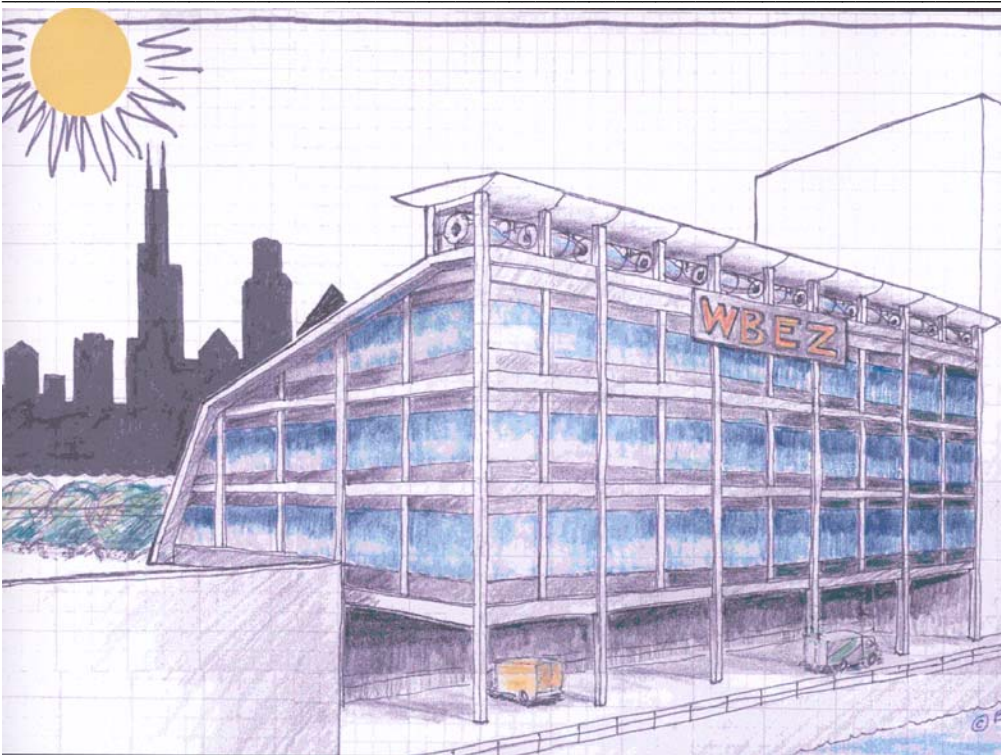


Heliographs

www.iseanetwork.org

Newsletter of the Illinois Solar Energy Association June, 2003, Vol. 22, No. 2



Aerotecture: A New Paradigm for Windpower in Cities

by Bil Becker, ISEA

Aerotecture is all about windpower in cities: Aerotecture = aerodynamics + architecture. Architectural aerodynamics in cities requires a new form of wind-electric generator. Current propeller-type and most vertical-axis wind generators are not compatible with the turbulent winds created by city buildings. Aerotecture aeroturbines are newly invented and patented wind-electric generators designed specifically to attach to, and/or integrate within, existing or new buildings.

The new aeroturbine is very effective in highly turbulent and gusting winds. In addition, Aerotecture aeroturbines:

- inherently self-regulate, cannot run away
- works in both vertical and horizontal axis (See illustration A)
- operate noise- and vibration-free
- are low RPM and bird-safe
- come safely enclosed in protective frameworks
- are propeller-free – no blades to throw
- require no special code exemptions or insurance
- set a new standard of wind generator beauty.

In the 1980's the author began experimenting with "non-propeller," low noise, low vibration, super safe aeroturbine alternatives that could best operate in cities and suburbs. This experimentation led to real world experience building one of the first urban wind generators in the U.S. with a team of experts and enthusiasts supported by the City of Evanston and the DOE. (continued on page 3)

ISEA Summer Membership Meeting

"Building-Based Wind Energy Systems"

Saturday, July 12, 2003

11 AM - 2 PM

*Host: Bil Becker - Aerotecture Ltd
(and Univ of IL-Chicago)*

*at Folding Guard Inc., 2035 South Racine,
Chicago, IL*

Letter from the President, June 2003

Summertime...

