



## Energy: Addressing rising prices and carbon constraints

Although fuel prices have moderated significantly, there is general agreement that this is not a permanent situation. Prices inevitably will rise again when the business climate eventually improves and demand is restored. In addition, there is general agreement that finding and accessing new fossil fuel sources will be problematic. Thus, identifying alternative sources of energy and new methods to reduce our industry's energy use must be a high priority for the glass industry.

Last November, following the Glass Problems Conference, the GMIC hosted its second energy-themed workshop, "Alternative Energy and Energy Efficiency." The presentations covered a range of topics, and the following is a brief description of subject matter and primary conclusions:

Praxair Inc.'s Len Switzer spoke of alternative fuels, including coal and biomass gasification, petroleum coke, producer gas, coal and landfill gas. Switzer reported that researchers are refining combustion system designs in search of greater efficiencies. He added that waste heat recovery should be a priority focus for our industry globally. Optimum solutions, he emphasized, will be found by glassmakers working with vendors and institutions, and by being open to learn from other industries.

Albert Calderon, president of Energy Independence of America Corp., introduced the industry to a specific superior approach to coal gasification. Calderon's Integrated Gasification Combined Cycle technology poly-generates low-cost power and yields methanol, gasoline or synthetic natural gas of pipeline quality as byproducts.

Calderon claims that the process can use any coal, including high sulfur coal. One final feature of such a system is that it can convert the flue gas containing CO<sub>2</sub> to a low-cost fertilizer, thus eliminating carbon capture and storage altogether.

Another alternative source gaining attention around the country is landfill gas. Tony DiPuccio, vice president of SCS Engineers, advised that more than 455 LFG energy projects around the United States are generating electricity or providing a direct-use energy source for kilns, boilers, furnaces and other applications. Another 550 landfills are viable candidates for project development that could add more than 1,300 MW of electricity or provide nearly 700 million cubic feet of LFG per day.

### Waste not

Waste heat recovery already is a major area of interest for preheat cullet and batch. But, why not take it a step farther? Dan Wishnick, industry manager for Siemens Energy and Automation, proposed a "Glass Factory as a Power Plant" concept, extracting electricity from the heat emitted by exhaust stacks, and then feeding it back into the national grid. Unfortunately, many states have technical and regulatory limitations on "net metering" and distributed generation.

Alternative energy investment capital is limited today, but Russ Meeker, principal of Renewable Concepts and Design LLC, argued that some alternative energy systems can pay for themselves through a variety of power purchase agreement options. PPAs can be negotiated to provide turnkey services with no up-front costs and savings that are shared over the life of a contract.

### Flexible future

Douglas Davis, senior glass technologist at TECO, rounded out the day's

presentations with a stimulating presentation, "Being Ready for Alternative Fuels." His idea is that during the next 10 years, we will see many changes in type and cost of energy sources. Davis suggested that glassmakers begin now to build in the ability to switch from one energy source to another according to short-term variations in availability and cost in order to take advantage of pricing and availability differentials.

Davis suggested some simple modifications of furnace design that could build in fuel flexibility. One of his suggestions is under-port firing instead of side-port firing, and he asserted that "under through-port firing" might be even better. A flexible firing control system might permit alternating use of fuels with varying Btu content, with caloric monitoring linked to adjustable controls.

Work surely needs to be done to make these changes feasible, but the possibility is clearly there, should future fuel realities make them desirable. The day could come where solar or wind farms become significant resources for powering electric-boost or all-electric furnaces. These possibilities may (or may not!) be in the distant future.

Davis suggested that now is the time to get "Energy Flexibility" on your company's agenda. He concluded, "Your money man won't like it much now, but he will love you in 2020."

A CD highlighting these presentations is available from the GMIC at a cost of \$25.00 for GMIC members and \$35.00 for nonmembers. Visit [www.gmic.org/pubs.html](http://www.gmic.org/pubs.html) to order your copy.

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