INNOVATIVE ROOFING INSPIRES SOLAR ENERGY COLLABORATION

BY NATASHA BIASELL

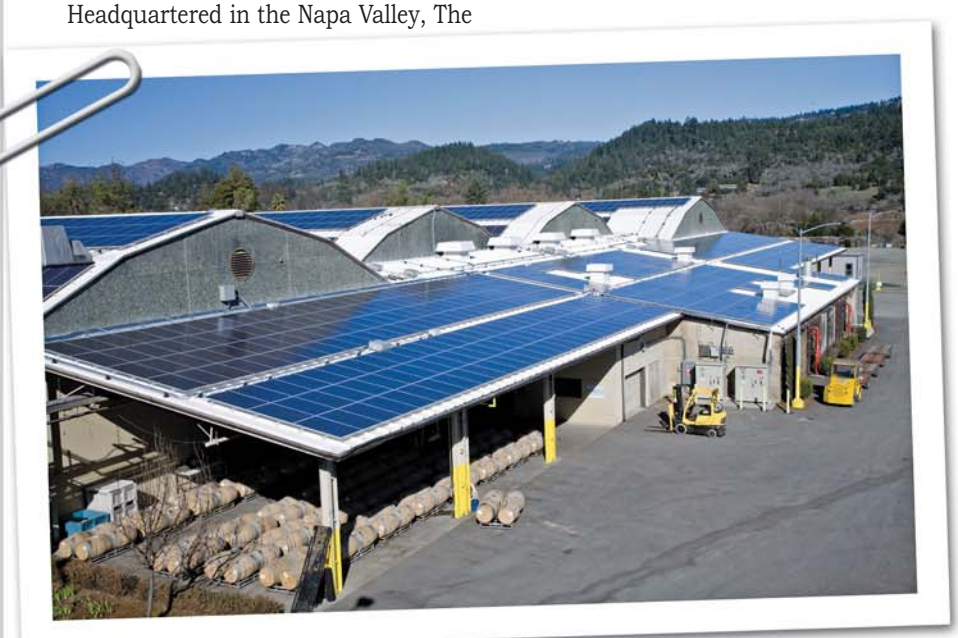
Aerial view of the solar installation at Asti Winery in Cloverdale, CA.

The Solar Evolution

The success of the wine industry can be credited largely to one vast, natural resource: the sun. The flavors, aromas, and overall intensity and varietal character of each wine are directly influenced by the vineyard's climate, soil, and weather conditions – all of which are affected by the sun. Within the past ten years, the sun's impact on United States wineries has evolved to a whole new level with the installation of solar energy panels helping to power those facilities. The sun is now relied on not only to produce ripe, full-bodied grapes, but also to generate solar power, renewable energy certificates, and carbon credits. As the solar energy movement evolved, a company deep in wine country recognized an ideal opportunity for growth.

Headquartered in the Napa Valley, The Bright Group, Inc. began searching its local market for solar roofing opportunities and in the spring of 2007 was asked to evaluate the roofing program at Foster's Wine Estates. The parent company, Foster's Wine Estates Americas, owns nine wineries throughout California, four of which are in the Napa Valley. Upon evaluation, The Bright Group was able to propose and negotiate a collaborative solar roofing system at Beringer, Stags' Leap, and Etude Wineries in the Napa Valley, as well as at Asti Winery in Cloverdale, CA.

Michael Bright, president of The Bright Group, noted, "They needed new roofs, and we were able to package a high-performance, solar-ready system which will outlast the industry standard 25-year warranty for solar panels. It was a win-win situation for everybody involved, including the environment."



Roofline view of the solar installation at Beringer Vineyards in St. Helena, CA.

