

Green Proving Ground Test Bed Project

Technology Fact Sheet

Category:

HVAC

Technology Name:

Chilled Beams

What is this Technology?

Use of active beams as the primary source of conditioning office spaces uses the more efficient thermal transfer rate of water (rather than air as is often typical in office settings) to achieve enhanced energy efficiency. Chilled beams are quiet, and are claimed to improve occupant satisfaction with indoor environmental quality.

Why is GSA interested?

Energy Efficiency - Chilled beams use pumps to move water rather than fans to move air. Combined with other system features domestic demonstration projects have reported energy savings range from 10% to 30% of cooling and ventilation energy compared to variable-air volume chilled-water systems.

Cost effectiveness - Preliminary cost estimates comparing total HVAC system construction cost suggests a small first cost premium for a chilled beam system compared to a comparable conventional VAV system. Based on projected energy and O&M savings, however, we expect this system to have favorable payback.

Space Savings - Chilled beam technology eliminates ductwork, enabling reduced floor-to-floor heights. Simplified mechanical design enables reduced mechanical room space.

Operations and Maintenance - With the significant reduction in fans, air-handling units, and filters, operations and maintenance costs are projected to be less with a chilled beam compared to the conventional VAV system.

Applicability - Chilled beams require complete reconfiguration of mechanical and ceiling systems as well as high performance façade systems. They are, therefore, most applicable to new construction and major renovation. Chilled beams are not designed to handle high internal loads, and require tight control of humidity. GSA Test Bed projects will be located in three different climate zones to best evaluate the technology's potential.

Adapted from report by Pacific Northwest National Laboratory