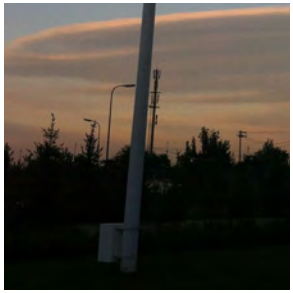







UGE
Case Studies

UGE is the world's premier designer and manufacturer of renewable energy systems. We bring together site assessment technology, load analysis, and installation capabilities across the globe to provide versatile solutions that combine small wind, solar, remote monitoring, and control.

This book contains a sampling of UGE's installations around the world.

At Work

- Burger King
- National Guard
- Brighton Car Wash
- Hotel Vale das Nuvens
- BMW

Powers your Connection

- Chinese Navy
- Verizon

On Campus

- UToledo
- Virginia Commonwealth U
- ISRC
- The Town School
- Weber Elementary

At Home

- Lexington Park
- Extreme Makeover
- St Maartan
- Colombia Apartment Block

Lights up the Street

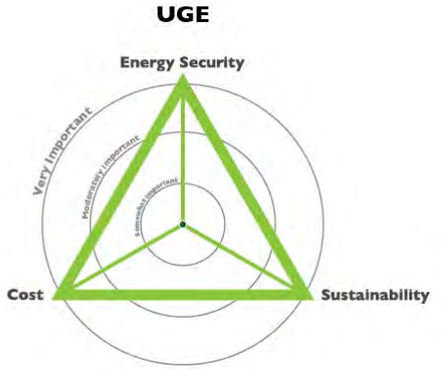
- Point Pleasant
- Diageo
- San Francisco
- Busan

Keeps you on the Road

- Barcelona Skypump

At Sea

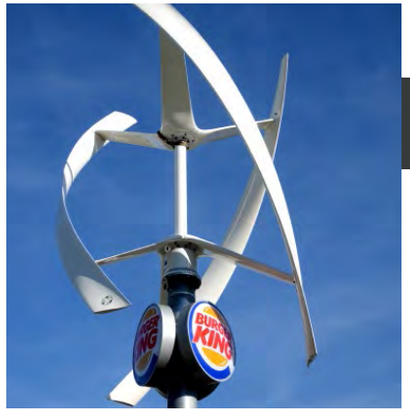
- Stena Line



All of our customers face an energy deficiency in their energy security, costs, or sustainability. The UGE Score Circle describes this need our clients face on a three point scale of importance.

Our solutions change from client to client as we adapt our hybrid systems to their needs. Each Case Study will include a score circle describing what energy needs the project addresses.

UGE™ At Work



COMMERCIAL PROJECT WITH CUSTOM TOWER IN GERMANY

UGE-4K

Project At A Glance

COMPLETED
October 2011

LOCATION
Piding, Germany

CUSTOMER
Burger King

SOLUTION
Turbine connected to the local grid offsets energy consumption from the restaurant directly

COMPONENTS
UGE-4K turbine with grid-tie electronics and a custom monopole tower

Project Highlights

- Integrates seamlessly with the local grid
- Forges way for other businesses in the area to consider renewable energy
- Visible statement of company's committment to sustainability
- Takes advantage of local incentives to provide a short payback to the customer

In October 2011, a **UGE-4K** was installed by **StegWinSon Ellwangen** at the **Burger King** restaurant in Piding, Germany, allowing the restaurant to be powered in part by wind energy.

The UGE turbine system has a three-blade rotor that rotates around a vertical axis. The blades are designed for nearly-silent operaton at about 40 decibels (roughly similar to the sound of leaves rustling in the woods).

The 10 meter high tower is **very robust, corrosion-free and is safe up to 120mph gusts.** The tower is supported by a concrete foundation. The turbine starts up at 3.5 m/s, requiring no start-up energy from the grid. This saves not only electricity, but also complex and sensitive control mechanisms. The special coating of the carbon rotor blades - in conjunction with the vertical orientation - also helps to prevent ice formation.

"With this first small wind turbine in the Berchtesgaden area, we assume a leadership role in our region and we hope that we can use it to show other companies and even private homes that investing in this technology is investing in a clean and sustainable energy supply for the future. We want to align business thinking with the conservation of nature in harmony."

- Klaus Satra, Managing Director

NATIONAL GUARD INSTALLATION-
RICKENBACKER AIR BASE

Project At A Glance

COMPLETED
November 2010
LOCATION
Rickenbacker Air Base, Ohio (USA)
CUSTOMER
National Guard
SOLUTION
Four turbines installed in unison feed energy back into the grid through a single set of electronics, offsetting local base energy consumption
COMPONENTS
Four roof-mounted eddyGT wind turbines take advantage of strong prevailing winds

Project Highlights

- Exceeded National Guard requirements for safety and reliability
- eddyGT's generate up to 4000 watts of energy
- Connected to Guard's existing energy system; helps offset energy costs to meet green energy goals

In November 2010, **4 eddyGT** vertical axis wind turbines were installed at the **Rickenbacker Air National Guard Base** at the **121st Air Refueling Wing (ARW)**. The wind turbines were installed to partially power the base through wind energy, helping Rickenbacker meet its green energy goals.