As a longtime baseball fan, I have enjoyed this big-league season, with a great National League Central Division race between the Cubs and Cardinals, among others, and the White Sox still in the hunt.

Another enjoyment is seeing the renewable energy industry moving into the big leagues in Illinois. We should be soon seeing Illinois' first commercial wind farm, Crescent Ridge in Bureau County by Illinois Wind Energy, LLC. If all goes well, turbines, each capable of powering hundreds of homes, will be majestically turning in what will be a truly breakthrough event. The installations will occur as the number of grid-connected solar and small wind systems in Illinois goes well over the century and multi-megawatt marks and be more distributed across the state in places like Cuba and Southern Illinois University. A suburban Berwyn Laundromat gets the largest solar thermal system to date in Illinois, joining hundreds of others.

More renewable energy businesses are looking to open up or expand in our state. This is reflected in ISEA's growing membership, at 172 and counting, making us one of the largest chapters in the American Solar Energy Society. ISEA has also secured funding from the Chicago Department of Environment for upgrading our displays to reach out to more people in Illinois.

Solar and wind energy combined in 2002 did over \$11 billion dollars of business in the world. Not bad for "cottage" industries. The challenge for Illinois is how much of that eleven-figure sum will we get by being proactive, or meekly accept crumbs from other states and countries. One of the signs will be how the proposed Renewable Portfolio Standard bill fares. However it turns out, the RPS discussion will accelerate renewable energy development.

Enjoy yourself at the American Solar Energy Society conference in Austin, Texas and Midwest Renewable Energy Fair in Custer, Wisconsin later this month. And get ready for the Illinois Renewable Energy Fair in Ogle County on August 9th and 10th.

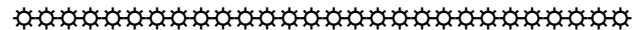
Mark Burger,
President, ISEA



Members Tour Solar Service, Inc. and Skokie home's solar thermal system

In the first quarterly membership meeting of the year, members and guests of ISEA toured the SolarService, Inc. facility

and a nearby Skokie home at which 8ftx10ft solar thermal panels provided both heat and hot water for an active family. Brandon Leavitt explained that two 4ftx8ft solar thermal panels could provide sufficient energy to meet the hot water needs of two adults; additional units can be integrated with traditional forced air heating systems or radiant floor systems, to provide room heating. With the Illinois rebate program (50% of the cost, up to \$5,000) AND the increased value of the real estate, the upfront cost can be rapidly recovered with the energy savings.



**Do you have a solar building
others would like to see ?**

**2003 National Tour of
Solar Buildings**

October 4, 2003.

*Both residences and commercial buildings are
included in the 2003 National Tour!*

***Sharing your building will spread the
knowledge and the passion to others.***

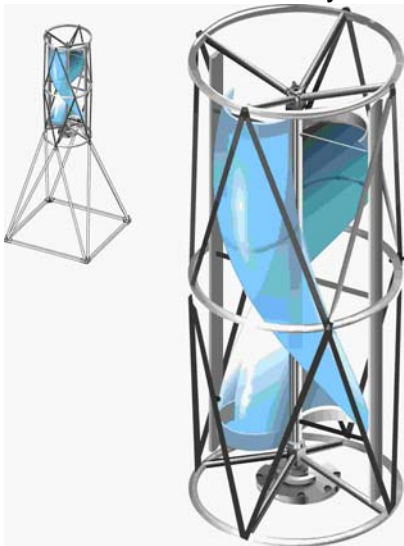
Contact Ted Lowe at Illinois Solar Energy
Association, P.O. Box 634, Wheaton, IL 60189-
0634, info@iseanetwork.org or via telephone at
630-260-0424

Aerotecture:

(continued from page 1)

The "Epoch B Windpower Project" designed, built and installed a 6 kW propeller-type wind generator on a 72-foot tower in the Ladd Arboretum. Everyone involved became immediately informed as to the limits of propeller-driven wind systems in cities.

