ArtikControl™ Energy Management Solution

The ArtikControl™ technology represents a cutting-edge energy-saving refrigeration controller designed for walk-in freezers and coolers. It offers remote monitoring and control capabilities accessible from your Desktop, Smartphone, or Tablet. This configurable energy-saving refrigeration controller boasts web-based bi-directional connectivity, enabling you to monitor, schedule, and optimize set points. It also integrates evaporator controls, adaptive defrost controls, failure alarming, and predictive diagnostics.

The ArtikControl™ system achieves energy savings for your walk-in freezers and coolers through two main categories: hard savings and soft savings. Hard savings involve tangible items with calculable values, such as device wattages and run times. Soft savings, on the other hand, stem from perceived cost reductions related to processes involving walk-in freezers and coolers.

Now, let's delve into some of the hard savings that the ArtikControl™ system brings to your walk-in freezers and coolers. Firstly, let's focus on the fan motors within the evaporator system. Traditional evaporator systems often employ shaded pole fan motors, known for their cost-effectiveness. These motors consume approximately 154 watts of power per motor in 115 Volt systems and around 229 watts per motor in 208 Volt systems. In contrast, the ArtikControl™ system uses 115 Volt EC fan motors, which are two-speed motors (typically in coolers) consuming 27.5 watts on high speed and 9 watts on low speed. For 208 Volt systems (typically in freezers), the two-speed EC fan motors consume 18 watts at high speed and 3 watts on low speed.

The ArtikControl™ system employs two-speed EC fan motors because they don't need to run at high speed when refrigerant isn't circulating through the evaporator coils. In typical systems, when the thermostat doesn't demand refrigeration, the fans continue running at high speed. In contrast, the ArtikControl™ system switches the motors from high speed to low speed after a preset time frame to allow the evaporator coil's refrigerant to cool the space. In coolers, a shaded pole fan motor runs at high speed 100% of the time, while in the ArtikControl™ system, EC fan motors run at high speed for 55% of the time and at low speed for 45%. In freezers, shaded pole fan motors run at high speed 90% of the time, with 10% off during defrost operations. In the ArtikControl™ system, fan motors run at high speed for 51%, low speed for 42%, and are off for 7% of the time during defrost operations.

Understanding the power consumption of different motor types in the evaporators, we can calculate the yearly energy reduction achieved by switching from shaded pole motors to EC motors with the ArtikControl™ system. For example, a shaded pole fan motor in a 115 Volt system consumes 1,349.04 kWh of energy per year, while in a 208

Volt system, it consumes 2,006.04 kWh per year. In contrast, the ArtikControl™ system's 115 Volt EC fan motor consumes 167.97 kWh per year, and the 208 Volt EC fan motor consumes 88.38 kWh per year. This results in savings of 1,181.07 kWh per fan motor for 115 Volt systems and 1,917.66 kWh per fan motor for 208 Volt systems.

Additionally, there are savings achieved by reducing the heat generated by the EC fan motors, which reduces the load on the compressor. In a typical cooler system, the reduction in Fan Heat Load is 602.2 kWh per fan motor per year, and in a freezer, it's 706.5 kWh per fan motor per year. This reduction in heat load results in a compressor load reduction of 60.02 kWh per fan motor per year in coolers and 70.65 kWh per fan motor per year in freezers.

Typically, freezer systems use a Time Clock to control defrost cycles. These cycles can raise the evaporator coil temperature as high as 240 degrees Fahrenheit. The ArtikControl™ system replaces the Time Clock and thermostat, allowing for better regulation of defrost and cooling cycles. In a standard freezer system with a Time Clock, it consumes 1,204.5 kWh of energy per fan motor per year, whereas the ArtikControl™ system consumes only 542 kWh per fan motor per year. This results in a reduction in defrost energy consumption by 662.5 kWh per fan motor per year. An additional 328.12 kWh of energy savings per fan motor per year is achieved because the ArtikControl™ system doesn't heat the evaporator coil as much, reducing the workload on the freezer system.

When summing up all the hard energy savings for each walk-in space, you achieve 1,841.29 kWh energy savings per fan motor per year in a 115 Volt cooler system and 3,685.43 kWh energy savings per fan motor per year in a 208 Volt freezer system.

Now, let's explore some of the potential soft savings when transitioning from a typical walk-in system to the ArtikControl™ system.

The ArtikControl™ system employs algorithms to monitor space and coil temperatures, sending alerts via text and email when the system operates outside its normal range. This early notification reduces food spoilage and the need to repurchase supplies, lowering costs associated with lost food.

Continuous monitoring of temperatures also allows for early issue detection, enabling timely system repairs, and reducing maintenance costs.

Remote monitoring of walk-in spaces with the ArtikControl™ system significantly reduces the expense of on-site checks, freeing up time for other essential tasks.

By decreasing energy consumption in walk-in coolers and freezers, you also reduce your carbon footprint, contributing to a greener environment.

Furthermore, the ArtikControl™ system's efficient operation can extend the lifespan of key components, particularly the compressor system, by reducing compressor cycles. This reduces the need for capital expenditure to replace components.

Lastly, the ArtikControl™ system offers peace of mind by automatically recording temperature readings every minute, which can be retrieved as a CSV document (Excel format) at any time. It also continuously monitors the system and sends alerts via text and email in case of issues, ensuring you're informed of system status even when you're away.

For those who opt for the Concierge Package with the ArtikControl™ system, additional insights into system performance, alarms, compressor run times, and defrost run times are provided, aiding in predictive maintenance.

In conclusion, transitioning from a typical walk-in system to the ArtikControl™ system not only delivers hard energy savings but also offers valuable soft savings and peace of mind for enhanced overall efficiency.