ADVANCED DIGITAL REFRIGERATION: ENHANCING MANAGEMENT FOR THE GROCERY INDUSTRY

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High service and maintenance costs shouldn't be the norm in the industry, yet equipment reliability and energy consumption remain major concerns for grocery store refrigeration systems. These issues arise from a lack of insight into equipment functionality. Conventional systems typically leave store owners unaware of problems until temperature setpoints are missed, energy use spikes or catastrophic failures occur. Service costs can potentially escalate without operational visibility – and sometimes quite dramatically.

Mechanical and pressure-dependent devices in traditional systems operate independently, making automatic coordination and simple adjustments impossible. Manual troubleshooting is time-consuming and often ineffective, as many problems are secondary effects of a primary issue. Without pinpointing the root cause, larger problems can develop, leading to high repair costs, prolonged downtime, and excessive energy use. Digitalizing the entire refrigeration system changes this by offering full access to equipment operation and advanced management capabilities. Leveraging detailed data, owners can achieve precise control and maintain optimal performance.

SAYER'S FOODS HARNESSES DIGITAL TECHNOLOGY

For their newly built store, the Sayers family, owners of Sayer's Foods in Apsley, Ontario, prioritized an efficient, straightforward refrigeration platform to address high maintenance costs and product protection. The rebuild represented an opportunity to modernize the store, optimize efficiency, and add lasting value to their investment. Integrating the Oxford Low-Pressure Platform (OLPP) with Sensori BAS created a highly efficient, data-driven, and user-friendly system. Electronic devices are digitally connected, sharing information seamlessly across the platform. If one device operates outside of predetermined thresholds, timely notifications are sent, and other devices can compensate until the issue is resolved.

The adaptive performance of components maintains optimal operation throughout the system. This digital transformation in refrigeration management ensures greater reliability and enhances overall performance.

Promptly identifying and addressing concerns is essential to avoid costly disruptions. The availability of real-time information allows for the immediate detection and resolution of minor issues before they escalate into significant failures. The OLPP's digital interface allows staff to monitor every aspect of the system in real time. Staff can view real-time temperatures and pressures and see how they affect other devices in the system on the HMI display. They can also analyze historical data and identify trends with user-friendly graphs. Setpoints can be easily adjusted at the HMI touchscreen or remotely via an IoT-connected device.

Sayer's system now provides reliability in otherwise difficult situations. Complications like power failures or faulty breakers can cause havoc for other systems but are easily handled with their new digital platform. In conventional systems, power failures often lead to unbalanced shutdowns, risking system damage and other complications. During an outage, these systems lack control, may continue running, and risk overheating, blowing fuses, or melting wires, resulting in service or repairs.

With the OLPP™, when power levels drop out of the threshold, an alarm is sent, and the system shuts down smoothly and is controlled before the power goes out entirely, protecting the system. When power returns, the digital system verifies stability. It slowly brings the system back online, one stage at a time, allowing VFDs to ramp up gradually. If power isn't optimal, the digital system will shut down to ensure equipment safety.

The controlled approach of digital systems prevents damage and reduces maintenance. With a user-friendly interface, equipment data is direct. At Sayers Foods, if the system shuts down due to a power issue like a faulty breaker, or an anomaly notification is sent, the information allows technicians to focus on the actual issue without needing to troubleshoot extensively. Detailed notifications direct them to the problem source, eliminating questions like, "Why is the refrigeration off?"

The visibility into the system also allows them to monitor energy consumption and

make informed decisions. With comprehensive data displayed, they can interpret precise logs and observe usage patterns, demonstrating the efficiency of their devices. The Sayers family can identify trends and optimize their system's performance by seeing the energy consumption in real-time. They can easily spot inefficiencies and take corrective action before they become high energy bills. This level of control ensures that their refrigeration system operates at peak efficiency, reducing energy costs and minimizing environmental impact.

By adopting advanced digital solutions, the Sayers family gained a better understanding and control over their systems, reaching a new level of efficiency. They now enjoy greater reliability, reduced costs, and improved efficiency, all while maintaining the highest standards of food safety and quality. By leveraging detailed data and advanced management capabilities, grocery store owners can achieve precision in maintaining optimal conditions. With access to the inside workings of the system, they can review processes and modify information easily with a user-friendly interface. Sayer's Foods' newfound confidence in the equipment highlights the significant advantages of digitalizing refrigeration systems and sets a benchmark for other grocery store owners aiming to modernize their operations.

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