



The Situation

A mid-sized specialty grocery chain was facing mounting operational and financial pressures across their refrigeration infrastructure as well as increased regulatory compliance requirements regarding HFC refrigerant leaks. Like many retail grocers, refrigeration represented their largest operational challenge, accounting for more than 50% of their total electricity consumption and up to 90% of their maintenance service calls.

The grocer was caught in a costly cycle of reactive operations: increasing volume of emergency repairs, escalating energy bills, frequent refrigerant leaks, and exposure to potential six-figure regulatory fines from refrigerant compliance failures. With refrigerant costs having more than doubled in recent years, technician shortages driving up labor rates, and increasingly stringent environmental regulations at the federal and state level, they needed a comprehensive solution that could address multiple operational pain points simultaneously.

Key Challenges

Maintenance and Reliability Issues

- Refrigeration systems drove up to 90% of all maintenance service calls, with stores experiencing 3+ high-impact refrigeration-related service calls per month
- Trapped in a reactive "break/fix" maintenance cycle with high emergency repair costs
- Elevated incident rate of 'call-backs' due to technicians lacking necessary insights into the nature of required repairs, combined with limited ability to confirm repair completion
- A skilled technician shortage complicated maintenance efforts and drove up labor costs

Refrigeration Management and Compliance

- Tightening state and federal regulations (CARB, EPA AIM Act) required proactive leak management
- Escalating refrigerant costs (2-3x increase in recent years) were significantly impacting operating expenses
- Refrigerant leaks represented the corporation's number one driver of Scope 1 greenhouse gas emissions
- Costly regulatory fines and compliance violations were a strategic risk

Energy Efficiency Challenges:

- Energy managers had already captured "low-hanging fruit" opportunities such as LED lighting and doors on cases, and they needed to find the "next big energy savings opportunity"
- Inefficiencies were hidden from view as they were buried in the massive amounts of data generated by refrigeration controllers across 115+ stores, and no "one size fits all" solution was available
- Energy usage was increasing by up to 2% annually due to a lack of continuous commissioning capabilities
- Optimal energy efficiency settings were routinely disabled during service calls and never re-enabled (~70% of facilities affected)

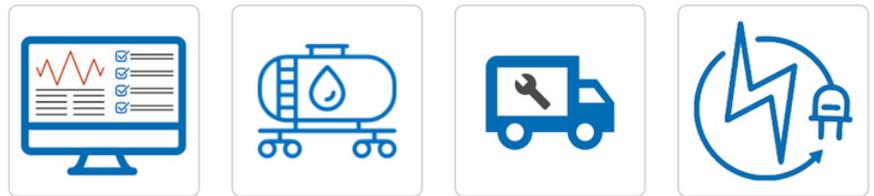
The Solution

The grocery chain deployed Axiom Cloud's comprehensive AI-powered refrigeration management platform across 115 stores. The solution leveraged all Axiom modules to maximize performance, compliance benefits, and maximize cost savings:

- **Predictive Maintenance:** Predictive diagnosis of refrigeration system issues, detailed diagnostic information, step-by-step repair instructions, and verification of repair effectiveness to avoid the cycle of reactive maintenance emergencies
- **Early Leak Detection:** AI-powered continuous monitoring of refrigeration systems to detect refrigerant leaks weeks or months before traditional detection methods (listed by EPA and CARB as an indirect "whole-system" Automatic Leak Detection system)
- **Energy Efficiency:** Continuous commissioning capabilities using AI to identify and target high-impact energy efficiency opportunities while maintaining food safety standards, including automatic detection when efficiency settings are disabled during service calls

The platform seamlessly integrated with existing refrigeration controllers. Axiom deployed its AI-powered modules to all 115 stores within days - no new hardware, sensors, or site visits were required.

