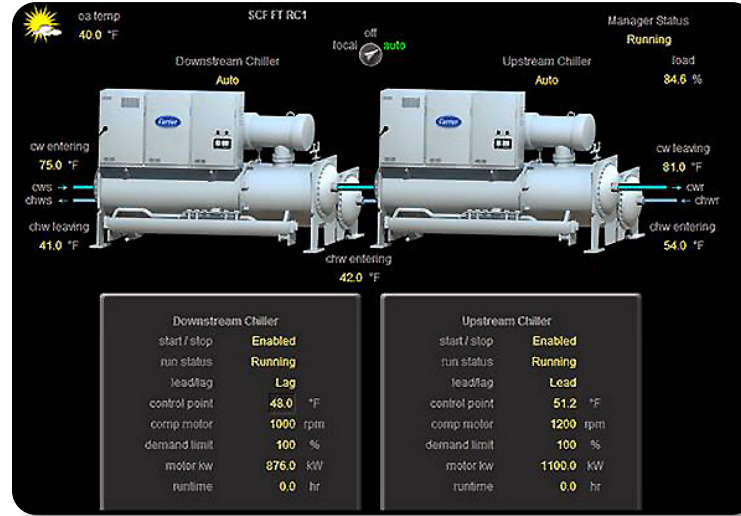


Carrier® ChillerVu™ System Series Counterflow (SCF)

The Carrier® ChillerVu™ plant control system includes proprietary, patented sequencing logic for two Carrier 23XRV screw chillers (shown at right) when used in a series counterflow (SCF) piping arrangement.

Staging and load balancing algorithms ensure efficient automatic operation in constant or variable flow systems over a wide range of operating conditions. This combination of industry leading Carrier 23XRV screw chillers with the Carrier ChillerVu system is designed to deliver best in class chiller performance and system efficiency.



The Carrier ChillerVu system's sequencing logic for two Carrier 23XRV screw chillers delivers system efficiency and significantly contributes to lowered lifecycle costs.



Carrier ChillerVu System Features and Benefits

| | |
|---|--|
| Plant Scheduling: Start/stop by user-defined schedule and/or conditions | Reduces unnecessary run time and operating costs |
| Optimized Chiller Staging: Multiple staging strategies automatically select only the chillers needed to meet demand; rotate by run-time or manual selection | Minimum number of chillers operate at maximum efficiency to reduce energy consumption, short cycling and equipment wear and tear |
| Demand Limiting: Plant capacity automatically adjusted to prevent plant from exceeding pre-set consumption levels | Avoids excess electrical demand charges |
| Chilled Water Setpoint Reset: Automatic adjustment of target setpoint according to load | Reduces energy consumption; allows plant to operate at higher chilled water setpoint in lighter load conditions |
| Primary/Secondary Water Pump Staging and Speed Control: Adjusts pump speed/number of pumps running according to demand | Reduces energy consumption while preventing insufficient chilled water flow and subsequent chiller short cycling |
| Cooling Tower Staging and Speed Control: Automatically adjusts fan speed/number to current condenser water temperature | Minimizes fan run time/number of running towers, reducing energy consumption |

Carrier® ChillerVu™ Plant Control System

Increase Energy Efficiency While Delivering Precise Comfort Management



Improve Your Chiller Plant's Performance and Efficiency with the Carrier® ChillerVu™ Plant Control System Standardized, Field-Customizable Control

With today's high-efficiency equipment and advanced controls, chiller plants should consistently deliver energy-saving performance — yet many do not operate as designed. To help correct this, Carrier developed the Carrier® ChillerVu™ plant control system to integrate all chiller system components into a seamless, automated network customized to your plant's design and specifications. The precise control of the Carrier ChillerVu system efficiently responds to real-world conditions meeting comfort demands while reducing energy usage and operating costs.

Automated Controls Improve Chiller Plant Efficiency

The Carrier ChillerVu system enables all components of a chiller plant to respond to changes in building conditions and comfort demands. For example, it will automatically reset chilled water supply temperature upward in response to decreased load requirements and precisely match the tonnage produced to the tonnage required.

It also continuously monitors all components and sends alerts and alarms to the appropriate facility personnel — expediting their response to help avoid downtime. Additionally, trending graphs provide real-time and historic monitoring of key parameters.

i-Vu® Building Automation System: Maximize Control and Efficiency in Your Building



The Carrier ChillerVu system is plug and play compatible with the Carrier i-Vu® Building Automation System (BAS) — an easy-to-use interface that enables plant managers to access, monitor and control all automated equipment, controls and sensors. Facilities engineers can receive alarms and monitor trends, and can troubleshoot and adjust the plant system and other integrated building systems from any Wi-Fi-enabled location.

Thinking Outside the Box... Helping Improve Overall Building Efficiency

Every building's HVAC system is simply that...a system. To fully achieve a system's overall efficiency and performance, its components — especially those outside the chiller plant's walls must operate together seamlessly... 24/7/365.

The Carrier ChillerVu plant control system integrates factory-embedded chiller (Carrier or non-Carrier) controls, ancillary HVAC system elements, the Carrier i-Vu system or an existing building automation system (BAS) to help reduce your building's energy usage and improve its equipment's performance and longevity.

