

Digi-DXR Reduced Refrigeration Energy 31% Fruit Storage Application

Project Information

This project showcases a typical fruit storage application for a large fruit distribution company. The demonstration system, located in a hot climate, is designed to maintain a space temperature of 40°F. It utilizes a Bitzer reciprocating compressor (model 4PES-15-40P) with a rated power input of 11.4 kW, and the evaporators are equipped with electrical defrosting.

In March 2024, a Digi-DXR system was installed. Variable Frequency Drives (VFDs) were added to both the compressor and the evaporator fans. The Digi-DXR system enabled smart defrosting, evaporator fan speed modulation, and AI load projection and compressor speed modulation.

Measured Energy Savings: 31%

The energy savings were jointly measured by the customer and Bes-Tech. The system operated in both Digi mode and baseline mode over four consecutive days with similar weather and production conditions. During the verification period, operational and weather data were recorded every 30 seconds. The customer collaborated with a Bes-Tech engineer to complete the energy savings verification.

Mode		Base		Digi	
Date		2024.03.15	2024.03.16	2024.03.17	2024.03.18
Ambient Temperature (°F)		70 ~ 84 °F	72 ~ 86 °F	70 ~ 86 °F	68 ~ 84 °F
Compressor & Condenser Fan	Meter Reading	4,649	4,788	4,900	4,993
		4,788	4,900	4,993	5,118
	Electricity	138	112	94	124
	Total	251		218	
	Savings	13%			
Evaporator	Meter Reading	4,546	4,643	4,742	4,799
		4,643	4,742	4,799	4,856
	Electricity	57	56	17	17
	Total	113		33	
	Savings	71%			
Total	Electricity	364		251	
	Savings	31%			