



BUILDING DESCRIPTION

Gilbert Biological Sciences (Gilbert) is one of the main buildings housing the Department of Biology’s facilities and peronnel, along with Herrin Laboratories and Herrin Hall. The building was named after Charles H. Gilbert, the founding president of Stanford University, and a pioneer ichthyologist and fishery biologist. The first floor of the building is primarily offices and one classroom. The second through fifth floor are laboratory spaces.



Building Number	07-420
Gross Square Feet	103,787
Building Type	Laboratory
Year Constructed	1987

PROJECT OVERVIEW

All existing VAV boxes which were previously configured as constant volume boxes without any actuators have been retrofitted with modulating Venturi-style Phoenix pressure independent air valves on both the supply and exhaust ducts in the interstitial space serving the labs on all floors (floor#2 through floor #5). As the sash of the hood is raised, the exhaust fan turns on and varies to full speed by virtue of the position of the sash and/or the temperature of the exhaust air. The pneumatic control system was upgraded to a DDC system. The VFD controls were modified to control to a certain duct pressure setpoint and the duct pressure setpoint is now reset according to the zone demand. Supply air temperature reset strategies were implemented as well. Demand control ventilation (using CO2 sensors) has been implemented in high occupancy spaces like lecture halls and conference rooms. A VFD and a bypass damper have been installed on the exhaust fan to maintain the lowest minimum velocity from the stack. A CO sensor was also installed in the loading dock area to control exhaust fans.



A new Phoenix valve was installed in the interstitial space above the lab

MORE INFORMATION

FACILITIES ENERGY MANAGEMENT

Leslie Kramer, Energy Retrofit Programs Manager, 650.725.5388, lfkramer@stanford.edu



KEY PROJECT METRICS

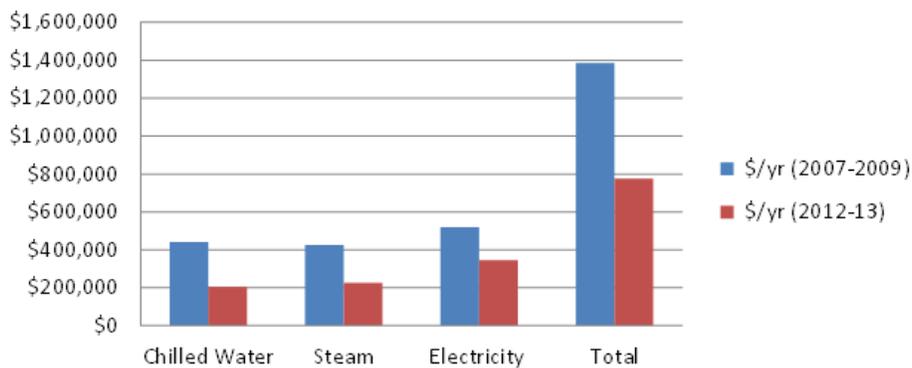
Online Date	December 2010
Project Cost	\$2,901,291
PG&E Rebate	\$709,808
Simple Payback	3.6 years
CO2 Savings	2,443 tons/yr
Baseline Energy Use*	
Chilled Water	1,383,456 ton-hrs/yr
Steam	23,857,534 lbs/yr
Electricity	4,741,768 kWh/yr
Cost (2013 rates)	\$1,384,518/yr
Energy Savings**	
Chilled Water	38,700 ton-hrs/yr (53%)
Steam	11,167,979 lbs/yr (47%)
Electricity	1,603,267 kWh/yr (34%)
Avoided Cost(2012 rates)	\$609,624/yr (44%)

* Average 2007-2009

** Savings based on usage in 2012-2013

PROJECT TEAM	
Stanford Team Member	Role
Scott Gould	WBERP manager
Jim Perrizo	Facilities Energy Systems Operations ("EMCS")
Daragh Conway	Zone B Manager
Greg Spinali	Zone Project Manager
David Osterlund	Building Manager
Rick Anderson	HVAC Shop
Non-Stanford Team Member	Role
Taylor Engineering	Energy Study and Design
AGC	Contractors

Annual Energy Costs Pre and Post Retrofit



*Pre- and post-retrofit costs normalized by applying FY 2012 rates to pre- and post-retrofit energy usage.

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