

# SYNERGY AMERICAS CONSORTIUM INC.

A consortium of solar and renewable engineering companies offering design engineering, pre-development services and plans for turn-key operations throughout the world.



Courtesy: [Saharaforestproject.com](http://Saharaforestproject.com)

- We are comprised of successful companies and professionals experienced with the planning, design & construction of green architecture, wind and solar farms, complete with sustainable land and ecological real-estate development.
- Member companies are active as manufacturers and distributors of solar thermal components, solar photovoltaic power systems, solar concentrator systems, wind turbines, and other technologies.
- We offer unique turnkey Solartecture® (solar & wind architecture) solutions; integrating renewable energy systems, elements and components for truly green buildings. These buildings are approaching net-zero energy consumption.
- We specialize in multiple megawatt commercial and industrial projects.
- We have international experience in the field and proven credentials.



# Some design and development projects completed or in process

- We have designed and delivered components for constructing the first solar powered air conditioning system in Latin America for HOLCIM APASCO, the largest cement company in the world. Hermosillo, Mexico, 2010-2012.
- We have developed and designed one of the largest wind farm projects (160 MW) in Mexico, 2008-2010, currently in construction.
- Recently obtaining of Power Purchase Agreement to develop and design a 40 MW Solar PV and Concentrator collector plant, integrated with sustainable greenhouse farming, water decontamination and water purification systems, Mexico, 2011. Received financing proposals currently under SYNERGY AMERICAS CONSORTIUM Inc. evaluation.



# Some design and development projects completed

- Conducted a wind and solar study through Integral, Inc engineers for the construction of 3 teaching hospitals in the Kingdom of Saudi Arabia, 2007.
- Provided Solar and Wind energy assets with KMD Architects for the PUC Administration Building, San Francisco, 2008.
- Designed the first wind farm on a building with Solar PV with Perkins & Will Architects for the Oklahoma Medical Research Foundation, Oklahoma City, Oklahoma, 2009.
- A renewable energy study for the Honeywell Orion Research campus. The study has been approved and we are now conducting Phase 2 of the contract to incorporate 18 wind turbines and 160 solar concentrator dishes on the roof. Bangalore, India, 2010 -2012.



# Our Global Infrastructure Dilemma:

- Global over-dependence on fossil fuels for transportation, heating our buildings and agricultural food production is provoking a global ecological and economic crisis.
- In this last decade we have reached “peak oil” and it appears that we have gone to war over oil.
- Solar, wind, biomass, and other renewable energy technologies makes it possible for energy consumers, building and land owners to become energy producers.
- *We need to ask:*
  - What technologies and systems are ready for immediate manufacturing and marketing?
  - Given the current state of our financial markets and fragile economy how can we transition to rebuild our infrastructure, buildings, and communities into vibrant local economies?



# Our Building Dilemma

- “Data from the US Energy Information Administration illustrates that buildings are responsible for almost half (48%) of all energy consumption and GHG emissions annually; globally the percentage is even greater.
- Seventy-six percent (76%) of all power plant-generated electricity is used just to operate buildings.
- Immediate action in the Building Sector is essential if we are to avoid hazardous climate change.”

*- Edward Mazria, AIA  
Founder, Architecture 2030*



# The Opportunity

- “It is becoming clear that the future of our electric power will come less from large coal, gas and nuclear power plants, but more from millions of building-integrated micro generators and urban turbines, photoelectric solar panels mounted on the roof-tops of the city with wind and solar farms in the countryside.
- Existing national power grids won't disappear. They will operate more like the Internet, as part of a complex energy web through which people and companies will supply electricity, by uploading, as well as downloading it.”