The 4 eddyGTs generate up to 4000 watts of energy, which is directly fed into the grid. The commander of the 121st ARW Civil Engineering Squadron had wanted to do a wind power project for years, but was previously unable to find a product that met the reliability and cost requirements sought. **The eddyGT was perfect for the National Guard's needs and was funded by money set aside for energy projects.** The turbines are connected to the Guard unit's existing energy management system to report their performance.

"This is just a fraction of the total building load, but it is a step in the right direction. In the near future we hope to start other projects here at Rickenbacker to help us meet our green energy goals,"

- Lt. Col. Mike Troxel

COMMERCIAL PROJECT-
eddyGT & CUSTOM LIGHT FIXTURES

Project At A Glance

COMPLETED
November 2011

LOCATION
Naperville, Illinois (USA)

CUSTOMER
Brighton Car Wash & Detail Center

SOLUTION
A turbine lighting solution that provides clean energy to lamps which light the car wash

COMPONENTS
One eddyGT turbine connected to the grid and custom light fixtures

In November 2011, an **eddyGT wind turbine system** manufactured by Urban Green Energy was installed at Brighton Car Wash & Detail Center by Sullivan Energy Group in a monopole tower installation.

A wind study, conducted prior to installation, determined the average wind speed at the Brighton Car Wash site to be approximately 10.5 mph annually. Across from the site sits a large prairie preserve to the west just across the highway, which contains no obstructions for at least a one to two miles. With the prevailing winds from the West, this was a great site for City of Naperville's first wind turbine. Other clean technologies installed on site are LED and CFL efficient lighting, building capacitors, and one of the largest roof mounted solar thermal water heaters in the Midwest. This particular water heater consists of 360 evacuated tubes to pre-heat the facility's wash water, light the skylights in the wash tunnel, and power the high efficiency commercial front load washers for towel laundry needs.

Brighton Car Wash has received **extensive positive feedback within the community** for its sustainable initiatives and always operates being mindful of its neighbors in the City of Naperville and its residential neighbors to the East, West and South.

eddyGT POWERS A HOTEL

Project At A Glance

COMPLETED
July 2011

LOCATION
Guaramiranga, Brazil

CUSTOMER
Hotel Vale das Nuvens

SOLUTION
Provide green energy to hotel which focuses on eco-tourism

COMPONENTS
eddyGT turbine atop a twenty meter tower, feeding energy to grid

In July 2011, an eddyGT was installed in Guaramiranga, Brazil by ECO Soluções em Energia.

Guaramiranga is a town 100km away from Fortaleza, the capital of Ceará, a state located in northeastern Brazil. The eddyGT was installed on the property of a new construction, Hotel Vale das Nuvens, that is scheduled to open at the end of November 2011. The hotel is an eco-construction that is also equipped with solar water heaters.

The customer is very happy with the wind turbine and is considering installing additional Urban Green Energy vertical wind turbines in the near future.

5 eddyGTs for BMW

Project At A Glance

COMPLETED
January 2012

LOCATION
Beijing, China

CUSTOMER
BMW

COMPONENTS
5 eddyGTs, 100kW Solar

SOLUTION
Large hybrid system offsets significant portion of energy consumption while feeding energy to batteries. Batteries allow for much-needed energy security

In January 2012, **5 eddyGTs and 100kW of solar** were installed at a central BMW dealership in Beijing, China as part of a significant renewable energy project. The BMW dealership, Beijing Star Double, chose to decrease its impact on the environment by partnering with UGE, which was the main project developer,

As the first authorized dealership of the new BMW 5S, the overall architectural and **sustainable design of the building exceeded local green building standards**. A number of renewable energy sources, including UGE's wind turbines, have been introduced from the design phase to offset electricity consumption at the site.

"Through the implementation of various technologies, including wind, solar, and geothermal energy, Beijing Star Double has taken full advantage of the environment to decrease its reliance on traditional fuel sources. The variety of clean and renewable energy sources, including over 1500 square meters of solar panels, are focused around the wind turbine system at its center."

-BMW

UGE™

Powers your connection

TELECOM PROJECT
FOR CHINESE NAVY

Project At A Glance

COMPLETED
July 2011

LOCATION
China

CUSTOMER
Chinese Navy

SOLUTION
Offsetting a significant portion of on-site diesel consumption, approximately $30,000/year

