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PANEL

Green Forum: Chicago 2014

A roundtable discussion moderated by Chris Clarke and Julie Conway

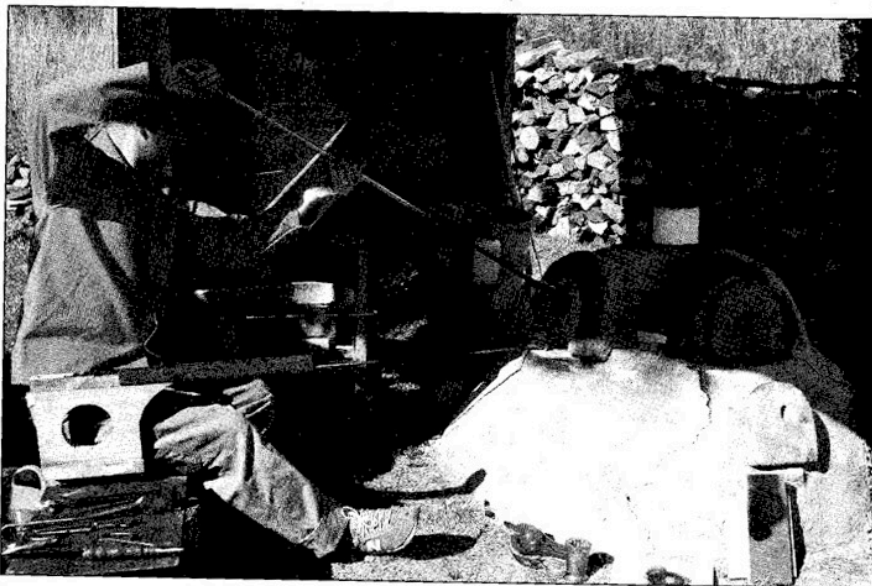
Since 2007, GAS has hosted the Green Forum, a panel discussion that focuses on how glassmakers can use less energy and save money in our fuel-intensive industry. At the 2014 Chicago gathering, Chris Clarke, director of operations at Pittsburgh Glass Center (PGC), and Julie Conway, founder of BioGlass.org, co-moderated the Green Forum. The forum was set-up as a roundtable discussion and felt more like a community gathering than a traditional panel presentation. More than 60 glass artists, inventors, equipment builders, studio managers, professors, and business owners attended the forum. The room was packed to capacity, and people were spilling out into the hallway eager to know more about making their glass studio practice more economical and energy efficient.

The Green Forum presentation included information, photos, charts, and graphs of current studio efforts, new equipment, and glass projects that help save energy. In anticipation of the conference, Julie and Chris sent a call for submissions to artists, studio managers, and equipment builders to invite them to come share their latest developments.

Julie Conway began the discussion with a presentation on the history of glass and how BioGlass.org formed by bringing an international community of glass artists together in one place, with a mission to educate and discuss energy issues. Her experiences in Italy, France, and other historical glassmaking centers of the world allowed her to personally connect with glassmakers and hear about their struggles keeping up with operational costs and their fears that rising energy costs could ultimately lead to the loss of their prized glass traditions and techniques. The increasing price of fossil fuels, the closing of factories, and loss of jobs have hurt glassmaking centers in Europe; likewise, studio artists are feeling the pain of high operating costs.

Chris Clarke presented the energy-saving efforts made at PGC including creating thermal cascades from waste heat for the building and other recuperation systems. He explained how daily operation costs decreased due to energy-saving efforts.

Public access studio managers, technicians, and teachers including Chuck Lopez, the studio manager at Pratt Fine Arts Center; Slate Grove, the studio manager at UrbanGlass;



Angus M. Powers working an ancient furnace reproduction at his personal studio in Alfred, New York. This was an in-depth research project about and running an inexpensive glass studio using local and sustainable resources. Photo: Dan Volk

Angus Powers, an associate professor at Alfred University; Ben Sharp; the studio manager at Pilchuck Glass School; and Mary White, a former professor at San Jose State and consultant at the Crucible, all had much to say about their respective programs and all agreed that energy savings equals money savings. Cost is a touchy subject for many educators; some fear that addressing their energy consumption will bring the administration's attention to their final energy bill and risk their program being shut down. However, in the long term, forthright action taken to save energy can help save glass programs.

Recuperation experts Charlie Correll and Eddie Bernard both presented new models for recuperated furnaces and shared their newest discoveries about efficient thermal cascades made from waste heat. Using recuperated glory holes and furnaces can save energy by capturing lost heat and feeding it back into the system.

Eddie Bernard also displayed a damper flue system that make furnaces more efficient and discussed a hot water heater exchange that uses the heat lost from the glory hole. "The flue damper system works by measuring the pressure inside the flue and then opening or closing proportionally to maintain a stable pressure in the furnace. When the furnace goes to high fire, the pressure inside the

furnace rises and the damper opens. When it goes to low fire, the pressure drops and the damper closes. Anywhere between low and high fire will cause the damper to be somewhere between open and closed."

Hugh Jenkins and Jordan Kube submitted their recent side-by-side test of a recuperated versus non-recuperated glory hole, built last year. Their test results demonstrated a 50% energy savings when using a glory hole with recuperated heat.

