DOW CORNING

Solar
Solutions

BP Solar sees proven performance over 25 years using silicone encapsulant from Dow Corning

Case Study: BP Solar

Photo courtesy of BP Solar. AV13134

CUSTOMER
BP Solar

LOCATION
Maryland, USA

PROBLEM
BP Solar sought a durable encapsulant for its module assembly in 1983.

RESULTS
After 25 years, tests showed sustained high performance and no encapsulant degradation.

With more than 30 years of experience, and installations in over 160 countries, BP Solar is one of the world's leading solar companies. It has manufacturing facilities in the United States, Spain, India and China.

Dr. Jean Posbic, director of Technology Projects, BP Solar, tells the story: "In 1982, the array started at a 200kW nominal power and consisted of 52 parallel strings. Each string contained 60 modules, of 55W to 65W, connected in series. The unframed modules used a silicone resin encapsulation. The whole system was stand-alone using a storage battery until 1987 when the system was converted to an uninterruptable power supply, then in 2000 to a pure grid-tied system."

> *We appreciate Dow Corning Solar Solutions' commitment to developing solutions for the solar industry that will make solar energy an ever-more-viable energy alternative,"*
>
> JOHN WOHLGEMUTH
> SOLAR AMERICA INITIATIVE
> PROGRAM MANAGER

FAST FORWARD 25 YEARS

After 15 years of service, exposed to all types of weather in Maryland, USA, followed by 10 years in storage, BP Solar ran testing to determine how well the modules still performed.

"Some of the modules removed a few years back were brought in and retested and showed little or no electrical degradation," Posbic says. "The array is now being looked at for in-depth makeover in order to ensure many more years of operation."

Specifically, testing showed the panel's power rating performance had only declined by 5 percent over a quarter century.

"We understand that durability is one of the critical factors PV producers and other solar manufacturers are looking for," says Allison Ashbrook, Americas commercial manager, Dow Corning Solar Solutions. "It's worth noting that after such a long time, this panel is in outstanding shape. It's completely constructed out of silicone encapsulation; no back sheet was used. There has been no degradation in the silicone and the panel is still operating as if it were new. This is the kind of durability and sustained performance PV producers require."

CONTINUED COLLABORATION WITH BP SOLAR TO DELIVER INDUSTRY BREAKTHROUGHS

BP Solar and Dow Corning Solar Solutions continue to work on next-generation solutions under the auspices of the Solar America Initiative (SAI). The collaboration encompasses product development that spans the entire photovoltaic (PV) value chain, including feedstocks, frame and junction box sealants, junction box potting agents, cell coatings and encapsulants.

"We appreciate Dow Corning Solar Solutions' commitment to developing solutions for the solar industry that will make solar energy an ever-more-viable energy alternative," says John Wohlgemuth, SAI program manager. "Dow Corning is willing to collaborate closely, attuned to the specific needs and concerns of the industry. They are applying their expertise in silicone technology to meet those needs to accelerate our journey forward as an industry."

THE ADVANTAGES OF SILICONE ENCAPSULANTS

The inherent properties of silicones make them ideal encapsulants.

- Silicones are highly transparent in the UV-visible wavelength region.
- Silicones do not need UV blockers, which allows the UV portion of the light spectrum to reach the cells.
- Because they are virtually unaffected by ultraviolet light or ozone, silicones maintain their performance for decades.
- Silicones retain their integrity and performance even under environmental extremes including high temperatures, corrosion, fire and moisture. Silicone encapsulants prevent degradation over the lifetime of the module.
- Silicones have very good electrical properties and dielectric insulation.

LEARN MORE

Dow Corning has sales offices and manufacturing sites, as well as science and technology laboratories, around the globe. For more information, please visit ***dowcorning.com/solar*** or e-mail ***solar.solutions@dowcorning.com.***

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