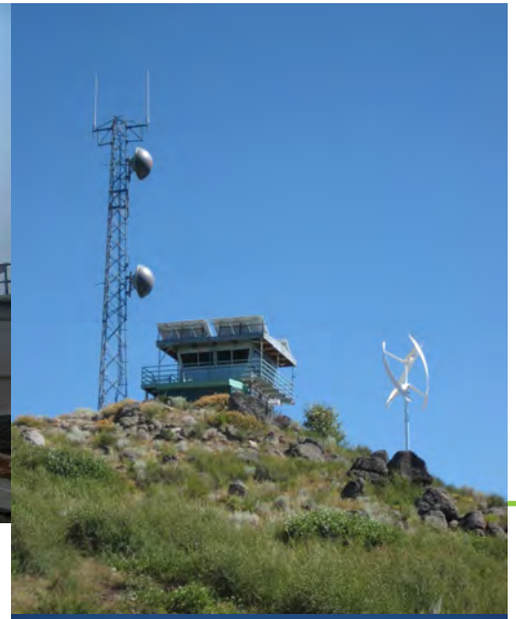
COMPONENTS
An off-grid UGE-4K wind turbine, 2 kilowatts of solar, battery storage and monitoring

In July 2011, the Chinese Navy installed an **Urban Green Energy Fusion system** at a coastal location on mainland China to power one of their communication towers. The system consists of an off-grid **UGE-4K vertical axis wind turbine** with **2 kilowatts of solar.**

Previously, the site had been powered by diesel since it was out of reach of the electricity grid. Powering this type of site by diesel is expensive to operate and maintain, so the client sought an alternative solution.

The client's main goal was to offset as much diesel as possible, making it a back-up source of power to the wind/solar solution. **The Fusion system implemented saves the client over $30,000 USD per year,** and helps the environment too!

VERIZON PROJECT AT BEAR MOUNTAIN



Project At A Glance

COMPLETED
July 2012

LOCATION
Bear Mountain, California (USA)

CUSTOMER
Verizon

SOLUTION
Location with no access to the grid managed to offset consumption by implementing custom Fusion system

COMPONENTS
Off-grid UGE-4K, 1.5 kW of solar energy storage and remote monitoring of system

Running an important telecoms site with no access to the grid is a difficult challenge. Not only is it expensive to run and transport the diesel traditionally used at these types of installations, but reliability is an issue that must be addressed.

UGE resolved this issue by assessing the site remotely, determining the adequate energy solution to use, and implementing the solution. Today, the renewable energy system is eliminating the site's reliance on diesel fuel, **lowering the customer's operating expenses significantly.**

UGE™

On Campus

UNIVERSITY OF TOLEDO: **A SUSTAINABLE CAMPUS**

UGE-4K

Project At A Glance

COMPLETED
July 2011
LOCATION
Toledo, Ohio (USA)
CUSTOMER
University of Toledo
SOLUTION
Adds to campus sustainability, educational tool and part of Clean and Alternative Energy Incubator
COMPONENTS
UGE-4K turbine connected into the local grid

Project Highlights

- First wind turbine installed as part of school's alternative energy solutions
- Included in university's Campus of Energy and Innovation- a hands-on alternative energy learning center
- "Turn-key" turbine installation on tallest building on campus

In July 2011, distributor Renu Power installed a **UGE-4K wind turbine** at the University of Toledo's Scott Park Campus of Energy and Innovation.

The turbine is part of the school's "Clean and Alternative Energy Incubator" and is the first vertical axis wind turbine installed on the campus. The campus currently also features three large solar arrays.

The Scott Park Campus of Energy and Innovation is the University of Toledo's hands-on alternative energy laboratory used for teaching, research and demonstration. It is also a center that generates energy and aims to reduce the University's carbon footprint and seeks to play a significant role in moving the world toward independence from fossil fuel-based energy.

The University of Toledo is associated with the founding of leading solar companies such as First Solar and Xunlight, manufacturers of the solar arrays currently used on campus.

Renu Power provided a "turn-key" wind turbine installation for the Scott Park campus. The Learning Resources Building was chosen as the site of the wind turbine for aesthetic and functional reasons: it is the tallest the building on the campus and is centrally located. Average wind speed at the site is 4 m/s.

"The University of Toledo is committed to the future of our planet. That commitment means realizing and proactively addressing the fact that our current lifestyle and rate of consumption is not healthy for our environment or sustainable for our species. Living in a sustainable way requires unconventional thinking, green solutions and effective innovation. With the Clean and Alternative Energy Incubator, L.E.E.D Certified buildings and the only campus in the region dedicated entirely to re-thinking energy production, The University of Toledo is leading the way in creating the industry that will fix our down economy and preserve our endangered environment."

-U of Toledo's Sustainability Office.

VIRGINIA COMMONWEALTH UNIVERSITY
INSTALLS A 6.3KW HYBRID SYSTEM

In June 2012 an eddyGT was installed by UGE Partner, Urban Grid at Virginia Commonwealth University in Richmond, Virginia. The turbine is positioned on the roof of the Pollak Building which houses classrooms, laboratories and faculty offices for VCU's Art departments.

