

Application Note

Glass Melting

Production of Glass in a Melt Furnace

How can you optimize regenerator airflow and prolong the durability of a melt furnace?

Situation Analysis

Glass production starts with the molten glass at temperatures of 1480 to 1550 °C (2696 to 2822 °F). The batch melts inside the furnace and is freed from gases (refined). Melt furnaces can be either cross-fired or end-fired. Regenerators improve fuel efficiency by heating incoming air and alternating the firing direction.

The temperature of the brick packing in the regenerator columns increases as the heated air from the furnace escapes. When this packing reaches the appropriate temperature, the cycle is reversed and these columns are then used to heat air entering the furnace. For economical reasons, it is absolutely necessary to detect the optimum point in time to reverse the regenerator airflow. The temperature of the bridgewall and the port arch must be measured to optimize the melting process and the furnace durability.



Photo: courtesy of Hüttentechnische Vereinigung der Deutschen Glasindustrie (HVG), Offenbach

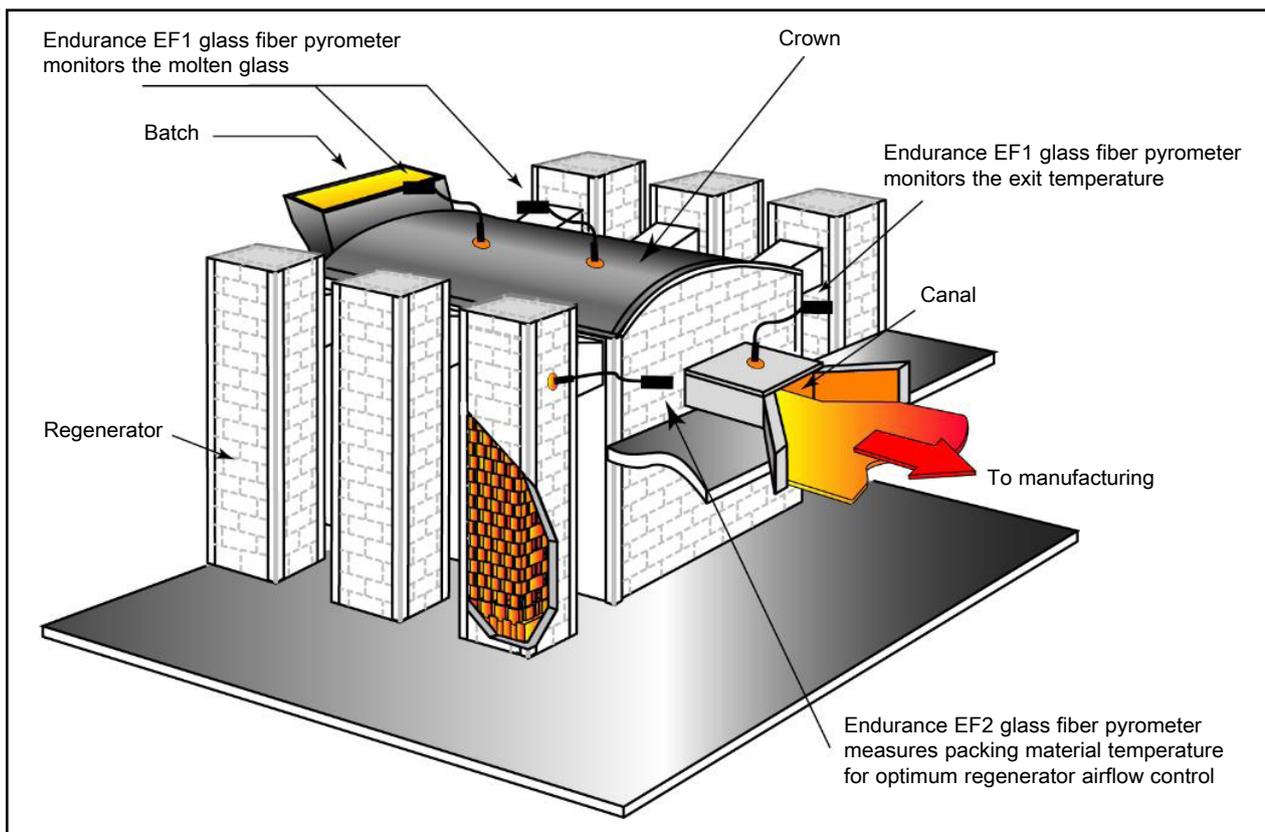


Fig. 1: Temperature Measurement at the Melt Furnace and Regenerators

Solution and Improvements

Recommended solutions for temperature measurement at the melt furnace are:

1. Endurance EF1M for temperature monitoring of the molten glass inside the furnace and at the exit (Fig. 1).
2. Endurance EF2M for detecting the optimum time to reverse the regenerator air-flow (Fig. 1).
3. Endurance E2M for prolonging the durability of the melt furnace by monitoring the refractory temperature at:
 - the Bridgewall (Fig. 2),
 - the Port Arch (Fig. 2 and 3).

The precise laser sighting of the E2M guarantees the temperature measurement of single bricks without being influenced by flames.

Products

- Endurance EF1M and EF2M
- Endurance E2M

Accessories

- Furnace Wall Mount System with flange for Endurance EF glass fiber pyrometers
- Furnace Roof Mount System gravity-held for Endurance EF glass fiber pyrometers
- ThermoJacket for Endurance E2M pyrometers
- Adjustable Mounting Brackets

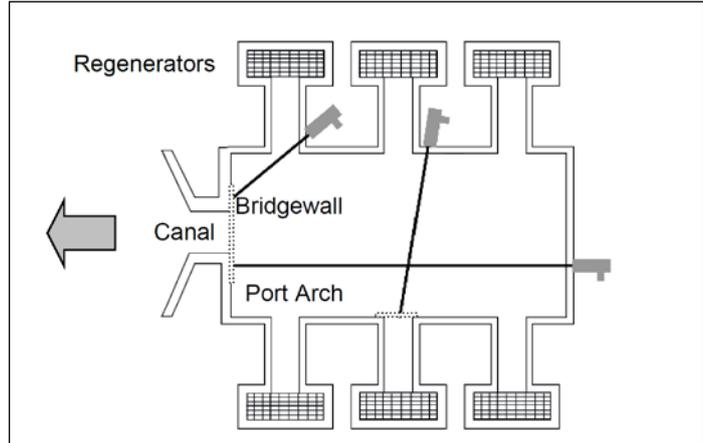


Fig. 2: Measuring Points inside the Melt Furnace

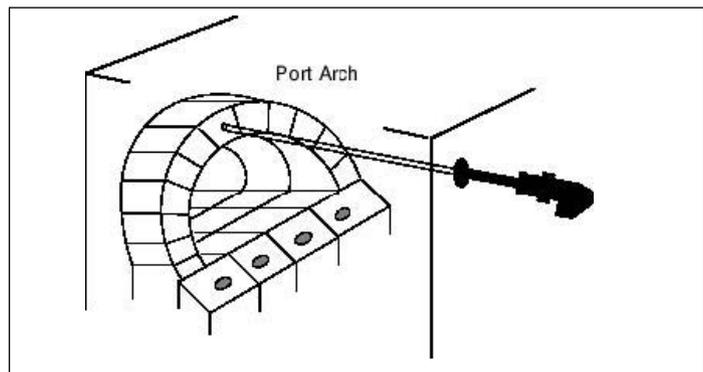


Fig. 3: Measurement at the Bridgewall inside the Melt Furnace

Benefits

- Optimum Regenerator Airflow Control
- Energy Saving
- High Quality of the Molten Glass

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