



Altanova Energy + Sustainability
Innovators in Sustainability

JACK NICKLAUS INTERNATIONAL GOLF CLUB KOREA

New Songdo City, South Korea



The Project

The Jack Nicklaus International Golf Club Korea was built with the goal of setting the standard of excellence and establishing a new benchmark for environmental stewardship. for private golf clubs and lifestyle communities Asia.

The features casual dining, a bar and lounge, private meeting rooms, complete fitness and swimming facilities, spa amenities and a professionally staffed golf shop.. Altanova contributed primarily to the Club House, 185,000 square foot new construction structure consisting of one underground level, one partially below ground/partially above ground level, and one completely above ground level. The basement consists of a parking garage, and access space to plumbing systems. The first level which is

Project Description

partially above ground and partially below ground/partially above ground level, and one completely above ground level.

The basement consists of a parking garage, and access space to plumbing systems. The first level which is partially above ground and partially below ground due to the slope of the terrain houses the pro shop, café, spa, pool, and employee support areas, as well as many mechanical rooms, and a parking garage. The second story is divided into two sections: one section consists of a café over the pool, and the other section has a lounge, formal dining, bar, and conference rooms.

What We Did

Altanova developed an energy efficiency strategy, provided energy modeling, analysis and reporting for design team, and submittals for LEED credit EAc1.

Impacts

14.2% energy savings per year after Altanova's involvement.



NYU ENVIRONMENTAL MEDICINE CENTER

Tuxedo Park, New York



The Project

The NYU Institute of Environmental Medicine at Sterling Forest is a medical research facility where researchers focus on understanding the environmental causes of disease. The research institute focuses on several important research areas, including early detection and prevention, health effects of metals and particulate matter, and susceptibility to environmental diseases.

The facility spans roughly 78,000 sq.ft, across three contiguous buildings. The facility sought Altanova's assistance in improving the building's energy performance while maintaining the strict climactic controls that the facility requires.

Project Description

What We Did

Impacts

Altanova provided an energy efficiency analysis and economic strategy to modify the facility's mechanical, engineering and plumbing systems as well as their operating practices with the twin goals of reducing energy use and increasing energy efficiency while maintaining, or even improving upon the buildings' current levels of occupant comfort.

The project was implemented under NYSERDA's New Construction Program, of which Altanova is a partner, which works with organizations conduct technical assessments of energy efficiency improvements in building designs and to offset a portion of the incremental capital costs to purchase and install energy-efficient . Working closely with the design and development team, Altanova modeled and assessed various design options with a focus on implementation costs and energy saved.



Altanova was able to make improvements which saved the facility an estimated **\$224K** per year.

AL AQARIA ENERGY CITY

Lusail, Doha – Qatar



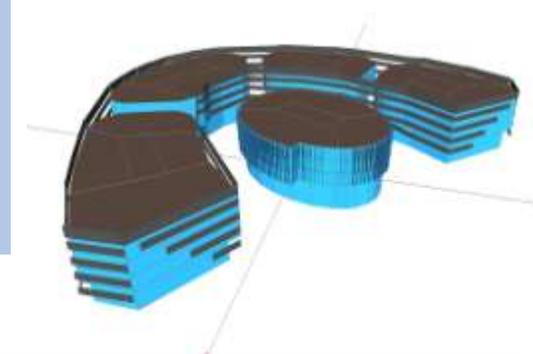
Project Description

What We Did

Impacts

Altanova worked in combination with another engineering firm to provide a full sustainability strategy for the . Al Aqaria Delta Center project. Altanova's scope included energy efficiency and renewable energy strategy, including modeling and LEED E&A credit responsibility. The project baseline followed criteria set out in ASHRAE 90.1-2007 appendix G according to LEED 2009 requirements. We developed a whole building model to simulate all HVAC systems, lighting, equipment, solar heat gain, and building envelope construction, and the interactive effects between these systems. Results include predicted total building energy consumption and energy cost reductions as required by USGBC for LEED credit EAc1.

Altanova was able to make improvements which reduced the facility's energy usage by **31%** per year as compared to ASHRAE 90.1-2007.



The Project

Altanova provided energy efficiency and sustainability consulting for a new complex in Energy City, Qatar. Al Aqaria Delta Center is a structure of approximately 1,454,000 square feet. Approximately 430,000 square feet of the building will be dedicated to rental as office space. About 152,000 SF will be designated as support space (toilets, corridors, pantries, etc.). A three-story underground parking garage will take up approximately 867,000 SF. The building will have five floors of above grade offices, one floor dedicated as mechanical space, and three floors of below grade parking garage. The Petrotec Office Building is 126,000 square feet; 56,000 will be dedicated to office space.



GARY C. COMER GEOCHEMISTRY BUILDING

Lamont-Doherty Earth Observatory, Columbia University - Palisades, NY



The Project

Altanova evaluated opportunities for energy efficiency improvements to the design of a new geochemistry building on the campus of Columbia University's Lamont-Dougherty Earth Observatory located in Palisades, New York. This 69,289 square foot building consists of two main, distinct, structures connected by a basement. Inside, it features five mass spectrometer labs, one high temperature & high pressure lab, seven instrument labs, eight wet chemistry labs, fifty-nine offices, three conference rooms, and support spaces.

Project Description

Altanova's scope included energy efficiency and renewable energy strategy, including modeling and LEED E&A credit responsibility. The project was implemented under NYSERDA's New Construction Program which provided financial incentives to offset some of the cost of implementing these energy efficiency measures.