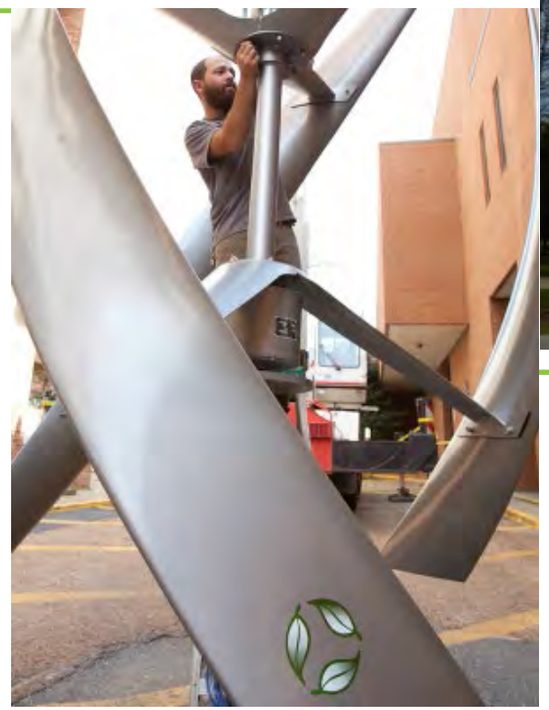
The installation was challenging due to the surrounding buildings and high location. A crane was required to lift the turbine up from where it had been installed in narrow passageway adjacent to the final location.

Project At A Glance

COMPLETED
June 2012
LOCATION
Richmond, Virginia (USA)
CUSTOMER
Virginia Commonwealth University
SOLUTION
Part of renewable energy initiative, climate-neutral goal by 2050, exposes students to clean energy resources
COMPONENTS
One eddyGT installed along with with a series of vertical photovoltaic panels, bringing the peak production to 6.3kW

The turbine was installed along with with a series of vertical photovoltaic panels, totaling the power production to 6.3kW. VCU is extremely pleased with the turbine, and describe it as **"kinectic energy recovery"**, as the wind speeds are enhanced by nearby mechanical equipment.

VCU is working to reduce emissions in all areas of campus life; with more than 325kW of solar PV installed, the UGE wind turbine, electric vehicle charging stations, and a vegetated roof, VCU is taking the initiative to make sure their students are exposed to the elements of our new energy future and sustainable building design.



eddyGT AT INDIAN RIVER STATE COLLEGE

Project At A Glance

COMPLETED
January 2012
LOCATION
Fort Pierce, Florida (USA)
CUSTOMER
Indian River State College
SOLUTION
Energy saving campus utilizes eddy-GT alongside solar suite, ECHO grant at IRSC allows school to teach and build renewables
COMPONENTS
eddyGT wind turbine atop standard monopole tower

An **eddyGT** was installed in January 2012 at Florida's Indian River State College in Fort Pierce. Forever Green Energy USA and BAW Construction completed the easy installation, taking only 8hrs from start to finish. The wind turbine was erected at the New Energy Building in the heart of the Main Campus, an area that receives on average 9 mph wind speeds. The site already has two other wind turbines, a solar field with path tracking, solar roof, solar street lights and solar car charging stations. The university was awarded an **ECHO Grant to teach and build renewables.**

WIND TURBINE AT THE TOWN SCHOOL IN MANHATTAN

Project At A Glance

COMPLETED
June 2012
LOCATION
New York City, New York (USA)
CUSTOMER
The Town School
SOLUTION
Makes environment healthier, adds to Green Schools Alliance, educates about sustainable future.
COMPONENTS
eddyGT wind turbine interconnected to local grid

Project Highlights

- Installed by volunteer team of architects, engineers, and electricians
- School part of The Green Schools Alliance, which educates children on about alternative and green energy solutions
- Inaugural ceremony emceed by NYC Mayor Michael Bloomberg
- First wind turbine installed at a school in Manhattan

June 11, 2012 marked the first installation of a wind turbine at a New York City school. The installation took place at The Town School in the Upper East Side of Manhattan. The school educates children from nursery school to eighth grade. A major highlight of the ceremony, besides the official announcement of Manhattan's first wind turbine at a school, was the ribbon-cutting by New York City Mayor Michael Bloomberg.

The wind turbine was a gift by the Class of 2009. The students purchased the eddyGT wind turbine through The Big Wind, LLC, a local distributor of UGE renewable energy solutions. It took three years to obtain the permits necessary to install the turbine, as the wind turbine was purchased prior to the change in City ordinance that now permits small wind turbine installations in New York City. Stephen Petrillo commented, **"This is a dream come true. A wind turbine for renewable energy for The Town School."** Since the wind turbine was a gift to the school, the team of architects, engineers, and electricians volunteered their time to install the beautiful machine.

The Town School is part of The Green Schools Alliance, which provides children with the tools and education to build a greener, more sustainable future. It is a charter member and Climate Champion of GSA and, as such, embraces the challenge to make the environment healthier for all of us. The turbine is also part of PlaNYC, the city's sustainability program. Mayor Bloomberg stated, **"I'm excited about this windmill!"** He also mentioned GreeNYC, an online resource with simple steps to live green.