By the 1990's however, the author had designed a new aeroturbine concept for cities based upon a new partnering of Savonius 'S' rotors and Darrieus 'D' rotors. The author radically improved, in weight and geometry, the traditional 'S' rotor by using advanced plastics which allowed twisting the classis 'S' profile into a helical form. This new helical shape removed all vibration and added higher torque. This new, twisted 'S' rotor profile will not "run away" as do typical propeller-types and most older vertical axis systems.



Another design improvement included the addition of a simple, dual airfoil Darrieus 'D' rotor that increased overall RPM in higher wind speeds without decreasing overall system safety and efficiency.

Illustration B – vertical aeroturbine with detail

This hybrid balance of 'S' and 'D' rotors gives good starting torque, higher RPMs, no noise, no vibration and provides a cylindrical form that is not only beautiful to architects, builders and owners, but that is also easy to integrate with a variety building sizes, shapes and design schemes.

Adding these safe, aesthetically pleasing and effective windpower systems to buildings creates the prospect of having buildings that can produce more energy than they use over the year. Such buildings are described as being 'Zero Energy' or

'Net Energy Positive.' Buildings like these already exist in Europe and England, integrating energy-efficient components, solar, and daylighting, but without the use of building-integrated windpower.



Illustration A – Horizontal and vertical aeroturbines with solar panels

Aerotecture aeroturbines provide such building-integration and a new paradigm for sustainable architectural design. For a look at several different 'aerotectural' approaches and emerging technologies within this new paradigm, you can visit www.urbanturbines.com. To see the author's contribution and unique approach, visit www.aerotecture.com. For a live, hands-on demonstration of aerotecture, attend the ISEA Membership Meeting on July 12, 2003 at Folding Guard Inc. 2035 South Racine (north of Cermak), Chicago, IL from 11am-2pm.

Bil Becker is a renewable energy engineer, president of Becker Eco-Design. He can be reached at 262-642-4707 or via email: bilbecker@bigplanet.com

What can YOU do to help the cause of renewable energy?

- ☀ Bring a friend to an ISEA event! You'll both be glad you did!
- ☀ Talk about renewable energy; share your knowledge and passion!
- ☀ Let political leaders know that you care about renewable energy with your votes and your questions!



The Solar Laundromat: Illinois's Largest Solar Thermal System Dedicated on Earth Day

The solar thermal system supporting the World's Largest Laundromat and Cleaners in Berwyn, IL was dedicated on Earth Day, April 23, 2003. The Laundromat's two hundred fifty washing machines are supplied with over 1200 gallons of hot water daily using twenty-four solar thermal panels and three 200-gallon water tanks. Solar Service, Inc. designed and installed this record-breaking solar thermal system. The system, funded by a grant from the Illinois Department of Commerce & Economic Opportunity Renewable Energy Resources Fund, saves the Laundromat 1.4million BTU's each day, equivalent to 281KWH of natural gas.

2003 Renewable Energy and Sustainable Living Fair

June 20-22, 2003 Custer, WI

MREA ReNew the Earth
Institute.
Midwest Renewable Energy
Association

7558 Deer Road, Custer, WI 54423
(715) 592-6595 • FAX (715) 592-6596

www.the-mrea.org



WELL WORTH THE TRIP! ONE OF THE LARGEST
SUSTAINABLE LIVING FAIRS IN THE USA!

The Illinois Renewable Energy Fair 2003

Renewables: Make the Commitment

Saturday, August 9, 2003 (9 am - 6 pm), and
Sunday, August 10, 2003 (9 am - 4 pm)

at the Ogle County Fairgrounds, 1440 Limekiln Rd., Oregon,
Illinois (two hours west of the Loop, off Hwy. 64 between
Oregon and Mt. Morris)

Discover the world of renewable energy at the second
Illinois Renewable Energy Fair!

Hosted by Illinois Renewable Energy Association, co-hosted by
Illinois Solar Energy Association

The Fair will provide information on renewable energy sources, energy-efficiency, and will build support for incorporating them into daily life. Come and meet the experts and others who are using renewable energy or offering renewable energy products and services. Renewable energy sources can help homeowners, farms, businesses, and communities achieve greater self reliance and a more sustainable energy future.