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*Reinhold Ziegler, Solartect, Synergy International Inc.*



# Our Commitment

SYNERGY AMERICAS CONSORTIUM with over 35 years of working experience in regenerative and renewable energy systems offers:

- Global Infrastructure and Eco Technologies
- Solar-driven Absorption Chiller plants for air conditioning and refrigeration
- Photovoltaic Systems for energy production
- Breakthrough technologies suitable for installation on, and within most existing buildings
  
- A new design initiative for all future buildings that incorporates:
  - Integrated Energy Design
  - Building-Integrated wind energy systems.
  - Building-Integrated Solar PV Roofs and curtain walls
  - Roof mounted solar concentrator collectors and “Power Roofs”.
  - Integrated Living machines & Hydroponic Food Production.

We call this new energy architecture:

**SOLARTECTURE®**





# Clean and Green

- We are integrating wind-turbines, photovoltaic panels and other energy assets into existing and new buildings. These technologies make it possible for the building to become an energy conserver & producer and to co-generate with the local power grid.
- Building owners can now take the first step in energy independence by proving that we don't need to go to war over oil. Every roof, on every building can be an energy generator. We can create clean and green energy wherever it is needed.

This is the mission of the **Synergy** Companies.



# Our Design Consortia

- Starting as Synergy California L.P. and Synergy International Inc, Synergy Americas Consortium Inc. is bringing renewable energy to the Americas, India, the Middle East and beyond.
- This **SYNERGY Network** is comprised of successful professionals in green architecture, solar, wind, solar concentrator manufacturing, complimented by sustainable land, and real estate development. We are a one-stop source delivering turn-key **Solartecture®** integrated with renewable energy systems, and true-green building elements and components.
- We re-design buildings and open land into green and healthy environments powered by building-integrated renewable energy systems or ground mounted wind and solar energy systems.



# Synergistic Services

- **Energy Conservation and Savings**

We retro-commission existing commercial buildings, improving operational efficiencies by 15 – 35%. Preliminary walk-through site surveys are followed by the installation of wireless sensors and data loggers which provide real-time data on the performance of the building or campus. Study of this data results in a decision to invest in those measures which have the highest return on investment in the shortest time frame.

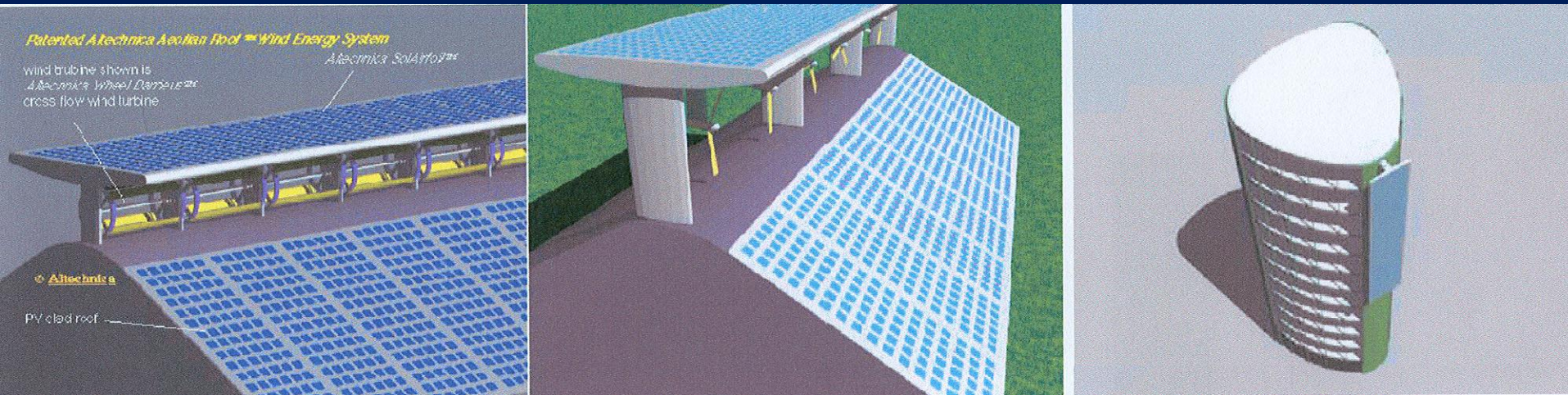
*Typical returns on investment for efficient lighting is less than 2 years.*

- **New Energy Generation**

Our core expertise is designing and installing building-integrated solar, wind, and hybrid systems on existing and new structures. This proprietary **Solartecture**® is composed of architectural energy elements. The energy may be utilized on-site, or sold through a Power Purchase Agreement (PPA) to a local utility. Building and land owners can become their own power companies.