After providing a brief overview of all of NYC's resources for sustainable living, Mayor Bloomberg explained to the students that he was about to hit the big red button to activate the wind turbine with his right thumb. He asked all in attendance to countdown from three. Seconds later, the turbine was activated and spinning with the wind, generating green power with every rotation.

At the end of the ceremony, Kevin Sheekey and his children expressed their gratitude to Mayor Bloomberg, **"Thank you for all the good things you've done for the environment."**

TWIN eddyGTS AT SOUTH WEBER ELEMENTARY SCHOOL IN UTAH

Project At A Glance

COMPLETED
November 2010

LOCATION
South Weber, Utah (USA)

CUSTOMER
South Weber Elementary School

SOLUTION
Renewable energy statement, component of sustainable energy system for school

COMPONENTS
Two turbines complementing a solar roof array

In November 2010, Intermountain Wind and Solar installed two eddyGT wind turbines at South Weber Elementary School in South Weber, Utah. This particular site has average wind speeds of 13 mph.

South Weber Elementary School purchased the turbines as part of a major renovation and addition to the current building. The turbines were placed on 45 and 55 foot poles on the school's property to complement its photovoltaic solar roof array and a large solar thermal system.

Jack Matsen from Intermountain Wind and Solar states,

"The architects wanted to include a great looking vertical axis wind turbine. One to go atop a 45 foot pole and the other on an even beefier 55 foot pole. The school's mascot is the 'Windjammer' ship and the architects carried that theme into the 'sails' on each of the custom turbine poles."

UGE™ At Home

32 eddyGTs AT LEXINGTON FARMS

Project At A Glance

COMPLETED
January 2011

LOCATION
Jerseyville, Illinois (USA)

CUSTOMER
Capstone
Development Group

SOLUTION

32 eddyGT turbines installed along solar panels at the new Lexington Farms residential development Utility bills dropped from $100-$200 to $0-$60 in a few short months

Project Highlights

- First LEED Platinum community of its kind in the United States
- The structure of the garage was specifically engineered to support the mast of the turbine, which was easy to do in a new home build
- Not for profit project designed to create quality, affordable green homes in under-developed communities

The community was built for families and individuals earning less than $41,000 per year and consists of 32 modular homes, each with an area of 1,425 square feet, three bedrooms and an attached garage. Monthly lease payments are $590 per month and residents can rent-to-own. Every home in the community was outfitted with an Urban Green Energy eddyGT (1kW) wind turbine and solar panels.

The wind and solar devices were activated at the beginning of April 2011 and have resulted in lowered electric bills for the residents.

"The fact that these homes will reach the prestigious LEED Platinum certification level and yet will remain affordable is a testament to the hard work the design team has put into this project, and shows that green building can work with any budget,"

-Jason LaFleur, a project manager for the Alliance for Environmental Sustainability.

RESIDENTIAL INSTALLATION IN FLORIDA-
EXTREME MAKEOVER HOME EDITION

Project At A Glance

COMPLETED
February 2011

LOCATION
Cocoa, Florida (USA)

CUSTOMER
Extreme Makeover Home Edition

SOLUTION
Turbine and solar panels add to energy efficient home, lowering carbon footprint and utility bills

COMPONENTS
eddyGT wind turbine feeding energy into home's energy meter

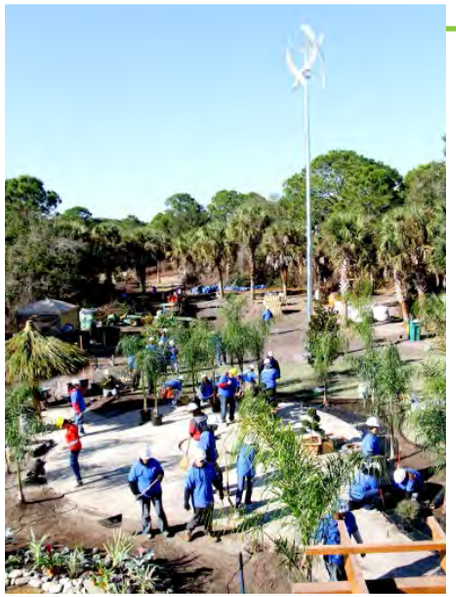
In February 2011, ABC's **Extreme Makeover Home Edition** built a zero net energy home for the Hurston family in Cocoa, Florida. Urban Green Energy's **eddyGT turbine** was one of the technologies included in building this energy efficient home, along with a solar array.

The combination of renewable technologies is saving the Hurston family approximately $250 per month on their energy bills. In the family's former home, the power bill was $300 to $400 a month.

The eddyGT together with the solar system generates **enough power to heat or cool the home and return power to the grid**. The renewable energy solutions along with energy efficient appliances, heating, ventilation and air conditioning systems and lighting all contribute to the lowered energy bills for the home.

"The wind turbine is so majestic and when the wind blows, the only sound we hear is a very slight 'ching - ching' as we know that we are making our own electricity and selling the excess back to our power company."

