



Glass Industry Turning to the Sun

Energy collected from the sun is generally recognized as an essential alternative to fossil fuel sources that, sooner or later, will need to be phased out because of environmental concerns or lack of availability.

One means of measuring interest in solar energy is the growth of worldwide photovoltaic (PV) production. During the last 10 years, production has grown at an average annual rate of 40 percent and, in 2007, it actually climbed 47 percent.

Along with increased interest in solar energy, the methods for reaping this energy are also increasing. In addition to PV production, glass plays (and will continue to play) a crucial role in “concentrating solar power” and in other state-of-the-art solar-energy production methods.

The United States, however, is considerably behind several other countries in PV and CSP installations (as a percent of total energy) and in utilizing glass made in this country within these installations.

Recognizing that the production of solar energy represents jobs for U.S. workers and business opportunities for this country’s glassmakers and related industries, the Department of Energy initiated a program to explore solar energy in late 2007. The intent of this program is to understand the specific types of specialty glass that the solar industry requires and to determine

what steps must be taken to optimize opportunities for manufacturing these specialty glasses.

The reality is – most solar-power systems use glass products, and these products have special requirements: high transmissivity for PV; high reflectivity, coating-delamination resistance and special geometrical shapes (bent glass) for CSP; and low soiling for both PV and CSP systems.

In addition, PV glass for thin-film modules often requires one or more transparent conductive coatings to facilitate collection. Borosilicate glass is required for some thin-film PV technologies because of its higher working temperature (compared with the more conventional and less expensive soda-lime glass).

A key question, however, is whether the formulation and fabrication of glass to provide these specialty functions can be done in the United States on a commercially viable basis. In April 2008, approximately 60 representatives of the glass and solar-energy industries came together for the first-time in Golden, Colorado, to discuss this and other critical questions.

Both sectors realized very quickly that they lacked a full understanding of each other’s capabilities and challenges. (A workshop report can be found on the GMIC website. Workshop agenda and presentations are available at energetics.com/glassandsolar08/agenda.html.)

This led to a requested follow-up “tutorial” in late May, where both sides introduced each other to their respective business needs and manufacturing methods. (Papers from the May session will be available soon on the GMIC website.)

These meetings have led to an important realization. Strong, thin glass is extremely important to the solar energy industry. Because solar panels are normally installed by hand, weight has traditionally been a size-limiting factor. Strong, thin, light-weight glass creates the possibility of larger solar panels – and this is a real plus to solar entrepreneurs. Add flexibility to glass, and the door opens to even more PV application possibilities.

Readers of this column know that the GMIC has given substantial priority to strengthening glass to a reasonably high percentage of its theoretical upper limit (2 million psi).

Now, however, the chance to take advantage of the growth opportunities offered by the solar-energy industry present an even more compelling reason for a focused initiative to achieve greater strength in glass.

Discussions in a number of venues are underway on this topic. The GMIC will be supporting research projects and conferences to discuss glass strength and the increased use of glass in solar initiatives in the United States and elsewhere. If you have an interest in learning more or in participating in the effort, please contact us.

Michael Greenman, Executive Director
Glass Manufacturing Industry Council
tel 614-818-9423
fax 630-818-9485
mgreenman@gmic.org
www.gmic.org