# Solartecture Energy elements



*For example,*

- The new energy architecture will have diffusers and shrouds for the wind turbines. These energy building-elements accelerate the mass flow of air through the turbines. Diffusers can be horizontal across the roof or mounted vertically along a high-rise. In some cases these shrouds can also be mounts for PV collectors. The diffusers can also have inlet and outlet screens to keep birds out. In the 10 to 20 mph range an increase of 2.5 mph in wind speed through the shroud will double the output of a wind turbine.

# Synergistic Developers

- **Land and Infrastructure Projects**

**Solar Farms** - As design engineers and developers of ground-mounted and building-integrated PV and solar thermal arrays, we build, operate, and transfer these arrays into long-term service with 25 year warranties. We are your farming partners whether you are growing food or making electrons.

- **Wind Farms** - Designers and builders of the “Fields Ranch”, the third major wind farm in the world at Altamont Pass, CA, in 1981. As bonded site surveyors, we determine the wind spectrum, matching this data to appropriate wind turbines for deployment on remote landscapes and occasional buildings.

- **Bio Farms** - Designers and architects of bio-intensive green buildings. We generate roof-top solar energy for growing our proprietary SYNAPONIC® vegetables, nutraceuticals, and pharmaceutical crops at a factor of 8 over conventional farms, with only 1/20th the water

We will illustrate some of these accomplishments.



# Green Infrastructure Project



Courtesy: Saharaforestproject.com

The objective of the **Green Infrastructure Project** is to develop and deploy an integrated, large-scale system for production of freshwater, energy, biomass and ecosystem services on a significant scale.

The first stage of the project is to establish a platform for international cooperation on innovation and development that pave the way for a large-scale roll-out of restorative agriculture and the security of fresh water and renewable energy supply. The project is coupled to an electric rail line and fiber optic high speed Internet which can shuttle people, products and information into urban corridors.

# The Synergy Portfolio

- The following is a partial portfolio of eco technologies with applications for boats and buildings designed and installed by our company.
- Full case studies are available for the **Solartecture®**.
- For those interested in our specific planning and design procedures that we utilize - contact us for our 3D animations and process templates.





## The Wind Energy Pavilion: 1980

The first public wind generator in San Francisco generating power for the first wind powered concerts, Ham radio Jamborees, and environmental center. Designed and built by Reinhold Ziegler through a grant from the US Department of Energy. Wind turbine and Pavilion was manufactured by our company: Aero Power - Earth Lab Institute, Berkeley CA



## Turbo and HydroStar fluid turbines: 1988

Completed R&D in San Mateo, CA and received a US patent for development of one of the most efficient wind turbines ever built.

Work continues to develop an under-water river turbine called HydroStar.

TurboStar is now being manufactured in Oregon under the brand: HALO-TurboStar.





*Up to 2.5 times the output of conventional wind turbines*

# **TURBOSTAR**

**Ducted Wind & Water Turbines**  
Available from: **Synergy California L.P.**  
**(415) 290-4990**

**synergycalifornia@earthlink.net [www.synergyii.com](http://www.synergyii.com)**

3 m Diameter 6,000 watt

5 m Diameter 500 watts

**Synergy** Kapoverdia Portfolio

## Urban Turbine and the Randall Museum: 2005

Installation of the first Urban Turbine in San Francisco. The machine has been monitored for any bird kills by Audubon Society and Sierra Club. None have been found after 4 years of continuous service, Built for World Environment Day from a grant from the Gordon and Betty Moore Foundation.