– Joe Hurston, home owner



RESIDENTIAL INSTALL IN ST. MAARTEN, CARIBBEAN

Project At A Glance

COMPLETED
January 2012

LOCATION
Guana Bay, St. Maarten

CUSTOMER
Trans-Caribbean Energy

SOLUTION
Wind turbine tied into the grid at windy location lowers energy bills significantly

COMPONENTS
UGE-4K wind turbine rated for strong winds and grid-tie electronics

In January 2012, a **grid-tie UGE-4K** was installed in Guana Bay, St. Maarten by **TransCaribbean Energy**. It is the first turbine on the island of St Maarten, and is situated at the Deputy Prime Minister's house.

The Deputy Prime Minister wanted to invest in renewable energy, as electricity from the grid is very expensive in St. Maarten. The island, like the rest of the Caribbean, receives a lot of wind year-round, which makes UGE wind turbines an extremely viable energy option.

The turbine is mounted on a **7m tower**, and was installed using a manual raising system. It is located on top of a hill above a scenic cove in **Guana Bay**, facing the Atlantic Ocean.

The installation was trickier than usual, mainly due to the hilly location with difficult access for heavy machinery. Soon after the turbine was installed (even before it was spinning), neighbors and various residents were already taking pictures of it. It is now the main attraction of Guana Bay!

UGE-4K RESIDENTIAL INSTALL - **APARTMENT BUILDING IN COLOMBIA**

UGE-4K

Project Highlights

- First building in the area to utilize renewable energy
- Lowers administrative costs for residential units as well as operating costs
- Utilizes exceptional winds speeds due to height of building
- Component of large renewable energy system including solar collectors

Project At A Glance

COMPLETED

February 2012

LOCATION

Bucaramanga, Colombia

CUSTOMER

Gaia Apartments

SOLUTION

Offsets portion of the energy consumed by the building's common areas, lowers administrative costs for each unit, creates value for the building

COMPONENTS

UGE-4K wind turbine and solar collectors atop roof

Silva Cancino Soluciones installed a **UGE-4K** in the city of Bucaramanga in early 2012.

Silva Cancino Soluciones and **Industrias Falcon** built **Gaia**, a 41-apartment building in Bucaramanga, Colombia. This was the first of a series of buildings in the region which will use renewable energy. The 60 meter height of the building offers exceptional wind conditions throughout the year and with its constant movement the UGE-4K adorns the cityscape.

Enrique Naranjo, a Gaia resident, stated:

> **"It is incredible how it can spin with hardly any noise produced. It looks like a moving sculpture; makes the building elegant. For us it is an honor to live in a building which generates a portion of the energy it uses."**

The wind turbine offsets a portion of the energy consumed by the building's common areas, lowering the administrative costs for each unit. It creates value for the building by lowering operating costs and by being a jointly-owned energy-generating asset. Gaia also uses **16 solar collectors for water heating, further lowering the overall energy consumed by the building.**

UGE™

Lights up the street

LIGHTING SOLUTION IN POINT PLEASANT BEACH, NJ

Boardwalk

Project At A Glance

COMPLETED
February 2012

LOCATION
Point Pleasant Beach, New Jersey (USA)

CUSTOMER
Point Pleasant Beach

SOLUTION
Illuminates nearby memorial, solar statement, hybrid technology

COMPONENTS
UGE eddy turbine provides power for the classic boardwalk light

Peter Wright of Turbine Advantage installed UGE's pilot Boardwalk in Point Pleasant Beach, NJ. The hybrid streetlight was installed in February 2012, adjacent to Manasquan Inlet. The lighting solution was sponsored by a local grade school, nearby businesses and the township.

The UGE eddy turbine will provide power for the classic boardwalk light and a custom spotlight which will illuminate the nearby Fisherman Statue. The 1932 statue is a memorial to the sailors lost at sea.

COMMERCIAL LIGHTING INSTALLATION FOR DIAGEO

SANYA

Project At A Glance

COMPLETED
October 2011

LOCATION
Plainfield, Illinois (USA)

CUSTOMER
Diageo

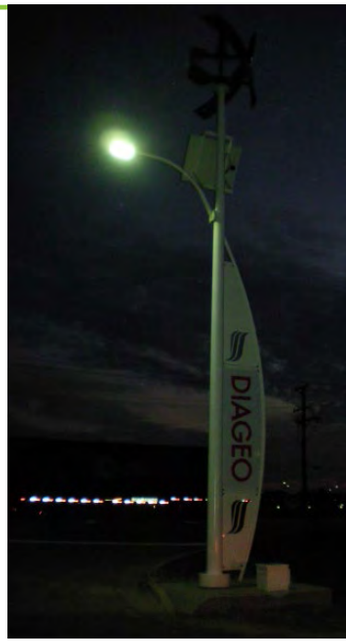
SOLUTION
Sanya lighting solution displays the company's commitment to renewable energies

COMPONENTS
UGE eddy turbine atop a 10 meter streetlamp tower with a 150W solar panel and LED lighting

Diageo, the world's largest producer of alcoholic beverages, installed a Sanya hybrid streetlight in October 2011 at the company's factory in Plainfield, Illinois. Sullivan Energy Group completed the easy installation in one day.