Carrier ChillerVu System: Controls Strategies for Efficient Chiller Plant Operation

The Carrier ChillerVu plant control system is a sophisticated, scalable, native BACnet control solution, and supports network integration using Carrier CCN, Modbus® and LonWorks® open protocols for precise equipment operation and global data sharing.

- **Part Load Efficiency:** Chillers typically run at part load capacity during operating hours. To improve efficiency, variable frequency drives (VFDs) enable the Carrier ChillerVu system to automatically control chillers to run only to measured demand. This precise staging minimizes the number of chillers in active use at any time.
- **Pumping Efficiency:** With VFDs on primary and secondary chilled water pumps, the Carrier ChillerVu system initiates efficient water pump staging to minimize energy usage.
- **Cooling Tower Efficiency:** Cooling tower fans can be staged and their speed controlled with VFDs to automatically match the number of towers running to meet, but not exceed required heat rejection from chillers.

Intelligent Control with the Carrier® ChillerVu™ Plant Control System

The Carrier ChillerVu plant control system consists of a dedicated chiller plant controller (shown at right) and a library of factory-engineered programs that coordinate the management of chillers, pumps and cooling towers. It offers a scalable hardware and software architecture for cost-effective future plant expansion and controls upgrades.

Whether you have two chillers or twenty, the Carrier ChillerVu plant control system connects to Carrier 19, 23 or 30 series chillers (air or water-cooled). Its full integration capabilities monitors and controls other equipment in the chiller plant as well, including non-Carrier chillers. The Carrier ChillerVu system's control logic is also fully editable, allowing field customization of the control sequences to match any site-specific requirement.

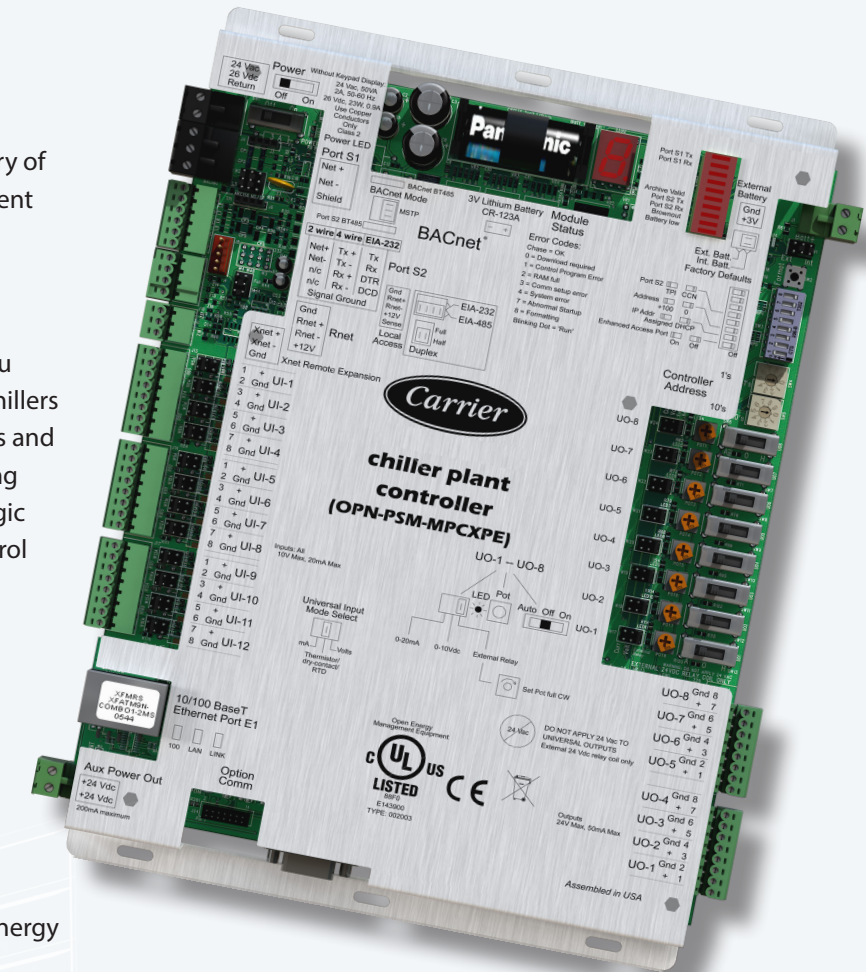
Carrier ChillerVu Energy Dashboards... Real Data and Real Control in Real Time

Effectively and accurately managing your chiller plant and entire HVAC system begins with having immediate access to each component's operational status.

To deliver this level of access, the Carrier ChillerVu system's Energy Dashboards (viewable through i-Vu's BAS) monitor, capture, graphically display and transmit your chiller plant's critical sensing points to give you precise data essential to successful system management.

Each dashboard is field-customizable to your specific needs and is preconfigured to provide valuable performance-based information such as:

- Chiller Performance in kW/Ton, iKw/kW, or COP
- Electrical Usage - Rate and Consumption
- Electrical Costs (optional)
- Component Electrical Usage
- Current and Previous Day's Electrical Consumption
- Device-Specific Operating Parameters
- Weather Data



The graphic elements of the Carrier ChillerVu system's energy dashboards may be easily modified to match your specific HVAC system components... regardless of chiller plant size.