Julie took a moment to honor Durk Valkema and his father Sybren for spearheading many modern energy savings concepts and practical furnace building techniques. Many artists and inventors are greatly indebted to the Valkemas' legacy.

Christian Thornton from Oaxaca, Mexico, is running a glass production studio where a methane digester miraculously provides electricity to his village while also running the equipment of his glass studio. He uses a triple-fuel burner system that utilizes methane gas, vegetable oil, and propane to melt his recycled glass batch. The studio also has a multi-port work station that many people can use at once, which only relies on a single fuel source.

Garrett Wheeler represented Green VI, a local program in Hawaii that is cleaning up the streets by recycling the discarded glass in the hotshop, alongside other trash clean-up

efforts. The hotshop uses waste vegetable oil as fuel and provides work to local residents.

Timm Muth, from Jackson County Green Energy Park in Sylva, North Carolina, shared the latest news about their vegetable oil ceramics kilns, in addition to the use of recovered landfill methane gas and other clean energy resources as fuel for a blacksmith forge, glassblowing furnace, and kilns.

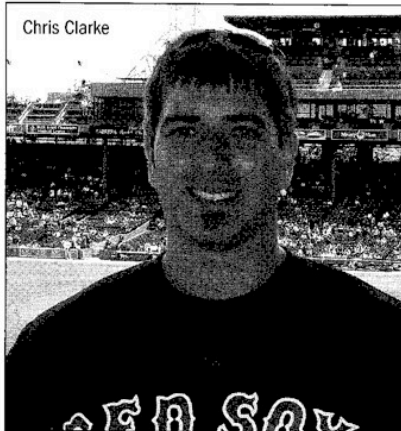
Salem Community College is operating with methane gas as a supplemental fuel to run their hot shop. The future of glassmaking is going to depend on the progressive education of young glass artists, and their understanding of glass as an art form as well as the resources needed to create it.

Ed VanDijk submitted photos of a wood-fired glass furnace, based on ancient Roman furnace building techniques. It was amazing to fathom that for thousands of years glassmakers have been making incredibly beautiful glasswork without the use of electricity. Angus Powers also uses a furnace based on ancient Roman techniques to demonstrate energy use to his students at Alfred University.

Hugh Jenkins and Pablo Soto have made giant energy-saving strides in their own individual studios by adding solar panels and hot water heat exchange systems. It was inspiring to see these individuals adapt their own equipment to decrease their overhead costs.

Brian Kerkvliet, from Washington State, has been running flawlessly for the last six years. His concept is to utilize a low flow down draft system that maximizes heat recovery of exhaust gasses while minimizing the flow of the incoming air. As a result, the furnace idles at almost off and sounds like it is off; low noise and a low fuel bill.

Here was a lovely comment from Ed Schmid, author and illustrator of the *Glassblowing Techniques* book series, "I really enjoyed your presentation at GAS. As tough as it is to cram all of that info in with such



Chris Clarke

a short time frame, you did the best job of organization and moved through the info better than anyone I have ever seen at any conference I have been to. Congratulations!"

There was definitely too much information to cover in such a short allotment of time, but we hope the audience will continue to grow and share their knowledge with one another.

Julie Conway has made an effort to organize these discussions on the GAS website, Blogglass.org, and a Facebook discussion page. Glass artists are now sharing ideas internationally and helping inspire each other to take energy saving steps in their studio practice.

There were many more topics and amazing energy-savings techniques that were not presented due to time constraints.

Questions for Next Year's Green Forum

What does efficiency mean? For some, increased efficiency is simply decreasing energy costs. For others, it's increasing the ratio of creative output to operating costs.

What if there was an independent organization which could analyze, rate, and certify a hot shop as "energy efficient" based on a set of published, well-defined standards (basically a LEED standard for hot shops)? Could GAS play a role?



Julie Conway

What kinds of things could GAS do to support bridging the information gap between the equipment experts and the hot shop operators?

Chris Clarke has been the Director of Studios and Technology at the Pittsburgh Glass Center since the opening in October 2001. He is responsible for the management, usage, maintenance and improvements of the PGC facility and its technology including computer and phone systems, HVAC, and all studios including two 1,000 lb. furnaces, eight glory holes, and over 30 kilns. Chris received his BFA in sculpture from Massachusetts College of Art in Boston and an MFA in Glass from Kent State University in Ohio. He received the Creative Glass Center of America Fellowship in 2000. Chris has worked as an artist, metal fabricator, and craftsman for over 15 years, and his work has been exhibited at museums and galleries across the country. When he is not in the PGC studios, you can find him either restoring his 1910 Arts and Crafts home or fly fishing in Pennsylvania's beautiful streams.

Julie Conway is a glass artist and the founder of BioGlass.org. She works in a community studio and shares resources to create her glass art. She, along with other concerned glass artisans, are creating bridges for alternative renewable heating technology and glass melting needs, resulting in a positive environmental impact and savings for glass studios. "As a contemporary glassmaker, I believe that we need rapid and creative responses to the current human and environmental challenges. By introducing innovative ideas that apply to our needs as glassmakers and working together as a global community, we can find solutions for success that save money, time, and energy – in essence, becoming more sustainable."

