Submitted by Dana Dillworth 7/28/16
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10 MW Dubai Skyscraper Makes 10X More Renewable Energy Than It Needs

ARCHITECTURE

03/10/2010 under Architecture, Env , Green Building, Renewable Energy 4 Comments

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by Bridgette Meinhold

VIEW SLIDESHOW

The 10 MW Tower is an eco skyscraper and renewable energy generating machine that harvests wind and solar power. A 5 MW wind turbine sits at the top of the building harnessing the wind, while the power of the sun is collected via a 3 MW concentrating solar system plus a 2 MW solar updraft system. Designed by UAE-based Studied Impact, this 50 story skyscraper will put out 10 times as much energy as it needs, pumping renewable power back into the Dubai electric grid.

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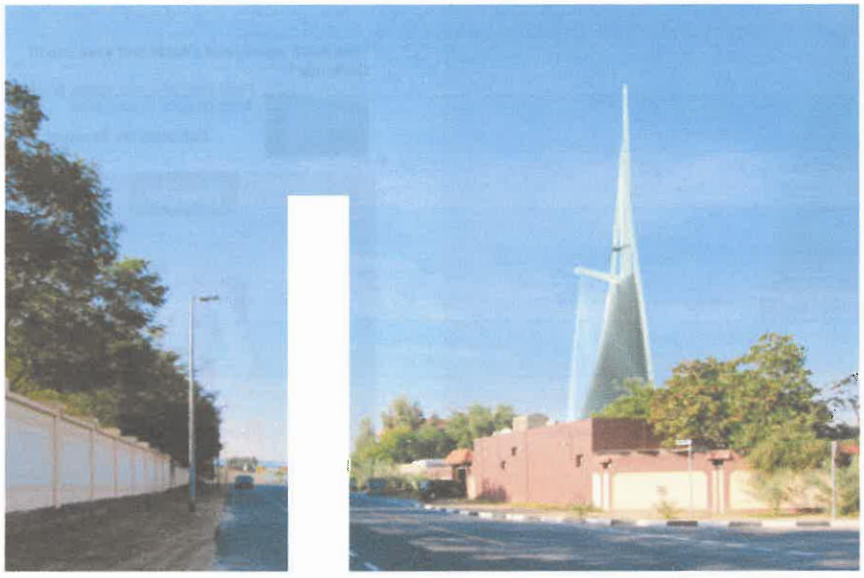

Studied Impact, headed by a t Robert Ferry, is also responsible for designing the Almesien Tower, another solar concentrating skyscraper. Ferry's newest design is planned for the Al Quoz neighborhood in Dubai, and would be located on an empty lot with clear access to sunlight on all sides. The bottom three floors would include shopping, commercial areas and restaurants and would be designed to fit in with the surrounding architecture, although the soaring tower would stick out compared to the low lying buildings surrounding it. On top of the retail podium would be a living roof top garden watered with condensate from the building's air handling units.

Renewable energy systems have certainly been incorporated into buildings before, but never on such a grand scale. The design and architecture for the 10 MW Tower is actually centered around the renewable integrated systems. Based upon meteorological data for the Al Quoz site, the 5 MW horizontal axis wind turbine is capable of operating for 1,600 hours per year, while the two solar systems could operate for 2,400 hours per year, adding up to a yearly output of approximately 20,000 MWh. The estimated embodied energy of the tower is 360,000 MWh, so the energy generation would be able to neutralize its environmental impact in less than twenty years, which no other skyscraper has ever done.

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The solar concentrating system is built into the south facing facade and consists of 1,600 heliostatic mirrors that direct the sunlight to a receiver mounted above the mirrors on a cantilevered arm. Molten salt is used as the working fluid to run a steam generator at 500 deg C. The mirrors shade the building partially, but also allow some sun in, which strikes a double curtain wall. Behind the wall is an interstitial greenhouse space reaching all the way to the top of the tower. Air is heated and rises up the 600 m tall chimney and turns the blades for the 2 MW solar updraft turbine.

This incredible design for a skyscraper moves far beyond energy efficiency and sustainable materials. This mixed-use residential and office building could potentially have a negative impact. Although it's located in a questionable spot without much else around it in terms of public transportation or an urban core, the concept is really fascinating and certainly deserves more study.