WORKSHOPS on renewable energy: solar electricity, wind power, hydro, biomass, fuel cells, hydrogen, solar hot water; agriculture: community supported agriculture, farmland preservation, switch grass for electrical production, anaerobic digesters for animal waste, wind farms; green buildings: earth sheltered homes, straw bale buildings; electric vehicles; natural landscaping, yards and gardens; health and environmental benefits of renewable energy; government programs; and others.

EXHIBITS featuring renewable energy producers, distributors, and installers will present options for Illinois residents.

FREE local band on Saturday.

FOR MORE INFORMATION:

<http://www.illinoisrenew.org>

Aur Beck (618) 893-1717 or
Bob and Sonia Vogl or (815) 732-7332.

Lifetime Achievement Awards Granted to Richard Ray, George Butkovich, Ken Woods



Richard Ray, shown here with Bill Lyons, ISEA Secretary, received the ISEA Lifetime Achievement Award with George Butkovich and Ken Woods at the recent membership meeting. Ray can be seen wearing the jacket which all three will receive as recognition for their years of service to ISEA. The three are credited with keeping the organization alive during the lean years between the booming 70s and today's current activity. Sponsoring the Solar House Tour; writing, publishing and distributing the newsletter; and representing the ISEA at state events kept the organization vital. Ray praised the current board for the recent growth, noting that the board now included professionals in the solar industry.

NOTICE! NOTICE! NOTICE!

ISEA Summer Membership Meeting

"Building Based Wind Energy Systems"

Saturday, July 12, 2003
11 AM - 2 PM

Host: *Bil Becker - Aerotecture Ltd (and Univ of IL-
Chicago)
at Folding Guard Inc.
2035 South Racine (north of Cermak), Chicago, IL*

Neighborhood parking available.
Even better, accessible by public transit!

Learn about the exciting new industry of wind power systems that can go on buildings!

Bil will describe and demonstrate "aerotecture" --
another example of a potential Chicago-based business
in clean energy!

RSVP at www.iseanetwork.org, or
630-260-0424 (ISEA) or
847-274-2155 (Bil Becker)

JOIN US in the common goal of promoting solar/renewable technologies, providing energy education and establishing a sustainable energy network. **Your support today can help provide a cleaner environment tomorrow.** *Dues and contributions are tax-deductible.* ☐ NEW ☐ RENEWAL

Name _____
Address _____
City, State, Zip _____
Home Phone _____
Work phone _____
Email _____

- ☐ \$100 Annual Business Membership
- ☐ \$30 Annual Family Membership
- ☐ \$25 Annual Individual
- ☐ \$20 Annual Student
- ☐ \$20 Annual Senior
- ☐ An Additional Contribution of \$ _____

Please make your check payable to "ISEA" and snail mail it with this membership application to

Illinois Solar Energy Association

P.O. Box 634

Wheaton, IL 60189-0634

ISEA BUSINESS MEMBERS

This listing is provided as a business member benefit and does not imply endorsement by ISEA. However, ISEA thanks these businesses for supporting our common goals of promoting renewable energy technologies and energy education.