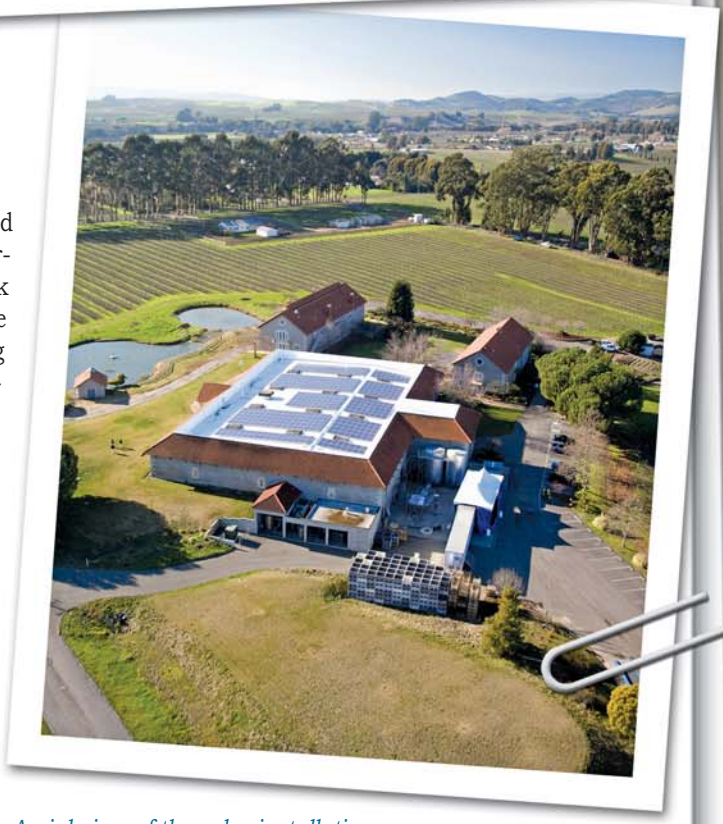
Creative Collaboration

The collaborative solar energy system at Foster's occupies a combined 400,000 sq ft of total rooftop structures. Beringer Vineyards hosts a 1,341,200-watt DC solar

energy system, the largest operational solar installation at a winery in the country. Additionally, Beringer's sister winery at Asti, home to brands Souverain and Cellar No. 8, hosts the third largest system of its kind, producing 1,152,144 watts DC. All four active rooftop installations will generate 3.85 million kilowatt hours (kWh AC) of energy annually.

In addition to the combined construction, financing of the solar energy project at Foster's Wine Estates is also a unique, collaborative effort. Foster's purchases the energy generated by the system from Perpetual Energy Systems (PES), which combined conventional financing and federal energy tax credits to finance the solar project. PES owns the solar array as well as the renewable energy certificates and carbon credits determined by the system's actual output. Foster's will host the system for a 25-year term and will have access to renewable energy at a reduced rate for each of the sites for the duration of the relationship.

Solar panels are installed at Beringer Vineyards in St. Helena, CA.



Aerial view of the solar installation at Etude Winery in Napa, CA.

Roofing Challenges

The multiple rooftop structures at the four separate wineries each harbored its own set of challenges. The Etude site had capsheet (granular-surfaced) roofs, Asti had both capsheet and metal roofs, Beringer had capsheet, metal, and TPO (60-mil thermoplastic olefin) roofs, and Stags' Leap had all metal roofs that had to maintain their existing dark green color to match the vineyard surroundings. The Bright Group needed to find proven roofing systems with 25-year warranties to work with all the various rooftop structures.

Executives traveled the country from California to Florida and Michigan to research and evaluate various solar arrays, products, and methods of installation. Thin-film panels for lamination on a single-ply membrane were reviewed, but the cost and lack of installation history forced the team to look at alternative products and methods of installation. After months of research and evaluation, the company decided on two products: one for the metal and TPO roofs, and one for the capsheet roofs.

The capsheet roofs at Beringer, Etude, and Asti wineries utilized Bright NRG-45, a polyester-reinforced hypalon or CSM membrane manufactured by Burke Industries. The product is made from a chlorosulfonated polyethylene (CSPE) and is backed by a 25-year warranty and a proven track record of durability. Before installation, the existing roof assemblies were surveyed for moisture to identify wet areas, and the Burke Vac-Q-Roof system was used because of its ability to provide exceptional wind-uplift capability and to expel moisture in the existing substrate. Quarter-inch DensDeck® Roof Board was utilized as an overlay board to maintain fire ratings and to provide a smooth surface for the Burke Hypalon®.

