



A collaborative approach to multi-platform integration proves crucial for optimizing chilled water plant performance

White Paper

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SUMMARY

The Clifton Center for Medical Breakthroughs is the newest medical facility at the University of Pennsylvania Health Systems in Philadelphia, Pennsylvania. The \$1.6 billion Clifton Center is a state-of-the-art facility, designed and built to be a **blueprint for the hospital of the future** focusing on patient experience, comfort, and cutting-edge medical care.

The construction process was a multi-year collaborative project that opened to patients on October 30, 2021. An important requirement of the project was the optimization of a 6,250 ton centralized chilled water plant performance to ensure patient comfort, energy savings, and long-term plant efficiency.

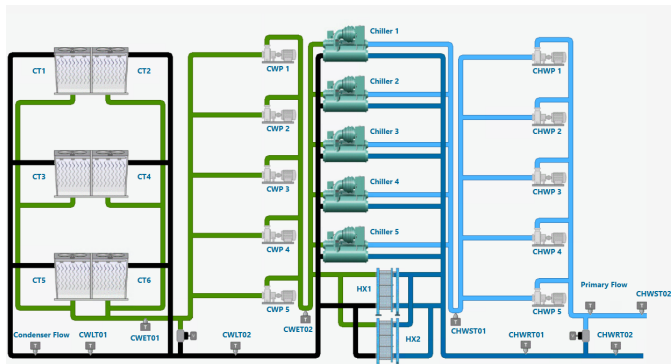
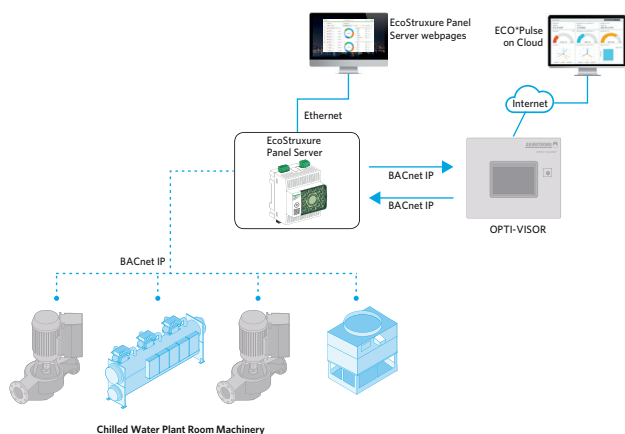


FIGURE 1: COMMUNICATIONS & CONTROL ARCHITECTURE



Working with the project team, an integrated solution consisting of Schneider Electric's EcoStruxure Building Management platform and Armstrong's OPTI-VISOR™ central plant optimization solution was installed.

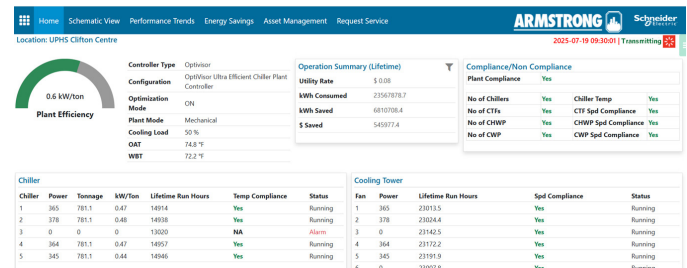
EcoStruxure Building Management solution is an integrated platform for monitoring, control, and management of energy, lighting, fire safety, security, and HVAC. It was designed to respond to demands for security, scalability, and efficiency. With an open and secure software integration framework, EcoStruxure allows collaboration across third-party systems to create truly innovative solutions

OPTI-VISOR™ solution is an ultra-efficient chiller plant control module that interfaces seamlessly with the EcoStruxure BMS to maximize overall plant efficiency – without replacing or reconfiguring existing componentry. By analyzing the data supplied by the Building Automation system, OPTI-VISOR™ provides operational instructions to the BAS to maximize the overall plant efficiency using leading-edge control algorithms.

The OPTI-VISOR™ instructions harmonize the interplay between building sub-systems and existing HVAC equipment, including Chillers, Chilled Water Pumps, Condenser Water Pumps, Cooling Towers, external environmental conditions, and Building cooling load requirements.

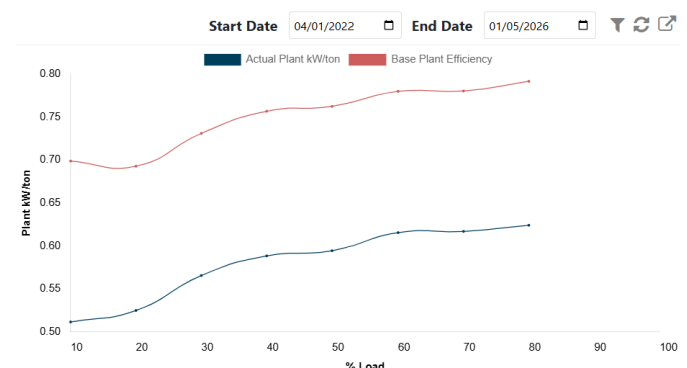
Where EcoStruxure provides connectivity and security, Armstrong's OPTI-VISOR™ focusses exclusively on the efficiency and performance of the HVAC system. Linking the solutions, in a way that drew on the strengths of each, was the crucial decision that pushed HVAC system efficiencies beyond the expectations of anyone involved.

In conjunction with the Armstrong OPTI-VISOR™ solution, the cloud-based HVAC health management service ECO*Pulse™ was also provided. Armstrong ECO*Pulse™ is a performance management service that combines real-time, automated diagnostics for HVAC systems, helps maintain optimal operating efficiency and minimize costs.



After careful review of this integrated proposal, Schneider Electric and Armstrong were awarded the contract. The proposal was approved, and the integration work went ahead.

The success of the project stands as an example of the requirement for regular communication and close collaboration between industry partners.



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Even where hardware and software systems are fully compatible for data exchange and shared execution of algorithms, late-stage customizations were required to meet the demands of this unique system and the reporting requirements set out for the project.

Optimization results post commissioning:

Average Plant Efficiency 0.5 kW/ton

4-Year Energy Savings 7,855,428 kWh

4-Year Cost Savings \$629,554

Plant Statistics (Last 30 Days)	
Base Energy Consumption	106,282 kWh
Savings In kWh	77,218 kWh
Savings %	73 %

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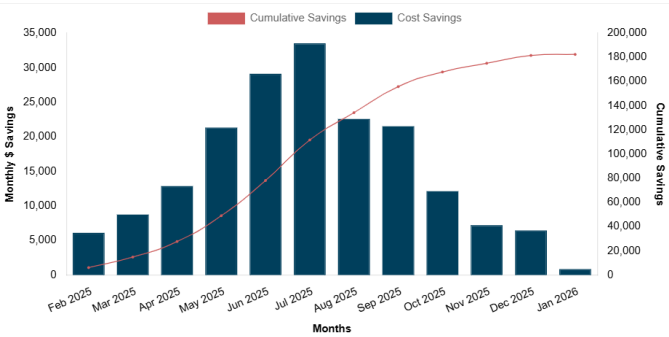
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Schneider Electric, Armstrong Fluid Technology and Chesapeake Systems, the local Armstrong representative, remain committed to collaborating with the Clifton Center staff. Monthly and quarterly plant performance reviews are conducted on an ongoing basis to ensure the overall operation of the system, and to discuss any plant performance suggestions.

On the basis of this success, Schneider Electric and Armstrong Fluid Technology are planning future collaborations and further integration of the EcoStruxure, ECO*Pulse and OPTI-VISOR™ solutions.