



Buro Happold delivers creative, energy-saving solutions to clients

Case Study

FlexTech Consultant:
Buro Happold

Business Type:
Commercial

Location:
Sewell, NJ

Building Size:
42,500 sq.ft.

Background

Buro Happold is an international, integrated consulting firm of engineers, consultants, and advisers—delivering creative, environmental solutions for an ever-changing world. The firm’s mission is to mitigate climate change and create an equitable, green environment by designing all new build projects to be net zero carbon by 2030.

The Project

The project is a 42,500 sq. ft museum in Sewell, New Jersey that will include exhibits, a theater, café, retail space, and administrative areas. With high sustainability goals from the project’s onset, the client is pursuing the Living Building Challenge Energy Petal Certification, which requires an offset of 105% of the facility’s total energy consumption with renewable energy.

In addition, as part of the Living Building Challenge, the client is required to achieve 100% electric with no combustion onsite. To achieve these goals, the museum’s administration reached out to Buro Happold for assistance.

The Study

Buro Happold conducted an energy conservation measure study during the schematic design, focusing on improving the building envelope and HVAC performance. The study compared several variables, including peak heating and cooling, annual energy use, carbon emissions, and operational costs. The recommendations resulting from the study were tailored to meet the client’s specific goals—mainly incorporating onsite solar panels.

BURO HAPPOLD

NYSERDA-Approved FlexTech Consultant



Putting Actions in Motion

Solar Heat Gain Coefficient (SHGC) was at the center of the study to measure the glare and solar gain experienced by employees and visitors. SHGC is the fraction of incident solar radiation admitted through a window, both directly transmitted and absorbed and subsequently released inward. The lower a window's solar heat gain coefficient, the less solar heat it transmits.

The client implemented a high-performance façade, which includes low U-values, SHGCs, and high R-values.

The Results

Measure Description	Annual Electric Savings (kWh)	Annual Gas Savings (MMBtu)	Annual Cost Savings (\$)
Reducing glazing U-value from 0.42 (baseline) to 0.25	24,267	-	\$4,853
Improving wall R-value from R-10 mass wall (baseline) to R-20 mass wall	17,054	-	\$3,411
Reducing glazing SHGC from 0.40 (baseline) to 0.25	-1,752	-	-\$350
Improving roof R-value from R-30 (baseline) to R-40	4,826	-	\$965
Reducing skylight glazing U-value from 0.40 (baseline) to 0.30	2,632	-	\$526
Reducing skylight glazing SHGC from 0.54 (baseline) to 0.34	1,361	-	\$272
Total:	48,388		\$9,678

By incorporating the recommended measures, the client will save approximately 5% in energy costs annually. As a result of the study, the client is now pursuing installation of a geothermal HVAC system using high-efficiency ground source heat pumps to further increase savings.

NYSERDA Flexible Technical Assistance Program

Completing an energy study of a building can help identify and evaluate opportunities to reduce energy costs and incorporate clean energy into a company's capital planning. Through the FlexTech Program, NYSERDA shares the cost to produce an objective, site-specific, and targeted study on how best to implement clean energy and/or energy efficiency technologies. A NYSERDA-approved FlexTech Consultant will work with businesses to complete the energy study and provide expert, objective and customized technical services to inform clean energy management and investment decisions.

BURO HAPPOLD

NYSERDA-Approved FlexTech Consultant

Discover how to reduce energy costs and incorporate clean energy with NYSERDA.

Visit nyserdanyc.gov/FlexTech



NYSERDA