On the metal and TPO roofs at Beringer, Stags' Leap, and Asti, the surfaces were power washed with a concentrated, environmentally friendly detergent by United Coatings. The seams and fasteners were treated and caulked with either Uni-Tape or Roof Mate Butter Grade, a high-tensile acrylic sealant, also by United Coatings. After the existing roofs were cleaned and prepped, United Coatings' Roof Mate was applied in three passes at 1.5 gallons per pass per 100 square feet. Bright SLR-HT, a modified, high-tensile acrylic with a high-gloss finish manufactured to The Bright Group's specifications by United Coatings, was then applied at 1.5 gallons per 100 sq ft for a total of six gallons of coating per 100 sq ft with an average nominal mil thickness of 50 mils. At the Stags' Leap site, United Coatings's KYMAX (a specially formulated high-gloss blend of Kynar Aquatec and acrylic paint designed for color fastness and resistance to dirt buildup) was applied in order to match the existing green color and vineyard surroundings.

Aerial view of the solar installation at Stags' Leap Winery in Napa, CA.

Completed roofs, standoffs, and solar racking system prior to panel installation at Asti Winery in Cloverdale, CA.

The Bright Group enlisted D.C. Taylor Co. as the roofing contractor for the entire Foster's roofing project. Headquartered in Cedar Rapids, Iowa, with a regional office in Concord, California, D.C. Taylor Co. is a commercial and industrial roofing contractor with 60 years of experience and more than 60 roofing and service crews across the nation. Due to strict time constraints set by the wineries' annual crush season, the 400,000-sq-ft project began in August 2008 and finished in September 2008. D.C. Taylor Co. employed ten separate crews totaling 55 workers from across the nation to complete the 15,000-man-hour project within a 30-day timeframe.

"We couldn't be more pleased with our decision to bring D.C. Taylor Co. on board with this project," said Bright. "This was a large-scale, complicated roofing project with difficult time constraints, and D.C. Taylor Co. rose to the occasion. Thanks to their meticulous scheduling and hardworking crews, the entire project was completed in time for crush, and the workmanship was excellent."

The Future of Green Roofing

In addition to the solar energy system itself, the actual roofs offer several eco-friendly aspects. The roofing membrane is formulated with some recycled materials, developed specifically for the project and approved by the Cool Roof Rating Council. In addition to using recycled materials in the original formulation, the membrane is recyclable as post-consumer content when the roof is ready to be replaced. These eco-friendly and innovative roofs are designed to collect potable water or to be pH-neutral in order to prevent groundwater contamination. By salvaging the existing insulation in the roof assembly, the company avoided hauling 611 cubic yards of debris to local landfills. Although LEED certification was not required, there are many aspects of this project that would contribute significantly to point accrual for LEED including manufacturing of the products within 500 miles of the construction project.

The Bright Group brought in SolarNet to coordinate and codevelop the project, and Stellar Energy Solutions was recruited to serve as the engineer and general contractor for the installation. After completion of the new, innovative roofs at all four winery locations, standoffs for the solar racking system were installed. The completed solar energy system, activated in January of 2009, will generate enough energy to eliminate two million pounds of carbon dioxide (CO_2) emissions per year from the environment. This reduction is equivalent to removing 183 passenger cars from the road annually or saving more than 150,000 trees.

As the solar energy movement evolves, the roofing industry will rise to meet the needs and challenges of solar energy installations. Historically, advances in technology were driven by the solar industry, but as roofing-integrated solar systems become more mainstream, much of the development is now driven by the roofing industry. New, nonpenetrating methods of attachment are being evaluated as well as the development of heavier, double-reinforced, five-ply membranes for solar installations with the durability to support and withstand the longevity of the solar panel warranties. Other markets, in addition to the wine industry, are recognizing the opportunity in solar energy and utilizing rooftop space to harness the power of the sun. This movement is creating a new area of growth for the roofing industry, catalyzing advancements in product design and installation techniques, as well as bringing a whole new meaning to the purpose of roofs.

Natasha Biasell

Natasha Biasell is the founder and owner of Ivy Public Relations, a boutique marketing and PR agency. After graduating with a B.A. in journalism and public relations, Biasell landed a position with a leading PR firm in Los Angeles and worked on successful PR campaigns for Fortune 500 companies and government policy campaigns for the White House. In 2007, she launched her own public relations consulting business in northern California. For more information, visit **www.ivypublicrelations.com**.