FIELD CASE STUDY - AI COMPRESSOR PROTECTION

From Eleven Failures to Zero

How continuous compressor-protection analytics ended a recurring pattern of compressor failures across a multi-site grocery operation

11	0	$115K	$21K
compressor replacements in the 2 years before KalderIQ went live	replacements in the year since monitoring began - same sites	(CAD) in replacement cost avoided in that first year	(CAD) typical billed cost of one 4FTC replacement - crane, labor, materials

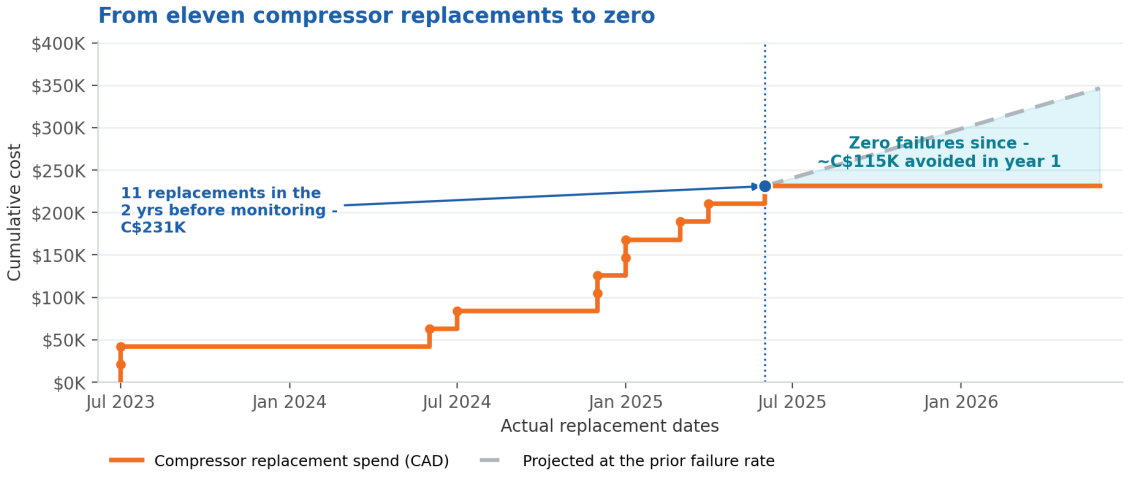
In commercial refrigeration, a failed compressor is treated as a discrete event: it trips or seizes, a technician is dispatched, a crane lifts the old unit out and a new one in, and the customer is billed roughly C$21,000. Across a multi-site grocery operation, that event was repeating - eleven compressor replacements in two years, each handled correctly, none of them obviously connected. KalderIQ - Kalder's AI compressor-protection system - began monitoring these sites in June 2025, watching for the slow failure mode behind the pattern. In the year since, the sites have needed zero compressor replacements.

A recurring pattern of compressor failures

The operation runs parallel compressor racks across its stores. Over the 24 months before monitoring, eleven compressors failed and were replaced across the estate - each one a crane lift, several hours of labor, and materials, billed at roughly C$21,000. On paper every replacement looked like an isolated mechanical failure: a compressor reached the end of its life, it was swapped, the rack ran cold again.

The common thread was a slow degradation no point-in-time check could see - the kind that develops intermittently over weeks and months and only reveals itself when the compressor finally fails. A technician responding to a tripped or seized unit sees the end result, not the long run-up that caused it. With nothing trending the system's behavior between visits, every failure was logged as a one-off and the underlying pattern stayed invisible.

> **“These weren't unlucky compressors. They were the visible end of a slow, repeating failure mode no point-in-time check could catch.”**



Cumulative compressor-replacement cost across the sites (CAD), plotted on the actual replacement dates. The orange line steps up with each of the eleven replacements between July 2023 and June 2025, then flattens when KalderIQ went live - zero replacements in the year since. The dashed line shows what the prior failure rate would have cost over that same year.

What KalderIQ found

KalderIQ monitors each compressor continuously and applies Kalder's intelligent compressor-protection analytics to detect the early signs of distress against each system's expected operating envelope. It surfaces problems weeks before they do the mechanical damage that ends in a replacement - turning what would have been an emergency swap into a planned, routine service correction.

Brought online across the sites in June 2025, KalderIQ began surfacing compressors that ran cold day-to-day but were trending toward failure. Technicians were directed to the underlying cause and corrected it as routine service, before the unit was damaged. The two-year run of replacements stopped: across the same sites, there have been zero compressor replacements in the year since.

The cost - and the downtime it carried

Each replacement runs about C$21,000 billed to the customer once crane, labor, and materials are counted. Eleven over the prior two years is roughly C$231,000 - about C$115,000 a year - spent on a failure pattern that was never addressed at its source. Since June 2025 that line has held at zero, avoiding an estimated C$115,000 in the first year alone. (Equipment still ages, and unrelated failures can occur on an estate this size - but this particular failure pattern is closed.)

The invoice never showed the full cost. Each failure carried an emergency call-out, a crane to schedule, and a case or rack running warm while parts and equipment were lined up - putting product at risk and loading the remaining compressors on the rack. Catching the issue early converts an emergency replacement into a planned, low-cost service correction, and keeps the cases cold while it is fixed. The reliability gain is as real as the capital saved.

The bottom line

Skilled technicians replaced every failed compressor correctly. What was missing was visibility into the slow failure mode behind the pattern - the long, intermittent run-up that no point-in-time check captures. KalderIQ provided continuous compressor-protection analytics and turned a recurring six-figure replacement pattern into early, planned corrections. Across these sites, the compressor-replacement line has stayed at zero since monitoring went live.

Estimate basis & assumptions

Figures are estimates for illustration, based on the customer's service history: 11 compressor replacements between July 2023 and June 2025 (plotted on their actual dates) and zero in the year since KalderIQ went live in June 2025; ~C$21,000 per 4FTC compressor replacement billed to the customer, inclusive of crane, labor, and materials. Avoided spend reflects one year at the prior run rate of ~5.5 replacements/year (~C$115,000); no forward years are projected. All dollar figures are Canadian dollars (CAD). KalderIQ applies continuous compressor-protection analytics; the specific signals and detection methods are proprietary. The customer is described generically to protect confidentiality.