Results and Benefits



In the first 12 months following implementation, the grocer achieved transformative improvements across all operational areas:

Cost Savings and ROI

Total Annual Cost Savings: \$1,928,000+ across all modules

- Early Leak Detection: \$460,000 in refrigerant and maintenance cost savings
- Avoided manual leak inspections: \$435,000
- Predictive Maintenance: \$860,000 in maintenance optimization and emergency repair reduction
- Energy Efficiency: \$158,600 in annual energy cost savings
- Mitigated corporate risks that include financial (lost sales and product spoilage) and regulatory (increased exposure to regulatory fines)

Compliance Risk Reduction

- 32 refrigerant leaks detected 84% faster on average than traditional methods
- 460 manual leak inspection work orders avoided, along with associated documentation requirements
- 8,303 lbs of refrigerant saved (259 lbs per leak on average)
- 40.1% reduction in annual refrigerant leak rate
- 11,886 metric tons of GHG emissions eliminated
- 100% compliance with state and federal HFC refrigerant compliance audits, avoiding potential six-figure fines
- Multiple CARB audits successfully passed without deficiencies
- Comprehensive audit-ready documentation generated for each store: ALD deployment reports, annual audit/calibration records, and ongoing leak detection logs

Maintenance Transformation

238 predictive maintenance anomalies identified

- Dramatic reduction in emergency service calls and "call-back" visits
- Technicians arrived with precise diagnostic information, the right tools, and materials, increasing "time on task"
- Automated verification of repair completion and effectiveness improved contractor accountability
- Maintenance tasks intelligently prioritized and batched for optimal efficiency

Operational Excellence

- Significantly improved system uptime and reduced food spoilage risk
- Store personnel freed to focus on customer service rather than equipment troubleshooting
- Facility management team transitioned from reactive firefighting to strategic planning
- Enhanced equipment lifecycle through more efficient operations and reduced equipment runtime

Energy Savings

- 43 energy efficiency anomalies identified and corrected
- 755,000 kWh reduction in annual electricity usage
- Geographic optimization tailored energy strategies to each location's climate and system design

Key Insights and Success Factors

Integrated Approach:

The synergistic effect of deploying all three modules simultaneously delivered greater value than individual implementations, with cross-module insights enhancing overall system optimization

Proactive vs. Reactive:

The transformation from reactive maintenance to predictive intervention fundamentally changed operational dynamics, reducing stress on facility teams while improving financial performance.

Accountability & Quality Assurance:

Real-time validation distinguished temporary fixes from permanent solutions, enabling facilities teams to verify root cause resolution before approving contractor invoices and ensuring long-term system reliability.

Scalability Without Complexity:

The software-only solution scaled across all subscribed locations without hardware requirements, enabling rapid deployment and immediate value realization.

Data-Driven Decision Making:

AI-powered insights enabled precise prioritization based on financial impact and urgency, while empowering regional managers to dispatch the right technicians with the right supplies to optimal locations. Contextual information provided before arrival increased first-time fix rates, especially for early-career technicians.

Integrated with existing systems and workflows:

Native compatibility with existing controllers, VPN infrastructure, and workflows enabled rapid deployment without disruption, while multi-channel connectivity and ecosystem integration minimized complexity and maximized adoption.

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SP-227-004 - Medium Urgency - SYS 1/2 SYS1 -23 R407A Suction Pressure - Not Meeting Setpoint

Date Sent: 2024-10-01
Address: 1260 Garnet Ave., San Diego CA 92109
Urgency: Medium - Address within two business days
Estimated Financial Impact if Not Addressed: \$7,333

SP-227-004

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• (RX-300)SYS 1/2:SYS1 -23 R407A:SUCTION PRES • (RX-300)SYS 1/2:SYS

Description and Root Cause:

Suction pressure controller for SYS 1/2 SYS1 -23 R407A is not maintainin "PROOF FAILURE".

Suggested Actions:

- Inspect compressor operation on SYS 1/2 SYS1 -23 R407A.
- Check suction transducer calibration.
- Inspect electrical components.

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Conclusion

This specialty grocery retailer's comprehensive deployment of Axiom Cloud's AI-powered refrigeration management platform demonstrates the significant untapped potential in holistic refrigeration optimization. By addressing maintenance, energy efficiency, and refrigerant management simultaneously through advanced AI and data analytics, they achieved over \$1.9 million in annual cost savings while dramatically improving operational reliability and environmental performance.

The success illustrates that modern grocery retailers can break free from the traditional reactive approach to refrigeration management. Through intelligent automation and predictive insights, they can transform their largest operational challenge into a competitive advantage, achieving substantial cost reductions, improved sustainability outcomes, and enhanced operational excellence.

For grocery retailers facing similar multi-faceted refrigeration challenges, Axiom Cloud's integrated platform offers a proven path to comprehensive operational transformation that delivers immediate financial returns while positioning organizations for long-term success in an increasingly regulated and cost-conscious environment.



Ready to connect?

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