Howard Alan Architects 849 Armitage Ave. Chicago, IL 60614 Phone: 773-929-2121 Fax: 773-929-2122 Email: halan@xsite.net www.howardalanarchitects.com	Becker Eco-Design Bil Becker Renewable Energy Engineer 2155 Wolpers Road Park Forest IL 60466 Phone: 262-642-4707 Fax: 708-481-6178 Email: bilbecker@bigplanet.com	Bergey Windpower Co., Inc. 2001 Priestley Ave. Norman, OK 73069 Phone: 405-364-4212 Email: mbergey@bergey.com Web: www.bergey.com
Chicago Dept. of Environment N. Marcia Jiminez Commissioner 30 North LaSalle Street, Suite 2500 Chicago, IL 60602 Phone: 312-744-7606 Fax: 312-744-6451 Email: environment@cityofchicago.org Web: www.cityofchicago.org/enviromet	Davis Caves Construction Inc. Marty and Ruthanne Davis P.O. Box 69 Armington, IL 61721 Phone: 309-392-2574 Fax: 309-392-2578 Email: earthome@daviscaves.com Web: www.daviscaves.com	Divane Bros. Electric Co. 2424 N. 25TH Ave. Franklin Park, IL 60131 Phone: 847-455-7143 Fax: 847-455-7899 Email: divanemail@divanebros.com Web: www.divanebros.com
Energy Environment Inc. Kenneth R. Woods AIA, PE – President 1264 Harvest Court Naperville, IL 60564 Phone: 630-420-1118 Fax: 630-420-1517 Email: casazeus2@aol.com	Environ Inc. Architecture, Design & Planning Susan F. King, AIA Associate 401 West Superior St. Chicago, IL 60610 Phone: 312-951-8863 Fax: 312-951-1719 Email: sking@environ-inc.com Web: www.environ-inc.com	Let the Sun Shine In Steve Graham, Designer/Installer of Alternative Energy Systems 19183 Plow Creek #9 Tiskilwa, IL 61368-9130 Phone: 815-646-4950 or 815-646-4505 sbgraham@plowcreek.org www.plowcreek.org/energy.htm
Thomas A. Gentry Assoc. AIA 122 S. Michigan Ave. Suite 1455 Chicago, IL 60603 Phone: 312-360-0754 Fax: 312-360-0756 Email: mail@thomasagentry.com Web: www.thomasagentry.com	Green Energy Tech., LLC Randy Zaleski 215 N. Washington Unit F Wheaton, IL 60187 Phone: 630-668-0717 Fax: 630-668-1672 Email: rzaleski@greenenergytech.com Web: www.greenenergytech.com	Homestead Specialties Jim Hartley P.O. Box 47 St Charles, IL 60174 Phone: 630-584-8780 Fax: 630-584-9092 Email: JamesHartley@homestead-specialties.com Web: www.homestead-specialties.com
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Philips Lighting Business Group Lighting Electronics Jamie Cleveland, Business Dev. Mgr., Renewable Energy Inverters 10275 W Higgins Rd Rosemont, IL 60018 Phone: 847-390-5102 Fax: 847-390-5058 Email: jamie.cleveland@philips.com Web: www.solar.philips.com	S.N. Peck, Builder, Inc. Neil Peck, President 1647 W. Fulton St. Chicago, IL 60612 Phone: 312-738-2600 Email: npeck@snpeck.com	Solar Gold J. H. Keller P.O. Box 1017 DuQuoin, IL 62832 Phone: 618-303-2100 or 1-866-771-9177 Email: info@solargold.com Web: www.solar-gold.com
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Illinois Solar Energy Association

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Howard Alan, Vice President
Ted Lowe, Treasurer
Bill Lyons, Secretary
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Heliographs is published quarterly by ISEA, the Illinois Solar Energy Association on recycled paper (of course!). Editor: Betty A. Warner. Membership information, updated information, and assistance in locating other resources can be obtained on the ISEA website at www.iseanetwork.org. Comments and questions can also be directed to the Illinois Solar Energy Association, P.O. Box 634, Wheaton, IL 60189-0634, to info@iseanetwork.org or via telephone at 630-260-0424

MARK YOUR CALENDARS!!!!

June 20-22, Custer, WI-- **MREA Renewable Energy and Sustainable Living Fair**
See Details on Page 4 or at www.the-mrea.org

June 21-26, Austin, Texas --**SOLAR 2003 — "America's Secure Energy"**
See Details at www.ases.org

July 12, 11am-2pm -- **ISEA Membership Meeting**, Folding Guard, Inc, Chicago, IL
See Details on page 1 or page 5. Be sure to come!

August 9-10, Oregon, IL--**Illinois Renewable Energy Fair 2003**, co-hosted by ISEA
See Details on page 4 or at www.illinoisrenew.org

October 4, 2003 -- **National Tour of Solar Buildings**
See Details on page 2 or at www.iseanetwork.org

Note to Current Members: To keep ISEA costs low and to save the environment, ISEA does NOT send annual dues invoices. Please check the address label on this edition of Heliographs! If the date on the label is highlighted in yellow, then your dues may be overdue! Use the application on the page 5 to mail your renewal! Thanks!



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