Manufactured by: Aerotecture International Inc. Chicago



Installation of 2-1KW Aerotecture wind turbines and 1.6 KW of Unisolar PV on the top canopy to a 3 Phase Inverter creating the first hybrid-electric ferry in the world. Design & Installation by Synergy California L.P. and Aerotecture International Inc.



Wind and Solar-Powered Hybrid-Electric Ferry: 2008-09, Alcatraz Horblower Hybrid



Future San Francisco Public Utility Commission Building  
Building Integrated Wind Energy Systems Design: Reinhold Ziegler, Synergy California L.P. (415) 290 4990

## SF PUC Administration building : 2006-2007

KMD | Stevens Architects.  
Co-design of the wind energy-  
systems tower and PV with  
ARUP engineers.

The building is powered by  
wind turbines and solar PV  
systems. The building is **Gold  
LEED certified.**



## Oklahoma Medical Research Foundation Tower: 2007-2009

Perkins and Will, Architects.

We designed the building-integrated wind and PV systems.

The building (now completed) is powered by 24 wind-turbines within ducted shrouds, and 250 KW of PV panels leading to **Platinum LEED certification**.

Project completion 2011.



Synergy Kapoverdia Portfolio

# Honeywell Technologies Solutions PVT



Placement of Wind turbines on the Orion Building



Visual Rendering showing the placement of the wind turbines on the roof of the Orion building.



Proposed Wind and Solar Concentrator  
Retrofit Bangalore, India

# Aeroponic Greenhouse & Solar/Wind Energy Harvesting Platforms



Translucent Roof Panel Sky lights between Aeroponic Growing Racks

Solar / Wind Electrical Production from Greenhouse Roof will support - 21 units -1,000 SF units @ 3,000kwh / year or 3.75 Ohana Eco Village 8-plexes on a 6 acre site.  
 Preliminary estimate -  
 3- Aeroponic Greenhouse & Solar / Wind Harvesting Platforms will support - 7 OEV 8-plexes , 1 Community Vision Center and ancillary facilities.

AEROTECHTURE International Inc - 15 - 6' x 10' Helical Wind Turbines  
 Bill Becker - Aerotecture

@ 12 mph average annual wind speed 1 Turbine produces 3,000 kwh / year x 15 = 45,000 kwh / year

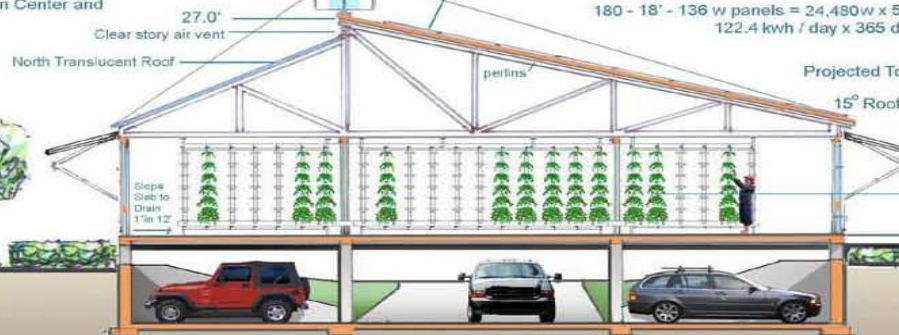
UNI-SOLAR - photovoltaic roof - PVL- 136 w 18'x1.3' roll flex panel

180 - 18' - 136 w panels = 24,480 w x 5hrs = 122.4 kwh / day  
 122.4 kwh / day x 365 days = 44,676 kwh / year

Wind Tu  
 + Photo-v

Projected Total Annual Electric Power from Wind and

Aeropon  
 system -  
 14 Rows



Fruit Producing Trees shade and wind protection for Greenhouse / channels wind up to wind turbines

# HOLCIM APASCO

This is the first solar powered air conditioned building in Latin America. 160 solar concentrator collectors produce hot water which runs a chiller to air-condition the Holcim Administration building in Hermosillo, Sonora, Mexico.



# The Future is Now

- For more information about our work with Solartecture and renewable energy, please contact us and visit us.

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