

Variable-speed Chiller Plant Control

What is this Technology?

Hartman LOOP technology optimizes all-variable speed chilled water plants by creating a network-based control strategy that operates the plant as an optimized complete system, rather than as optimized individual component elements (such as the centrifugal chiller, chilled water supply pumps, condenser water supply pumps, and tower fans).

Why is GSA Interested?



ENERGY EFFICIENCY The manufacturer projects energy savings between 25 and 40% directly attributable to the control strategy. Previous demonstration projects have shown greater savings because the strategy was accompanied by upgrades including new chillers and the addition of variable-speed drives when none existed previously.



WATER SAVINGS Water may be saved through the need for less heat rejection from the tower. As a result, some tower water chemicals may also be reduced.



SPACE REDUCTION Hartman LOOP technology enables reduction in plant size of 20% or more with the same capacity and redundancy capabilities as larger conventional plants.



COST EFFECTIVENESS Hartman Company owns the technology and charges a one-time licensing fee for its use, based on chiller plant capacity; third-party vendors install the control strategy. Based on conceptual pricing, GSA believes that this technology should be life cycle cost effective in all locations with average electricity costs and extended periods of moderate weather conditions.



OPERATIONS & MAINTENANCE This control strategy takes advantage of variable-speed controls across multiple components to operate all chillers at optimal partial load rather than the traditional practice of keeping a minimal number of chillers operating at full load. Full-time, partial-load operation is projected to lead to a reduction in overall O&M costs.



APPLICABILITY The technology is applicable to both new and retrofit installations for chilled water plants with centrifugal chillers. If not currently present, variable-speed drives need to be installed on chilled water pumps, condenser water pumps, and cooling tower fans. The technology requires coordination between facilities and IT.

Measurement & Verification

The Green Proving Ground program has commissioned the Pacific Northwest National Laboratory to perform measurement and verification (M&V) on variable-speed chiller plant control technology at the Thomas F. Eagleton Courthouse in Saint Louis, Missouri. Findings from that investigation will be available in September 2012.