

OPPORTUNITY

What is the impact of improved chiller operations on GSA?

80% OF GSA FLOOR SPACE IS IN LARGE BUILDINGS

The majority of which is cooled by chillers¹

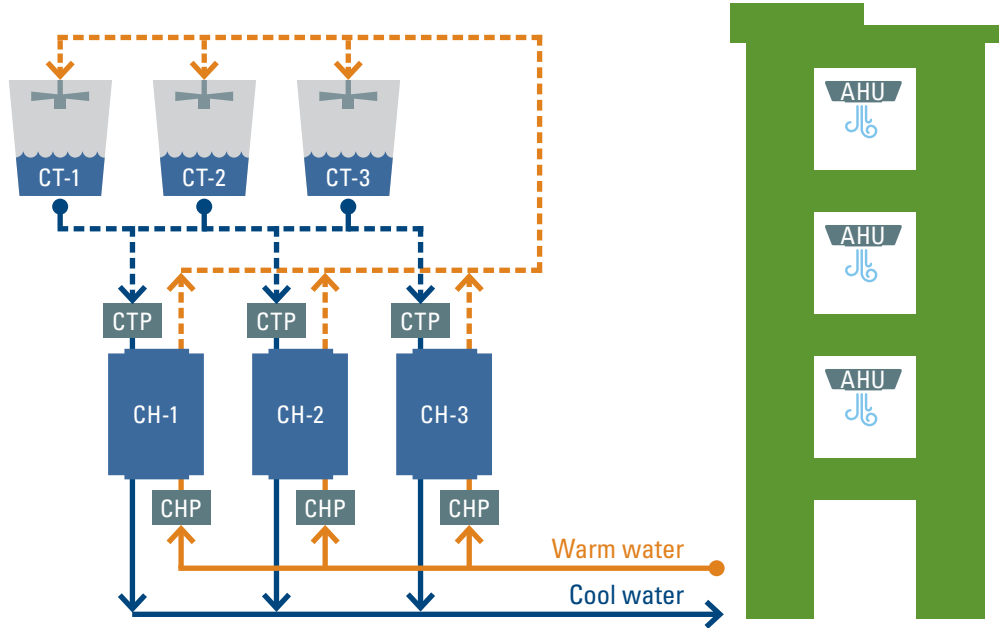
TECHNOLOGY

How does the Control Optimization System for Chiller Plants work?

OPTIMIZES SYSTEM PRESSURE AND TEMPERATURE DIFFERENCE (DELTA T)

MANAGES CHILLER LIFT AND FLOW BY MONITORING AND CONTROLLING FIVE INTERDEPENDENT SYSTEMS

Cooling Towers (CT), Chillers (CH), Condenser Pumps (CTP), Chilled Water Pumps (CHP), and Air Handler Units (AHU)



M&V

Where did Measurement and Verification occur?

PACIFIC NORTHWEST NATIONAL LABORATORY assessed a control optimization system for chiller plants provided by Siemens at the Frank M. Johnson Jr. Federal Building and U.S. Courthouse in Montgomery, Alabama

RESULTS

How did the Control Optimization System perform in M&V?

35%
COOLING SAVINGS

+/- 10% uncertainty
due to estimated baseline¹

5 YR
PAYBACK

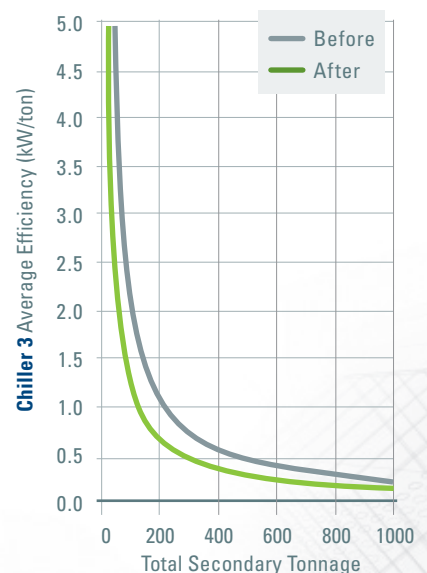
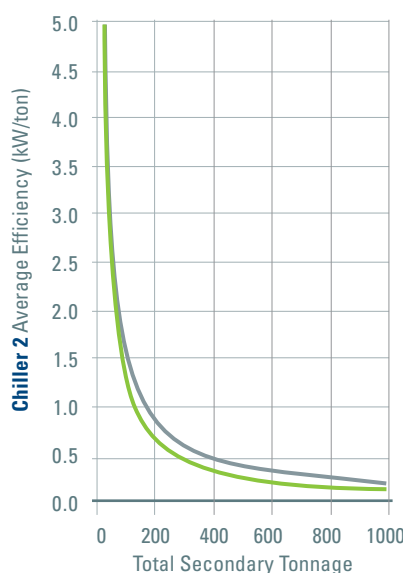
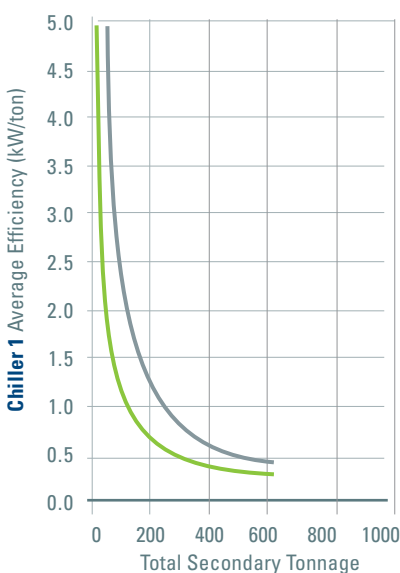
At avg. cost of
\$0.11/kWh³

BETTER
VISIBILITY & CONTROL

FOR PLANT OPERATIONS²

Increased Efficiency, Especially at Part Loads

Performance averaged 0.64 kW/ton after control optimization



DEPLOYMENT

Where does M&V recommend deploying the Control Optimization System?

CENTRIFUGAL CHILLERS WITH LOADS > 3 MILLION TON-HRS/YR

Also consider for incorporation into new all-variable-speed chiller plants, where both installation costs and energy savings may be lower.

¹Optimization of Variable Speed Chiller Plants: Frank M. Johnson Jr. Federal Building and U.S. Courthouse, Montgomery, Alabama, JC Hail, DD Hatley, RM Underhill (PNNL), August 2016, p.13 ²Ibid, p.7 ³Ibid, p.38 ⁴Ibid, p.7