The 10 meter streetlamp tower includes an eddy wind turbine by Urban Green Energy, a 150W solar panel and LED lighting. Wind speeds at the site average 10-12 mph.

Diageo wanted to add to its sustainability program and show the local community its dedication to green initiatives. The Sanya lighting solution displays the company's commitment to renewable energies. Diageo is very satisfied with the streetlight. It lights up at the right time during the day and is performing smoothly.



HYBRID STREET LAMPS IN SAN FRANCISCO'S CIVIC CENTER PLAZA

SANYA

Project At A Glance

COMPLETED
December 2010

CUSTOMER
San Francisco Public Utilities Commission

LOCATION
San Francisco, California (USA)

SOLUTION
6 Sanya Streelamps light Civic Center Plaza

BENEFITS
Adds to sustainability program, shows community dedication to green initiatives

In December 2010, UGE's Sanya hybrid street lamps were installed in a high-profile location in San Francisco by San Francisco Public Utilities Commission (SFPUC). The installation of 6 Sanya hybrid street lamps were located in front of the city's Civic Center for a twelve month demonstration period, joining Mayor Gavin Newsom's ongoing campaign to green San Francisco and create a sustainable Civic Center.

"The Civic Center Sustainability District seeks to showcase cutting-edge environmental technologies, energy efficiency and renewable energy projects all within the context of our historic Civic Center Plaza. This new hybrid streetlight pilot project is another step towards achieving our vision of a model, sustainable public square that harnesses the power of the wind and sun to deliver an essential government service."

-Mayor Gavin Newsom

The Sanya hybrid streetlights are comprised of a 600 watt vertical axis wind turbine along with a 150 watt photovoltaic solar generation module. UGE's Sanya hybrid streetlights were estimated to reduce energy consumption at Civic Center Plaza by 1400 kilowatt hours per year and offset the equivalent of 1516 lbs of CO2 per year. When electricity costs are taken into account, the Sanya from UGE offers a cost competitive solution to traditional lights, yet it powers itself with 100% clean energy.

As shown in this project, the Sanya also offers the opportunity for customers to put their environmental commitment on display. Customers can customize the panel with their own logo or message, making the Sanya a great marketing tool for companies in industries including government, hospitality, real estate development, sports and recreation, and more.

LARGE SCALE HYBRID PROJECT IN BUSAN, KOREA

SANYA

Project At A Glance

COMPLETED
January 2011

LOCATION
Busan, Korea

CUSTOMER
Bn Group

SOLUTION
Large scale hybrid project; In addition to the standard custom sails, 150W solar panels, and 600W eddy, 84W LEDs were used for extra illumination

BENEFITS
Busan's first hybrid outdoor lighting solution, diverse locations prove wide range of Sanya performance, utilize renewable energy to provide lighting alternative to grid power

In January 2011, Urban Green Energy partnered with **Bn Group in Korea** to install UGE's **Sanya hybrid street lamps** throughout the city of **Busan, Korea's** second largest city and the nation's largest port city.

The Sanya hybrid street lamps were placed in a diverse set of topographies to test performance based on location: the seaside, high altitudes, and a basin area. Locations included: Amisan Observatory, Hwamyung Arboretum, Busan Central Park, Taejongdae, and the Bn factory.

Products were put through a full commissioning process which analyzed the quality of production and functionality once installed. All units are functioning properly and successfully delivering Busan's first hybrid outdoor lighting solution!

UGE™

Keeps you on the road

WORLD'S FIRST WIND POWERED EV CHARGING STATION

Project At A Glance

COMPLETED
Summer 2012

LOCATION
Barcelona, Spain

CUSTOMER
CESPA

SOLUTION
Co-developed with GE, the Sanya Skypump charges EVs directly from the wind, while providing lighting to the area below

BENEFITS
Sustainable solution, makes a statement, cuts energy consumption

Project Highlights

- Wind turbine passes energy to charging station and LED directly
- Energy consumption from EV charging offset entirely
- Grid-tie installation means grid is used when no wind available, or electric bill of location offset when no EV is being charged

In the summer of 2012, the first **UGE Sanya Skypump** was installed at Cespa's headquarters near Barcelona. The Skypump will not only help power Cespa's electric vehicles, but also reduce carbon emissions from the fleet.

The **Sanya Skypump** gives its users the assurance that the energy used in their car is provided by 100% clean, renewable energy produced directly on-site. It is powered by Urban Green Energy's elegant **UGE-4K turbine** taking advantage of GE's advanced **WattStation**.

The Skypump has resulted in worldwide media coverage as a prototype for future EV technology. The Skypump will soon be available worldwide.

COMPONENTS
Yellow UGE-4K wind turbine, GE Wattstation, GE LED, Grid-Tie electronics (in enclosure at base), UGE Skypump tower

YIELD
As much as 80 miles/day for the fleet, more than is necessary on an average day. Up to 15,000 Wh/day during the winter months.

