OptiNet case study

The GreenLab Project

Dramatic Energy Savings, Sustainable Design

The GreenLab project is a prime example of using sustainable design principles in a state-of-the-art research facility. It is a prototype facility created to test whether a highly functional biotechnology facility can also be environmentally responsible. A primary project goal is to reduce energy consumption by 50% compared to similar baseline buildings. Additionally, the design team wants to develop an R&D facility that is qualitatively superior in providing a scientist-friendly, vibrant work environment.

LABORATORY DEMAND CONTROLLED VENTILATION

The dramatic energy savings in GreenLab will be primarily generated by OptiNet's Laboratory Demand Controlled Ventilation application to dynamically control the dilution ventilation based on the cleanliness of the air, rather than leaving the air change rates at typical design levels. The GreenLab design team is keenly focused on reducing costly outside air that is required to maintain ventilation rates in the research labs and vivariums. The system will be designed to vary the ventilation rates within the laboratory spaces between 4 to 16 air changes per hour (ACH) rather than a typical fixed rate of 9 ACH. The vivarium spaces will vary between 8 to 16 ACH as opposed to a fixed rate of 15 ACH.

Image courtesy of Busby, Perkins & Will

GreenLab will be located in the South Lake Union area of Seattle which is being designated as the life sciences center of the Northwest.

GROSS FIRST COST SAVINGS: $1,025,000

Net savings after OptiNet = $650,000
($13.86/sq. ft. gross or $8.68/sq. ft net for laboratory)

BUILDING ENERGY SAVINGS: $250,000 ANNUALLY

The building's total energy bill would be reduced by 20% with a return on investment (ROI) of 1.5 years energy payback.

PROJECT SIZE

The mixed use laboratory building contains:

Laboratory space	=	75,000 (square feet)
Office space	=	75,000
Optional vivarium	=	25,000
Total square footage	=	215,000

PROJECT TEAM

Owner: Vulcan (Paul Allen)
Architect: Busby, Perkins & Will
Mechanical Engineer: Stantec (Keen Engineering)
Contractor: Sellen
Estimator: Davis Langdon

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