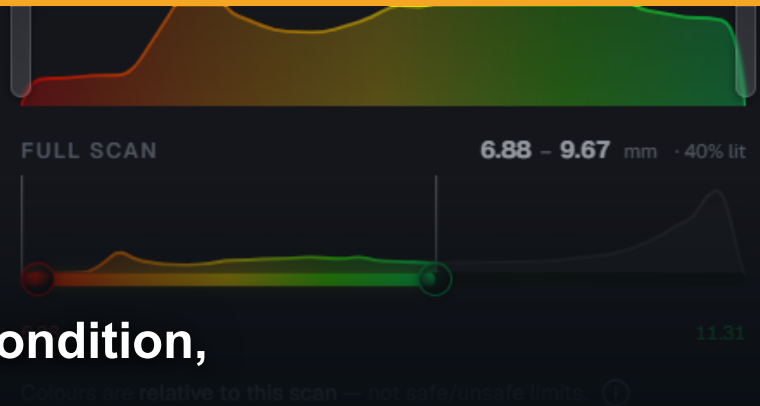


SIMULATED CASE STUDY · MINING

Slurry elbows replaced on condition, not on the calendar



SLURRY TRANSPORT · CONTINUOUS EROSION MONITORING · AUGUST 2026
BANNER: HELIX HORIZON — DEMONSTRATION ELBOW HEATMAP AND HISTOGRAM, SIMULATED DATA

*The pilot HELIX wants to run, written as the case study we intend to earn
— scored in shadow against the site's own UT.*

MODELLED RESULTS — SIMULATED

- Replace on measured wall, not the calendar — recovering the 30–40% of usable spool life the four-month schedule scraps
- A dated, scored replacement forecast for the whole elbow: no crossing of the retirement wall before 2026-10-30, at 95% confidence
- One avoided changeout pays for about three years of monitoring — subscription roughly 11% of today's changeout spend



*The instrumented demonstration elbow in HELIX Horizon — red marks the thinnest wall. Simulated data.
Colours are relative to this scan — they mark the lowest and highest readings shown, not safe/unsafe limits.*

SCENARIO

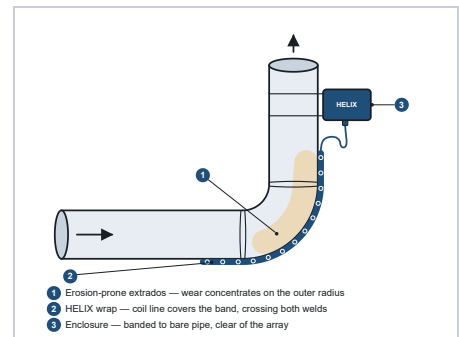
A representative composite, not a named or real site: a slurry operator with fast-wearing spools. Modelled here, a 24-inch rubber-lined cyclone feed elbow, replaced every four months on the calendar.

APPLICATION

HELIX Wrap in area format over the full elbow, streaming wall thickness and temperature per node into HELIX Horizon — installed by the site's own crew: no hot work, no shutdown, under a day.

CHALLENGE

The calendar is set for the worst campaign on record, so healthy steel is scrapped in every average one — at a typical 1.5 safety factor, roughly a third of each spool's usable wall. Manual UT samples a few points on a wear band that moves, and the line is unwatched between rounds; the downside managed is a \$250,000 slurry release.



Monitoring concept — coverage across both welds, over the erosion-prone extrados. Representative placement.

The pilot runs in shadow: the site keeps its schedule and its UT programme, and the wrap is scored against both — savings are banked from Year 2.

3 / yr

CHANGEOUTS PER
POSITION TODAY

\$35,000

ALL-IN COST PER
CHANGEOUT

30–40%

USABLE SPOOL WALL
SCRAPPED

\$250,000

SLURRY-RELEASE
DOWNSIDE MANAGED

~\$1,000/mo

PRICE ANCHOR PER
POSITION, 2026 CAD

SOLUTION

The spare spool is wrapped at ground level before the changeout; monitoring starts with its first hour in service — wall thickness per zone, rate of loss and remaining life, temperature-compensated, into HELIX Horizon.

The pilot is one normal spool cycle — about four months, in shadow: on changeout day the baseline goes live; each month brings a colocated UT check and a sealed forecast; at month 4 the spool is pulled and every prediction is scored. Four KPIs decide it:

1 · Agreement with UT

Monthly colocated UT on a marked grid; wrap readings match within a tolerance fixed at kickoff — a few tenths of a millimetre.

2 · Blind forecasting

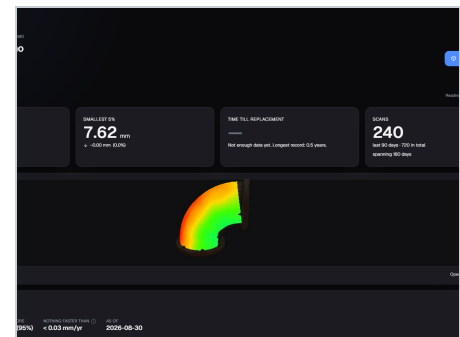
Each review seals a forecast twice as long as the history behind it, then scores it against the scans that follow.

3 · Wear-rate map

A mm-per-year map ranking where erosion concentrates, confirmed against the pulled spool at changeout.

4 · Rate-change detection

Shifts in per-zone erosion rate flagged when solids, pump pressure or water content change, matched to plant records.



The demonstration elbow's asset page in HELIX Horizon — simulated data, Feb–July 2026. Colours relative to this scan, not safe/unsafe limits.

Simulated scenario. A representative composite, not a named or real site; no customer data appears in this document. Dollar figures are representative defaults from the HELIX Wrap pricing model (2026 CAD), replaced by a site's own numbers in scoping. Where wear is too slow to resolve a rate, Horizon says so rather than claim one.

MODELLED ECONOMICS — ONE POSITION

On the HELIX pricing model (representative defaults)	2026 CAD
What the position costs today: three changeouts a year at \$35,000 all-in (spool, crane, downtime)	\$105,000 / yr
A · Interval extension — replace at measured wall-out, about 30 percent more life per spool	\$24,500 / yr
B · Rotation instead of replacement — labour only, once the thin quadrant is known	\$11,400 / yr
C · Avoided unplanned failure, deliberately counted at 35 percent credit	\$9,200 / yr
Total modelled annual value	\$45,100 / yr
HELIX subscription at the target 4× customer return — about 11 percent of today's spend	\$1,000 / mo

HELIX Sensors Inc.

The pilot ask: one fast-wearing position, a spare spool to wrap ahead of a changeout, an hour of crew time, UT at the monthly checks, and process context. HELIX brings the patent-pending wrap, install kit, edge node, gateway and HELIX Horizon.

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