ARMSTRONG

SAVINGS DELIVERED BETWEEN TRAINS

A TRANSPORTATION FACILITY CASE STUDY

Anacostia Station

The Armstrong Design Envelope iFMS is a factory assembled, packaged pumping system that uses advanced variable speed technology to adjust pumping speed in response to HVAC system demand.

The WMATA installed a variable speed, packaged pumping solution that has reduced their energy costs by over $8,500 per year.

"The whole pump system arrived in one package, on one service train and fit through the doors perfectly. The installation was definitely a lot faster."

Randall Henigin,
WMATA

Background

Anacostia is a commuter train station in Washington, D.C. on the Washington Metropolitan Area Transit Authority (WMATA) Metrorail Green Line. The station serves Metrorail and Metrobus passengers traveling to and from the Anacostia neighborhood in Southeast Washington.

Construction projects at the track level present some unique challenges. Delivery of equipment and components requires a special service train. Admission to the mechanical room of any Metro station requires a background check, government clearance and a full day of safety training. The logistics of delivery are also a key consideration, because subway system shutdowns during regular operating hours are expensive and require two weeks advance notice.

When the WMATA wanted to update the cooling system, they initially planned to assemble it on-site using loose components. Armstrong, working in partnership with Daikin McQuay, recommended the newly-developed iFMS, because it offers the certainty of a prefabricated, factory tested solution, in addition to the energy savings of Design Envelope Vertical In-Line pumps.

Benefits

For the WMATA, the most important benefit of the iFMS solution is the cost savings that comes from variable speed operation. The Armstrong Design Envelope Intelligent Variable Speed technology controls the output of the iFMS unit based on system demand. The energy savings from the change to demand-based variable speed operation are estimated to be over $8,500 annually.

Choosing the iFMS also reduced the installation time and addressed the challenge of delivering components to the mechanical room. The completed iFMS unit was delivered to site and craned into place, allowing both the contractor and the WMATA to reduce labor costs on the project. David Lambert of Daikin McQuay was closely involved in the installation and commented on the time savings, stating: "The system was delivered on a 3 AM service train, and we were working on the pipe connections within two hours. Other times, when we've installed base-mounted pumps we couldn't even pour the inertia pads in two hours. An installation like that could have taken three days."

Lastly, the space savings offered by the iFMS design was an important consideration. Even though the iFMS included two pumps, to provide 100% redundancy, the unit fit into the footprint of the previously installed HSC pump.

Commenting on the performance of the Design Envelope technology, David Lambert explained "[WMATA are] operating only one of the two pumps, using the controller to run it at about 5 hp and meeting the needs of the cooling system. They're saving close to 80% on energy usage compared to the old system."

Tech Info

Pumps: 4300, 4×4×6
Flow: 343 USgpm
Head: 65 feet
Impeller diameter: 5.37 in
Motor: 15 hp, 215TC, 3600 rpm, 460/3/60
CHW primary pump head: 65 ft
CW pump head: 35 ft
BMS comm protocol: BACNet MS/TP

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