+ Studied Impact

Via Land Art Generator Initiativ

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Almeisan Tower is a Solar Concentrating Skyscraper

ARCHITECTURE

07/13/2009 under Architecture, Environment, Green Building, Solar Power 2 Comments Like 12

by Bridgette Meinhold

VIEW SLIDESHOW

Architect Robert Ferry recently unveiled a stunning design for a sustainable spire in Dubai that requires zero energy and produces zero waste and zero emissions. The Almeisan Tower is a concept created for Za'abeei Park that generates all of its own energy using concentrating solar power technology. The tower itself is actually a solar power tower (much like Solar One in California) that uses heliosta tioned at the top of the tower to direct sunlight onto a central receiver.

Almeisan is the Arabic name for one of the brightest stars in the sky in the Gemini constellation. It is also derived from the word Al Maisan, which means "the Shining One." The solar power tower would be capable of generating 600 kW of solar power, which is enough to meet the energy demands of the tower as well as Za'abeel Park. The 224 heliostats placed around the top of the tower would track the sun and reflect the light to the central receiver, which will then heat liquid sodium to 500 degrees Celsius in order to drive a steam turbine.

Eight concrete pillars curve up and out to provide the base for the rooftop solar concentrating plant. The pillars are held together in the middle with a large tension ring. The interior of the structure features a cafe and an observation deck, which would offer spectacular views of the city. Near the bottom, the tower features a conference facility, a children's library, and a cultural center.

The spire's construction features eight wind towers that are used to help provide a natural cooling effect, where hot air is drawn up and out of the structure via chimney effect and cool air is drawn in. Living walls and roofs also help cool the building by helping to moderate temperatures. The vegetation acts as a "heat sink for modulating the temperature variations in a similar way to mud walls in traditional indigenous huts."

This tower has an intriguing ı and is the first one that we have come across to incorporate concentrating sola ıal energy into skyscraper design. The building was also designed to qualify as Triple Z zero waste, zero energy and zero emissions, which is a very ambitious design goal. Alt his concept did not win the competition, we hope to see its ambitious array of sustainabl res integrated into future projects.

+ Robert Ferry

Via Gizmag

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WORLDWATCH INSTITUTE
Vision for a Sustainable World

Bahrain Propels Wind Energy to Urban Future

The first oil field developed in the resource-rich Persian Gulf region was the Awali oil field in Bahrain, discovered in 1932, several years before the Saudis began pumping their own oil. Today, 75 years later, Bahrain's economy remains highly dependent on oil and natural gas. But the country is also helping to pioneer the way toward a renewable energy future. It recently installed its first utility-scale wind turbines on a new commercial development—the Bahrain World Trade Center (BWTC)—in the financial district of Manama, the nation's capital.

When the BWTC is completed, likely in early 2008, the building's three 29-meter diameter wind turbines will produce enough power to meet 11 to 15 percent of the needs of the two 50-story office towers—or an estimated 1,100 to 1,300 megawatt-hours of clean electricity each year. The massive 225 kilowatt turbines were lifted into place in March 2007 and are supported by three bridges that span the distance between the two towers.

The structure's sail-shaped towers were designed to maximize the potential of the wind turbines by funneling and accelerating breezes from the nearby Persian Gulf. They were inspired by Arabian wind towers, or Al Barajeel, which rest atop the main rooms of traditional mosques and houses to provide natural ventilation.

This project is the product of three years of intensive research and development by architects and engineers with the global design firm Atkins and its Danish partners Ramboll and Norwin. According to Atkins senior project manager Simha LytheRao, the effort marks the first time wind turbines of such a scale had been installed at this height or between buildings, creating new challenges for installers.

In addition to the wind turbines, the BWTC incorporates several other features that are intended to reduce its potential carbon footprint, including a heat recovery system, windows that can be opened to allow for natural ventilation, grey-water recycling, solar photovoltaic (PV)-powered outdoor lighting, and shading on the external glass façade.

Bahrain World Trade Center under construction in Manama, Bahrain.
Photo by Christian Bering via Flickr

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Atkins believes the project sets a precedent for sustainable architecture around the world. Already, the BWTC is inspiring the integration of renewable energy in commercial buildings elsewhere. Atkins is now designing a 400-meter-high tower in Dubai in the United Arab Emirates that will incorporate wind turbines and solar PV, while Ramboll and Norwin is working on a residential building in London that will include three smaller wind turbines.

Janet L. Sawin is a senior researcher and the director of the Energy and Climate Change Program at the Worldwatch Institute. For photographs and more information: Bahrain World Trade Center Web site*State of the World 2007: Our Urban Future* (in particular Chapter 5, "Energizing Cities")

The first oil field developed in the resource-rich Persian Gulf region was the Awali oil field in Bahrain, discovered in 1932, several years before the Saudis began pumping their own oil.

