ARMSTRONG

OPTI-VISOR™

Ultra-efficient chiller plant automation

SOLUTION OUTLINE

FILE NO: 90.22
DATE: OCTOBER 2023

SUPERSEDES: 90.22
DATE: MAY 2013

OPTI-VISOR™

OPTIMIZED PERFORMANCE

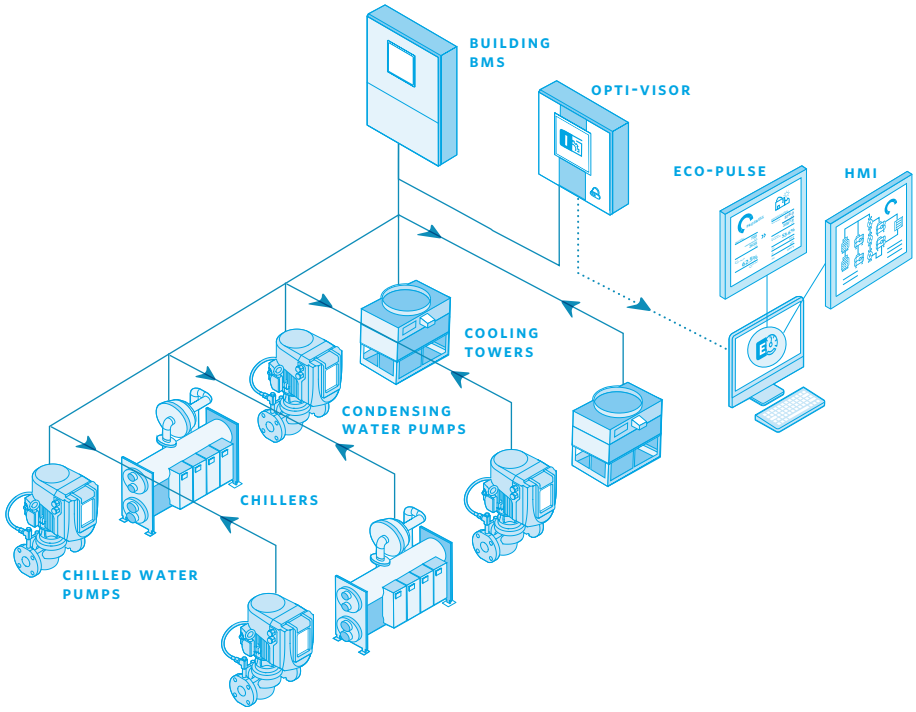
The Armstrong OPTI-VISOR™ control panel is a chiller plant control solution that interfaces seamlessly through the existing building automation systems (BAS) to optimize plant performance.

HOW IT WORKS

The OPTI-VISOR™ control panel links directly to building automation systems (BAS) that have responsibility for automation of the chiller plant. The OPTI-VISOR™ receives plant operating data from the BAS network, determines the optimal plant equipment settings and communicates these optimal settings to the BAS. The BAS plant automation module executes plant automation sequences to achieve the recommended equipment settings. Essentially, the OPTI-VISOR™ control signals are providing the BAS with control advice for the optimization of the chilled water plant.

Seamless integration

The OPTI-VISOR™ enhances an existing BAS, adding more refinement through plant integration. The OPTI-VISOR™ installation architecture involves a simple serial communications link to the BAS. A set of new BAS sequences to respond to the control signals from the OPTI-VISOR™ are also added.



TURN TO DEMAND-BASED RELATIONAL CONTROL FOR OPTIMAL PERFORMANCE

The OPTI-VISOR™ is a digital-era control technology that operates the chiller plant as one integrated all-variable system. This control strategy enables better coordination of the plant equipment at part loads than would be possible with other control approaches. Demand-based relational control is a patented technology with OPTI-VISOR™ that changes traditional thinking about how variable speed can improve plant performance.

OPTI-VISOR™ DELIVERS WITH RELATIONAL CONTROL

An all-variable-speed chiller plant offers the best opportunity to optimize efficiency, life costs, and occupant comfort.

But even in modern, all-variable-speed systems, most chiller plants are controlled by feedback control loop schemes developed during the analog era. The feedback control loop method isolates the chiller, cooling tower and pumps as independent control silos, and is unable to trade off capacity and efficiency between the control loops to optimize the full system.

The OPTI-VISOR™ is a relational control technology that controls an all-variable-speed plant using patented, digital-era control sequences. The OPTI-VISOR™ control panel receives chiller plant operating data such as cooling load and device power consumption from the BAS network. The embedded algorithm calculates the ideal operating power levels for the individual components (pumps, fan and compressor) while viewing the chiller plant as one integrated system. The OPTI-VISOR™ then communicates those device operating points to the BAS for execution.

This integrated, digital approach allows for:

- **Faster response**
- **Better stability**
- **Optimized thermodynamics**
- **Reduced risks of equipment failure**

Annual average plant efficiency:

<0.5*

kW/ton
(COP >7.0)

The OPTI-VISOR™ improves the annual average plant efficiency by 25% or more over other best-in-class VPF plants. Typically, buildings with VPF which operate at greater than 0.8 kW/ton can achieve annual average plant efficiencies of less than 0.5 kW/ton.

*Typical plant performance in moderate climates, expressed as an annual average including chiller, fan and pump energy.

KEY FEATURES

User interface

The OPTI-VISOR™ offers both a touchscreen control interface and a web-based interface with intuitive menus for easy operation. Both of these offer a clear assessment of your plant's performance and BAS execution.

Simple plug-and-play installation

Installation requires minor modifications to the existing BAS plant automation module to ensure that the BAS recognizes the control signals from OPTI-VISOR™ and provide the necessary input data. The OPTI-VISOR™ is factory configured and bench tested offsite. Software updates can be downloaded while it is operating. The OPTI-VISOR™ unit mounts easily to any interior wall and requires no maintenance.

ECO*PULSE™ Health Management

OPTI-VISOR™ includes one year of web-based performance assessment, predictive diagnostics, calibrations, predictive performance, and quarterly reports. Additional subscriptions are available on an annual basis.

The Armstrong OPTI-VISOR™ is an industry-leading solution that can be applied to any chiller plant installation that employs:

- Water-cooled, variable-flow chillers
- Variable speed compressors
- Variable flow cooling towers, air or water
- Variable speed condenser water pumps
- Existing variable primary flow plant automation (as found in modern building automation systems)

PERFORMANCE INFORMATION & SYSTEM INDICATORS

- BMS/BAS responsiveness status
- Plant performance statistics (YTD, 30 day, actual)
- Plant operating connection status
- BMS communication connection status
- Chilled water plant schematic with equipment status
- Plant operating load (capacity and kW)
- 30 day plant performance trend charts (efficiency, load, and chiller efficiency)
- Alarm history
- Efficiency levels of the pumps and fans