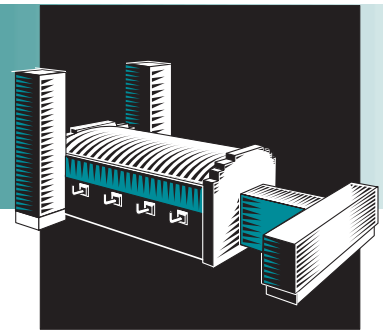


# GLASS

Project Fact Sheet



## INTEGRATED BATCH AND CULLET PREHEATER SYSTEM

### BENEFITS

- Reduced consumption of fuel and oxygen by 25 percent in oxyfuel glass furnaces
- Increased glass furnace production (up to 25 percent)
- Improved overall glass production costs
- Increased furnace longevity

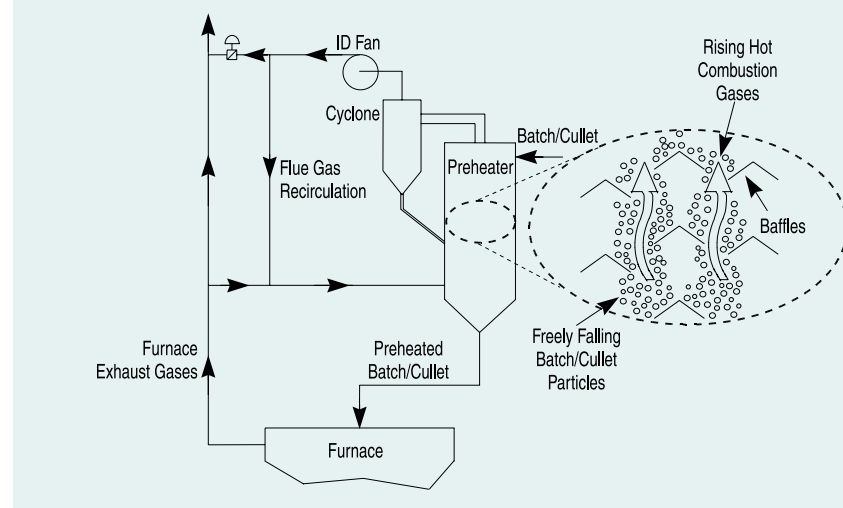
### APPLICATIONS

This project is a commercial demonstration of energy recovery from an oxyfuel-fired glass furnace. Commercialization of the technology will involve making it available to glass manufacturers throughout the industry.

## RAINING BED BATCH AND CULLET PREHEATER TECHNOLOGY WILL IMPROVE THE ECONOMICS OF OXYFUEL GLASS MELTING

Batch and cullet preheating technology plays an important role in the evolution of glass furnaces to improve industry competitiveness. The Raining Bed Batch/Cullet Preheater is a heat exchange system that preheats the glass furnace charge with hot flue gases. Batch/cullet is fed at the top of the preheater and “rains” through the heat exchanger. The batch/cullet particles are deflected by internal baffles and are in direct contact with rising hot flue gases. Laboratory testing by Corning, Thermo-Power, and Praxair demonstrated preheating soda-lime batch/cullet to greater than 1000°F. At 1000°F, batch/cullet preheating recovers approximately 0.5 MMBtu/ton of glass produced to the glass melting process. The recovered energy allows glass producers to reduce furnace utility operating costs (fuel and oxygen) or boost furnace production, thus reducing the unit capital cost of producing glass.

### SCHEMATIC OF THE RAINING BED BATCH/CULLET PREHEATER SYSTEM



**Raw materials entering the furnace are preheated using the exhaust gases leaving the furnace.**



## Project Description

**Goal:** Commercially demonstrate the Raining Bed Preheater technology to preheat glass batch and cullet in order to improve the overall economics of oxyfuel glass melting.

The project consists of two commercial demonstrations of the batch/cullet preheating system. The first installation will be a retrofit on a 15 ton per day (TPD) alumina-silicate glass furnace. Information from this installation will enable the researchers to design future systems for technical and commercial success. The preference for the second installation is a 100 to 200 TPD soda-lime glass furnace.

## Progress and Milestones

Five TPD pilot unit - tested for 48 hours at Thermo-Power in Waltham, MA

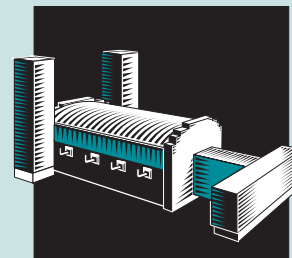
- Successfully preheated soda-lime batch/cullet to greater than 1000°F
- 1300°F gas inlet, 280° to 380°F gas outlet
- Particulate loss leaving the preheater exhaust cyclone was less than 0.02 percent of feed to preheater

Phase I host site: Corning - Fall Brook, NY. Furnace produces approximately 15 TPD of alumina-silicate glass tubing

- Retrofit an existing furnace area
- Completed design of the Raining Bed Preheater in 2<sup>nd</sup> quarter of 1998
- Determined effect of batch/cullet delivery system designs on capital cost of project in 3<sup>rd</sup> quarter of 1998
- Complete fabrication and installation in 1<sup>st</sup> quarter of 1999
- Preheater scheduled for operation in 2<sup>nd</sup> quarter of 1999

Four Phase II host sites are considering this project in 1999

- Target is 100 to 200 TPD soda-lime glass furnace.



## PROJECT PARTNERS

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New York Gas Group  
New York, NY

New York State Energy Research and  
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