

Performance Monitoring Services for Industrial Refrigeration Systems

EnergyDashboard® is a web-based energy and performance monitoring service developed by VaCom Technologies for refrigeration systems and other energy using systems. Using communication over the Internet, information is collected from existing control systems or from dedicated data collection hardware.

These values, including temperature, pressure, flows, power usage, and other system data are processed to provide key performance parameters for the refrigeration system and plant processes.

The highest-level performance parameter for a refrigeration system or chiller plant is kW/Ton, which summarizes total energy efficiency and also provides early indicator of changes in overall mechanical health. From these highest level metrics, a user can "drill-down" to the performance of sub-systems and individual components.

Password protected EnergyDashboard Web pages are available from a standard Web browser, allowing owners, service agents or engineers to view information from any location. Display screens can be customized for the requirements of a particular system or process.

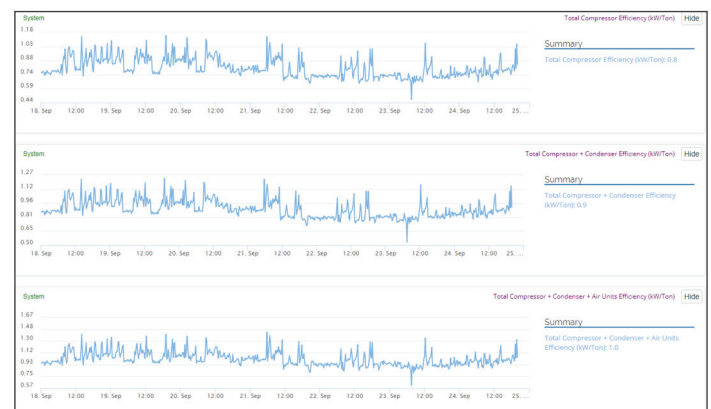
EnergyDashboard® Includes:

- **System Performance**
 - Overall plant efficiency
 - Individual compressor efficiency
 - Pressures, temperatures, GPM
 - Total kWh, ton-hours
- **Continuous thermodynamic analysis**
- **View intervals from a few hours to months**
- **Real-time Smart Alarms**
- **Export to Excel feature**
- **Use with common HMI platforms or add a dedicated Internet Gateway**

Suction Group Summary					
Suction Group	Avg Suction Pressure (psia)	Avg SST (°F)	Avg SST Setpoint (°F)	Avg Discharge Pressure (psig)	Avg SCT (°F)
-40°F Suction Group	5.6	-59.7	-69.0		
+20°F Suction Group	29.4	-1.4	-2.0	106.7	66.5

Zone Summary				
Zone	Avg Temp (°F)	Avg Temp Setpoint (°F)	Liquid Runtime (Hrs.)	Avg Speed (%)
EV-01 Freezer #2	-18.9	-17.0	18.4	65.2
EV-02 Freezer #2	-18.1	-17.0	6.0	65.2
EV-03 Freezer #2	-18.4	-17.0	99.6	76.0
EV-05 Freezer #2	-18.9	-17.0	34.1	66.7
EV-06 Cooler	39.0	38.0		65.3
PH-01 Freezer #1	-17.7	-17.8	170.2	78.7
PH-02 Freezer #1	-19.0	-17.8	84.8	73.8
PH-03 Dock	48.5	40.0	205.6	66.7
EV-13 Packing Room	65.5	66.0	0.0	100.0
EV-14 Packing Room	65.5	66.0	0.0	100.0

Color	Temperature Condition	Average Speed Condition
Green	Actual <= Setpoint	Average Speed <= 75%
Yellow	Setpoint < Actual < Setpoint + 1	Average Speed > 75% AND Average Speed < 85%
Red	Actual > Setpoint + 1°F	Average Speed > 85%



EnergyDashboard® Applications:

- Industrial refrigeration systems
- Plant production lines
- HVAC, process chillers and heat pumping
- Cogeneration and absorption systems
- Water pumping and air compression systems
- Commercial refrigeration racks
- Total building and facility performance