Measures included Efficient lighting plan, upgrade for higher-efficiency T5 fixtures instead of standard T12; occupancy sensors associated with fluorescent lighting, occupancy sensors for fan coil units; staging exhaust fans with VFDs, energy recovery ventilation, high-efficiency air cooled chillers; VFDs on chilled/hot water pumps.

What We Did

Impacts

Altanova was able to make improvements which reduced the facility's energy usage by **16%** per year over the original design. In addition, the building was certified LEED Silver and named 2009 "Lab of the Year" by Research and Development Magazine. It also won awards for excellence in sustainable design and architecture from the Environmental Protection Agency and the American Institute of Architects.



QUEENS COLLEGE, THE SUMMIT

Flushing, New York



The Project

Queens College's first residence hall, The Summit, opened in August 2009. Established in 1937, today the campus encompasses 35 buildings on 77 acres, and enrolls approximately 17,000 students. Centrally located on the College campus, The Summit houses 506 students in 140 units.

The project has been certified LEED Gold.

Project Description

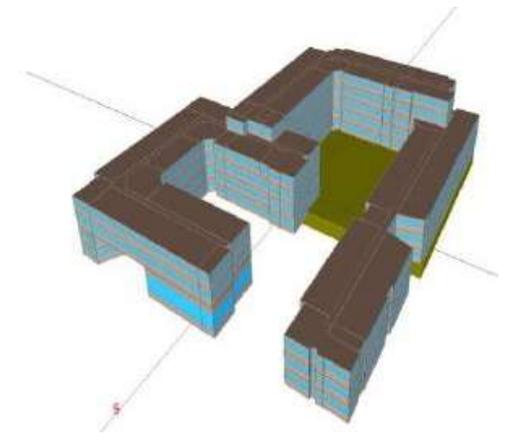
Altanova (subcontracted to the Community Environmental Center) contributed to the sustainable design strategy on this project by conducting all technical analyses and advisory regarding energy performance, compliance with E.O.111, LEED E&A credits and potential incentives.

Investigated measures includes: Lighting density reduction, bi-level lighting, window improvements, condensing boiler/DW Heater, improved PTACs, EnergyStar appliances, exterior wall insulation improvements, economizers, and Enhanced Building Management Systems.

What We Did

Impacts

Altanova was able to make improvements which resulted in a **19%** savings per year when compared to ASHRAE 90.1-2004 (the current common standard).



Living Walls



About Living Walls

A living wall or green wall is a wall that is covered in growing vegetation. Although, living walls have become increasingly popular in office environments due to their dramatic appearance, improved affordability, and ability to signal a firm's commitment to sustainability, they are actually an old technology. The concept of a green wall dates back at least to 600 BC and the Hanging Gardens of Babylon.

Living walls are more than dramatic office décor. They can provide a number of benefits including improved indoor air quality, worker performance, building marketability and access to LEED green design credits.

Benefits

Biophilia

A concept first credited to Harvard Biologist E.O. Wilson, Biophilia is human's innate need, or affinity towards nature. Numerous studies have shown that humans are exposed to green spaces, such as living walls, heal faster from illness, have lower stress levels (based on blood pressure and cortisol levels), and reduced worker absenteeism. By reducing environmental stress, employees are better able to focus on the task at hand – their jobs.

Correct plant selection will balance your need for improved air quality, with aesthetics, and ease of maintenance. NASA has a list of 17 house plants that are proven to reduce indoor air pollutants which might be considered for inclusion on a green wall. Similarly, plants that are invasive to one's region should be avoided in favor of native species.

Plant Selection

Improved Air Quality

Many common houseplants absorb benzene, formaldehyde and trichloroethylene. These volatile organic compounds, frequently found in new constructions and deep retrofits, increase the risk of cancers, birth defects, eye and nasal irritation, and irregular heartbeats. While green design avoids products that use these chemicals, it is all but impossible to eliminate them completely from a modern office environment. Incorporating plants via a green wall can help filter out some of these pollutants.



LEED Credits

Depending on sourcing and siting your Living Wall it can contribute to LEED v 3 credits including Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, and Innovation in design.

Maintenance

Living walls require regular maintenance, the frequency of which is based on plant selection. Consider creating a maintenance framework that includes employees to internally signal the company's sustainability commitment.



WELL-BEING

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GOAL: Create a healthy living environment for all residents, employees, and the surrounding community.

METHODS:

1. VEGETATION

Research from the field of *biophilia* shows us that green spaces:

- **Reduce Crime:** One University of Illinois at Urbana-Champaign study found a direct connection to nature reduced incidents of violence by 25%.
- **Reduce stress and increase student performance:** Diverse natural environments improve brain function, making it easier to concentrate.
- **Increase Property Values.** Especially in cities, access to green spaces mean apartments sell at higher prices and faster than their concrete bound counterparts.



Green roofs covering a third of the total roof area will provide residents with access to vegetation, recreation areas and expansive views, while also reducing energy use.

Two story green walls, ground-level landscaping in inner courtyards and plazas will create safe and welcoming community spaces with trees, lawns, pergolas, seating areas, and a playground while also reducing noise penetration to the interior of buildings. The lawns will be seeded with no-mow grasses and native perennial vegetation. The trees will be registered with Million Trees New York.

2. EDUCATION

Green spaces promote safe neighborhoods by creating a vested interest in place. Education can extend this connection further, by leveraging people's curiosity to connect them to the community.

- An urban farm operated by GROW NYC will be located on the roof and the surrounding area of one building. This community gardening facility will serve as an educational center while also providing locally-grown foods.
- Similarly, educational programming, perhaps working in concert with the nearby Wildlife Conservation Society, will connect residents with their verdant surroundings.



RESULTS:

