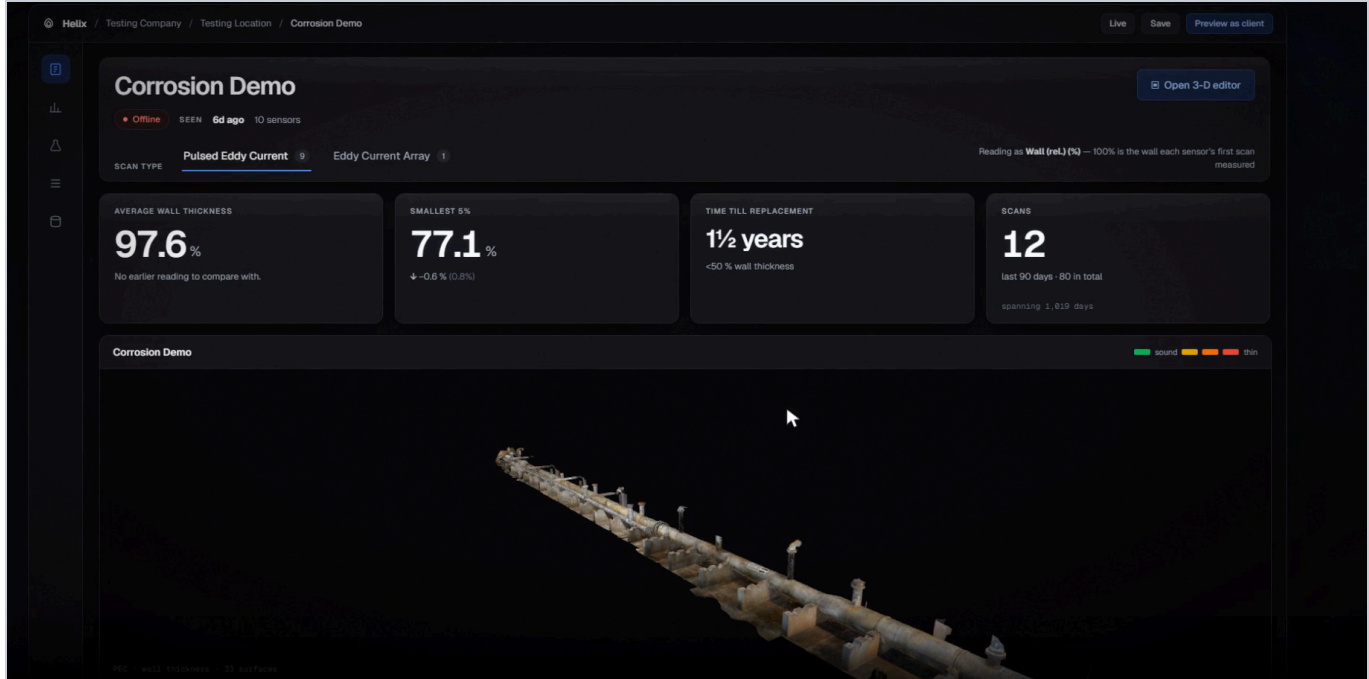
12 MEASUREMENT POINTS	3.000 mm NOMINAL WALL MONITORED	<1% WALL-LOSS DETECTION THRESHOLD	±25 μm TEMPERATURE-COMPENSATED READINGS	4,800 READINGS OVER 8 HOURS
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Figures from HELIX's published live wrap pilot ("Array Live", helixsensors.com).

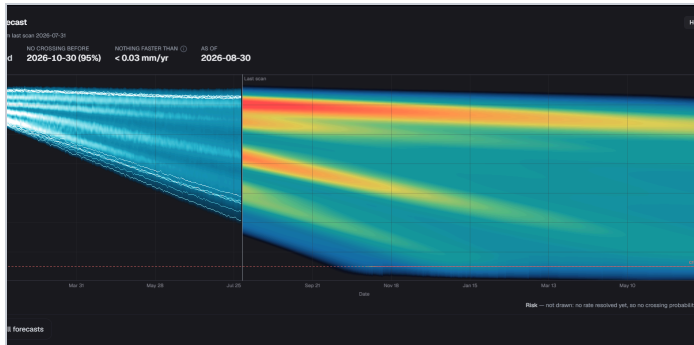
THE SOFTWARE

HELIX Horizon — every reading, on the asset, over time

Horizon registers every screening and monitoring result to its physical location on a LiDAR + photogrammetry model of the real asset — then trends it, forecasts it, and shares it.



Asset dashboard ("Corrosion Demo"): KPI tiles — average wall, smallest 5%, time-till-replacement, scan count — above the live 3D health map.



"Latest forecast": probabilistic wall-thickness fan against the acceptance criterion — here reporting "no crossing before 2026-10-30 (95%)" and a loss rate below 0.03 mm/yr. Screens on this page show demonstration data, not customer results.

- PEC and ECA heatmap layers on the 3D model, with per-zone histogram analysis
- Point-of-interest cards with a guided asset tour
- Scan replay in capture order and a scan-history time slider
- Hover tooltips with per-point wall (rel.) values
- "Sensor mean over time" longitudinal analytics across repeat measurements
- Probabilistic wall-thickness forecast with criterion line and risk curve
- Client portal: per-client dashboards, KPI tiles, site and asset cards
- Preview-as-client mode for sharing exactly what your stakeholders see

Colours in Horizon heatmaps are relative to each scan — they mark the lowest and highest readings shown, not safe/unsafe limits. Forecasts are statistical trending of the measured rate of change, not a trained model.

PROVEN IN THE FIELD

Fisheries and Oceans Canada — Capilano River Hatchery

July 2026, North Vancouver BC. Four days on site screening ~100 m of 1970s piping — a 24-in wastewater line and a 4-in chlorinated water line — in place, without cutting, draining, or dismantling. Reference HLX-2026-001.

378,407

SCREENING SAMPLES

34

INSPECTION ZONES

~100 m

OF 1970S PIPING SCREENED

4

DAYS ON SITE

WHAT WAS DELIVERED

68,679 PEC readings + 309,728 ECA samples
in one campaign

46 point-of-interest entries, ranked for follow-up

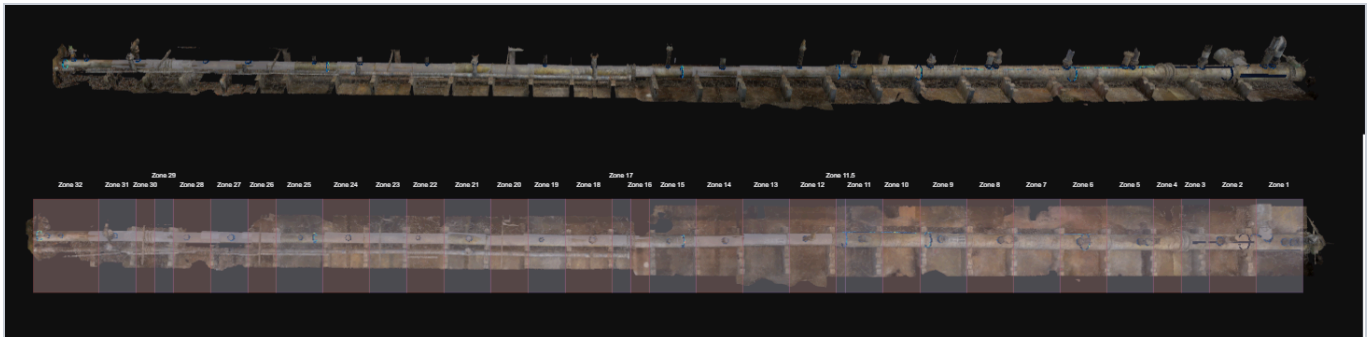
Every result registered to a 3D model of the
piping in HELIX Horizon

Inspection report and processed datasets
handed over with Horizon access



HELIX field hardware deployed on a remote outdoor line.

The full findings summary is available in the released HELIX case study (NDT screening & 3D condition mapping, ref. HLX-2026-001) — ask us for a copy.



Excerpt from the campaign's inspection-zone map (HLX-2026-001).

HELIX FIELD RECORD TO DATE

2,002 h

WRAPPED SCAN TIME

3,200+ ft²

SCANNED

360M+

DATA POINTS

Field-record figures as published at helixsensors.com (live counters).



HOW TO ENGAGE

Start with one asset.

Pick one section where better data would change a maintenance decision. We scope a contained pilot and define the path to broader deployment.

1

Scoping call

Tell us about the asset, the access constraints, and the decision the data needs to support.

2

Screening visit

Four methods on one visit — PEC, ECA, LiDAR + photogrammetry capture, and registration in Horizon. Fixed scope, priced in line with market screening engagements; you keep the report, the datasets, and the model.

3

Continuous monitoring

Wrap the sections worth watching and subscribe to Horizon — wall-loss trends and forecasts, continuously, on the same asset model your screening built.

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HELIX sensor hardware, deployment methods, signal processing, and predictive modeling are the subject of five filed provisional patent applications (patent-pending). Standards named in this document are reference frameworks only; HELIX does not claim certification to them. HELIX screening does not certify to any code scheme; fitness-for-service assessment remains with the client's engineers. Specifications subject to change without notice.

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