The Gullwing Twin Wind Towers

The Gullwing Twin Wind Towers

The Gullwing Twin Wind Towers might be one of the design of a skyscraper **tower wind turbine** as an energy source of the most ambitious in the beginning of 2011. The tower is designed to run entirely from *wind power* energy produced by wind turbines placed in this tower.

Architects and designers in ARXX Studio designing skyscrapers independent twin towers to Dubai, which generate all the energy it needs from renewable resources sourced from wind, which certainly environmentally friendly. Baptized in the Gullwing Wind Twin Towers, the tower is equipped with a *unique power-generating systems* that use wind turbines hinge attached to the building to generate electricity from wind.

If the tower skyscraper built and fully supported by its own wind turbine. The Gullwing Twin Towers Wind planned for Dubai, a country that has served as a breeding ground for the concept of a skyscraper is exceptional.

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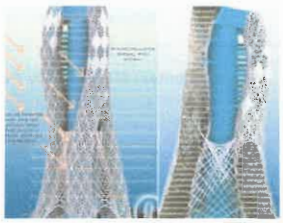
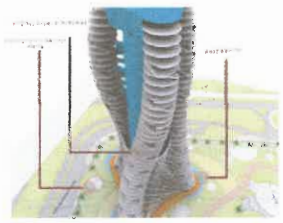
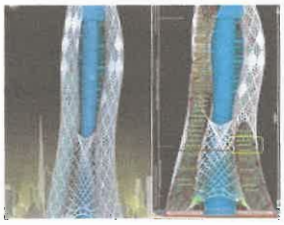

Circular wing structure that encourages turbines to generate clean electricity. Turbine is a cylinder with the circle, where each section contains a series of bladed ring to catch the wind. The tower has been designed in the form of a cylinder to simulate the effects of tornadoes to maximize environment-friendly energy generation.

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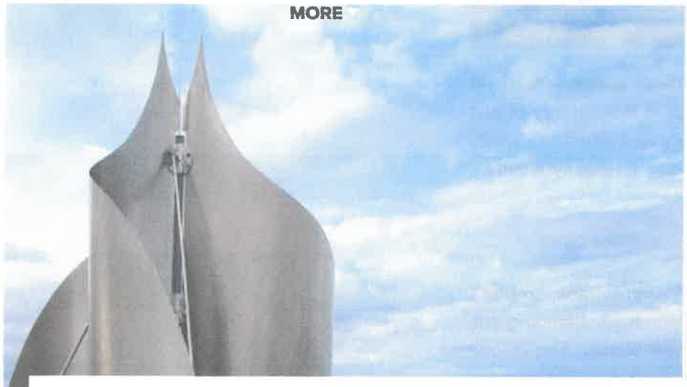

Innovative new wind turbine from Iceland is tough enough for the strongest gales

12/27/2015 under Alternative Energy, carousel showcase, Energy, Environment, Green Resources 2

by Cat DiStasio

VIEW SLIDESHOW

Iceland already runs on 100 p sources, but researchers have winds in the region as well. Trac common to the small country, t wind turbine could withstand th better than its skinny counterpa renewable energy. Most of it comes from geothermal working on ways to harness the incredibly powerful wind turbines would spin out of control in the high winds bright inventor realized that an entirely different type of ls. In fact, IceWind's CW1000 wind turbine may be even

Iceland does already generate some electricity from wind. It started harnessing wind energy in 2013 and researchers continue efforts to evaluate the energy potential in the country of just 329,000 residents. However, traditional wind turbines just don't fare very well when the winds really pick up, which can be up to 40 miles per hour on an average day. In stormy weather, wind speeds average 112mph.

Related: Iceland's gorgeous Passive Solar Hof House

The only way to address this problem was to create a different kind of wind turbine, so that's what inventor Saethor Asgeirsson did. Rather than being long and thin with blades fanning out, his CW1000 turbine stands vertically on a wide base and features curved blades. The unique blade shape allows the turbine to catch the wind in such a way that it can't possibly spin too fast, which is the main problem with the traditional design. The CW1000 can thus endure Iceland's consistently high wind speeds.

Although Iceland is already getting all of its energy from other renewable sources, efficient wind power systems still have a market there, especially for individual homeowners. The IceWind CW1000 is designed for residential use, and the company plans to start selling the turbines within the next few months. Asgeirsson recognizes the opportunity to harness the energy in the winds of his hon but also plans to sell the technology internationally as early as Summer 2016. The com ecently signed with an American investor and is currently looking for distributors to bring oduct to North America and Europe.

Via CBS

Images via IceWind

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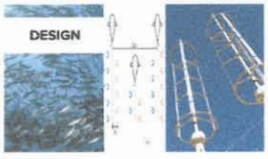

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