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The Search for Energy Efficiency

Rising (and volatile) energy costs are rapidly becoming a serious concern for glass manufacturers around the world. After aluminum, we are the most energy intensive manufacturing industry in terms of energy use as a percentage of manufacturing costs. Changes in energy costs directly impact the bottom line—and quickly!

For this reason, the GMIC hosted an energy workshop in Columbus, Ohio, on the day following the conclusion of the GPC (18 October 2007). More than 100 industry professionals from 10 countries stayed over after the three-day conference to hear speakers from six countries give presentations on

a broad range of topics. Here's a brief look at the topics covered: **Ruud Beerkens (TNO): Energy Efficiency of Glass Furnaces and Application of Batch & Cullet Preheating**—The positive impact of using these technologies on overall efficiency, quality and productivity has been clearly demonstrated in a number of furnaces in Europe and in the United States. Ruud provided details on the relative effect of different technology approaches involving varying percent-ages of cullet content.

Erik Muijsenberg (Glass Service): Intelligent Glass Melting Concept (IGMC)—Fiction or Reality?—New melting concepts involve risks and uncertainties and cannot be quickly implemented. The IGMC uses a number of diagnostic, analysis and modeling techniques to study the detailed operations of existing furnace designs to produce evolutionary furnace improvement leading to a furnace that operates at its maximum technical capability. Erik provided practical examples with real glass production data.

* **Steve Mighton (Owens Corning)** and **Kevin Cook (Eclipse, Inc.): Oxy/Gas Combustion in Fiberglass**

Front Ends—This update highlights the impact of two different styles of oxy-firing technology on furnace results. Gas consumption reductions of up to 64% have been recorded along with reductions in capital costs and increases in operation savings

* **Marc Blanchard (Owens Corning): U.S. DOE Assessments and Energy Projects at Owens Corning**—Assessments under the DOE's "Save Energy Now" program are ongoing. Owens Corning has made good use of the program and Marc described the energy savings benefits that have been derived from this program as well as the company's overall structure and processes for obtaining energy savings throughout the organization.

Derek McCracken (Prince Minerals) and **Anand Sheth (Talison Minerals): Economic & Environmentally Advantageous Glass Batches Formulated with Spodumene**—Lithia (Li_2O) in glass batches has been shown to reduce 310% of energy consumption, about 4% in combustion gas emissions and increase in the melt to pack ratio by 210%, thus achieving improvement in the process efficiency.



Levent Kaya (*Sisecam*): **Heat Recovery Examples at SISECAM**—This company uses a variety of heat recovery technologies to suit different needs and seasons. Heat recovered in the form of steam is used for space heating in winter months. Absorption coolers supply chilled water for fiber winding stations' air conditioners, and steam turbines generate electricity that can be directly returned to the production process.

Niels A. Rozendaal (*OPTIMUM Environmental & Energy Technologies b.v.*): **Heat Recovery on Float Furnace**—A waste heat boiler with Automated Pipe Cleaning System (APCS) is used in a Dutch float glass plant that has a steam capacity of 10,000 kW (34 MM BTU/hr) and has had an ROI of significantly less than a year. Next step is installation of a steam turbine generator set.

Rodney Rossow and Shahla Keyvan (*Enterprise Energy & Research*): **Visual Intelligent 3D Temperature Analysis System**—“VITAS” 3D temperature profiling and analysis minimizes fuel consumption by avoiding operating above minimum required temperatures and yields estimated energy savings in the 5 to 10% range. A unique “lease-to-own” program installs the equipment at no charge with payments based on monthly energy savings.

* **Kevin Moss**, (*TriMer Corp*): **Heat Recovery, Air Pollution Control, and CO₂ Reduction—an Integrated Approach**—The TriMer Approach demonstrates the advantages of heat recovery in conjunction with air pollution control and CO₂ reduction strategies.

Dan Wishnick, John Salkas, (*Siemens Energy & Automation*): **Energy, Sustainability and the Glass Industry**—A review of the role of automation and sensors in an integrated approach to energy reduction. Waste heat recovery was also reviewed as another technique to mitigate the rising cost of energy and to enhance environmental sustainability.

These presentation (except those marked with *) are available in CD from GMIC Cost (including shipment) is \$25/35 (members/non-members). Order from Donna Ransom:

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