UGE™

At Sea

STENA JUTLANDICA- FIRST PASSENGER FERRY IN THE WORLD EQUIPPED WITH WIND TURBINES

UGE-4K

Project At A Glance

COMPLETED

June 2011

LOCATION

Gothenburg, Sweden

CUSTOMER

STENA

SOLUTION

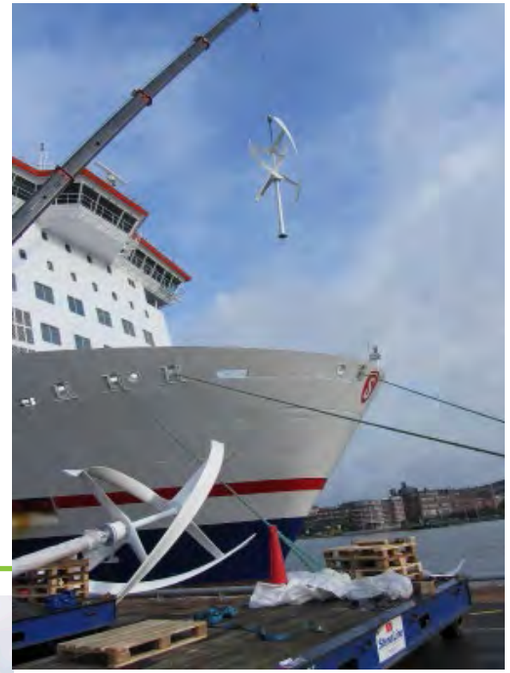
Uses wind turbines to improve ferry aerodynamics, while reducing fuel consumption through electricity

COMPONENTS

UGE-4K wind turbine connected to ferry's microgrid.

Project Highlights

- First installation of wind turbine on a passenger ferry
- Improves boat's overall aerodymanics utilizes wind leaving turbine
- Special mounting system designed to secure wind turbines in place of deck
- Part of Stena Line's environmentally friendly efforts to reduce impact on their surroundings



In June 2011, **two UGE-4Ks** were installed 4 meters above the bow of the Stena Jutlantica, a commuter ferry line in Gothenburg, Sweden by Swedish distributor WindQ as part of Stena Line's environmental efforts. This is the world's first installation of a wind turbine on a passenger ferry.

The objective of the project was to use the aerodynamics of the wind leaving the turbine to improve the boat's overall aerodynamics. (CFD simulation showed the coefficient of drag decreased from 0.56 to 0.51 with the turbines installed.) The power generated by the turbines is expected to save on fuel as well as supplement onboard power systems, significantly reducing the energy costs of the boat when it is docked and minimizing its environmental impact.

The reduced air resistance at sea will result in a reduction in fuel consumption of between 80 and 90 tons per year, which is equivalent to the amount of oil required to heat 28 homes in one year.

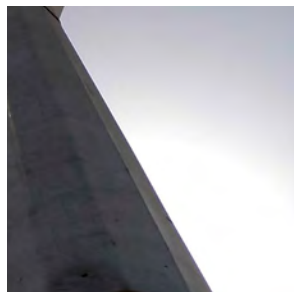
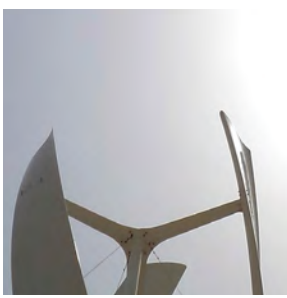
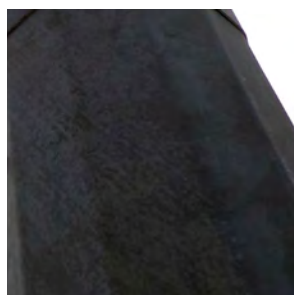
A special mounting system was devised to securely mount the two turbines on the boat deck. The low-noise levels, low vibrations, and sturdy compact design of the two UGE-4Ks were a perfect fit for this project as the turbines sit right outside of a passenger lounge with windows.

"The two turbines will generate about 23,000 kWh per year, equivalent to the domestic electricity consumption for 4 normal homes during one year. Among other things, the electricity will be used to power the lighting on the Jutlandica's car deck. Within our Energy Saving Program, we are currently pursuing 200 environment improvement projects and this is yet another very interesting project. Stena Line has a tradition of leading when it comes to the development of different types of new solutions,"

Robert Åkerlund, Director Technical & HR at Stena Line.

Stena Line's operations in Scandinavia are environmentally certified according to ISO 14001. There are electricity connections for all ships in Gothenburg and, during recent years, a number of environmental improvement measures have been implemented that have resulted in either reduced energy consumption or lower fuel consumption.



UGE

330 West 38th Street
Suite 1103
New York, NY
10018

Email:
info@urbangreenenergy.com
Phone:
+1 (917)720 5685
Fax:
+1 (917) 536 9957
www.urbangreenenergy.com