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TALIESIN FELLOWS

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ENERGIZING TALIESIN WEST

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As a youngster, growing up in New York, I had the opportunity to play "sidewalk supervisor" as Frank Lloyd Wright's Guggenheim Museum became a reality. At the time, I knew little about Mr. Wright or his Taliesin Fellows. But what I did know, with absolute certainty, was that Frank Lloyd Wright was giving a very special gift to the people of New York . . . and to me, his sidewalk supervisor.

Fast forward 50-plus years (to 2011), and I found myself sitting at Mr. Wright's desk, in his Taliesin West office, preparing to return Mr. Wright's gift by transforming his 1937 architectural laboratory into a 21st century model for solar-powered energy efficiency.

Energizing Taliesin West

The Energizing Taliesin West project started during 2011, with the goal of demonstrating how older and complex historic buildings can become "net zero" energy users.

At the time, the annual energy bill was approaching an unsustainable \$200,000. Serendipitously, our Big Green Zero® team was developing EnergyActio™ software, an innovative platform for reducing energy bills and carbon footprints in commercial environments. At the urging of Architect and Taliesin Fellow, Brian Spencer, Big Green Zero donated the use of EnergyActio software and the engineering hours required to do a thorough energy assessment.

The Energy assessment findings were exciting. First, we found that approximately one-half of the energy bill could be eliminated through simple and relatively inexpensive energy efficiency improvements. Second, after making those efficiency improvements, the addition of a solar photovoltaic system could reduce annual energy use to a "big green zero" (e.g. solar could pro-

duce electricity equal to 100% of the total annual requirement). Based on those findings, our EnergyActio team proposed pursuing donation of the equipment and services required.

We were both honored and excited when the Frank Lloyd Wright Foundation Board said "Yes" and immediately began soliciting donor partners. To-date, four partners have joined us in Energizing Taliesin West, including First Solar, Inc., Power-One, Inc., Studio Lux, LLC and HomeTech AV Solutions, LLC.

First Solar, Inc.

To kick off the project, during 2011, First Solar, one of the world's leading solar companies, donated and installed a 250 kW (AC) solar photovoltaic (PV) array. Arizona-based First Solar is a premier provider of complete solar PV systems and has developed and installed some of the largest and most noteworthy solar projects in the world. With help from several key suppliers, First Solar custom-designed, donated and installed approximately 4,000 solar panels.

First Solar worked diligently to create a design that enables tour guests to see the impressive solar array, from the road, before they arrive at the Taliesin West historic core - reinforcing the Foundation's commitment to sustainable energy. At the same time, the panels are not visible from anywhere in the historic core - maintaining the historic integrity of Frank Lloyd Wright's desert home and studio.

Power-One, Inc.

Power-One, a world leader in manufacturing solar energy inverters donated the inverters for the First Solar System. Power-One also donated monitoring equipment that enables live-time monitoring and display of the solar system's energy production. The display is located in Anneliese's Bookstore at Taliesin West.

Studio Lux, LLC

Studio Lux, a Seattle-based architectural lighting firm, joined the Energizing partnership to introduce lighting technology that advances the Frank Lloyd Wright Foundation's goals, improves the quality of light in areas of the facility, and most importantly embraces the original design intent while using efficient, sustainable lighting technology.

Studio Lux is performing the lighting design services required to bring historically appropriate 21st century technology to Taliesin West. Studio Lux CEO Chris-

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First Solar Panels installed at Taliesin West
Scottsdale, Arizona
Photo provided First Solar, Inc.



topher Thompson is also working to secure donations of LED lighting from several leading manufacturers.

HomeTech AV Solutions, LLC

HomeTech AV Solutions, in partnership with ELAN Home Systems, designed a 21st century projection, sound and control system for Taliesin West's Cabaret theater. The system brought Mr. Wright's "home theater" back to life with state-of-art energy efficient technologies.

Results To-Date

The first three Energizing Taliesin West projects, completed during 2012, included 1) extensive modification of the LP gas system, 2) installation of a 250 kW First Solar PV system, and 3) a detailed lighting survey in preparation for installation of LED lighting. To-date, our donors and partners have invested equipment and services valued at approximately \$1.5 million.

During the June 2012 through March 2013 period, these projects reduced gas and electrical bills 38% (to a total \$101,360 versus \$163,073 for the corresponding period during 2010). Electrical consumption for the period decreased 364,200 Kilowatt Hours (45% versus same period prior year).

What Happens Next?

Working with the Frank Lloyd Wright Foundation and historic preservation specialists, we are cur-

rently exploring innovative fabric roofing materials that retain historic daylighting qualities while adding insulation value.

Additional next steps under consideration include extensive LED lighting retrofits, installation of monitoring equipment and controls, and extensive HVAC improvements, including geothermal. We will also be considering a wide variety of new, emerging energy efficiency technologies and products as donations become viable.

Speaking to "what happens next," Frank Lloyd Wright Foundation CEO, Sean Malone notes that "This is an extraordinary opportunity to make a world-famous National Historic Landmark entirely self-sustaining. It is unprecedented. The endeavor will have a broad and deep impact for sustainability efforts throughout America and across the globe. And, importantly, the initiative is entirely consistent with the values of Taliesin West: innovation, an evolving site, embracing new technology, celebrating nature, and strategic use of resources."

A Final Note

Fifty years ago, Frank Lloyd Wright gave the Guggenheim Museum, as a gift, to New York City . . . and to me. Today, I am deeply grateful for this opportunity to thank Mr. Wright by partnering with the Frank Lloyd Wright Foundation to make Taliesin West a 21st century model for energy efficiency.