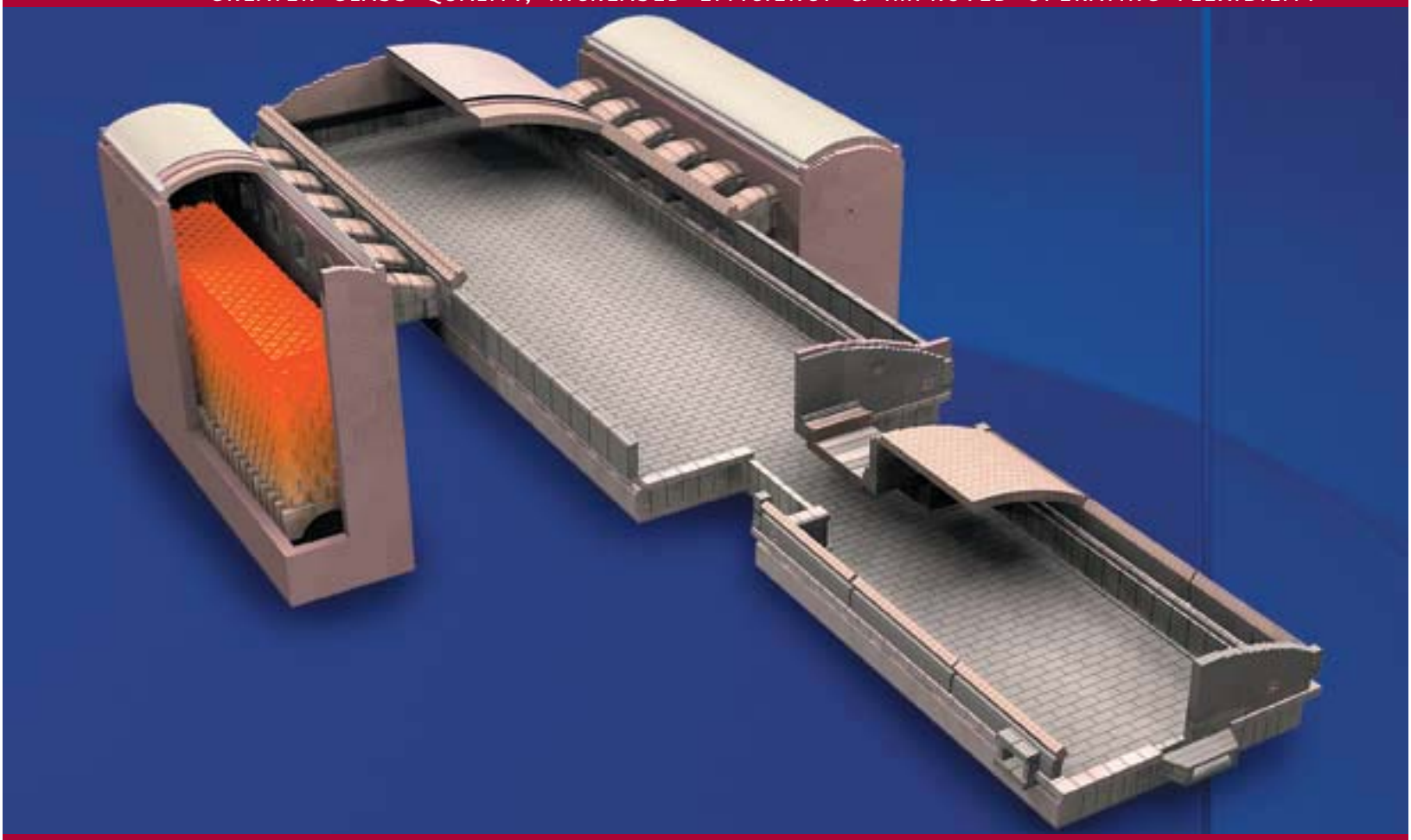
Float Glass Furnaces

GREATER GLASS QUALITY, INCREASED EFFICIENCY & IMPROVED OPERATING FLEXIBILITY



TECO 75 YEARS

- GLASS PLANTS
- BATCH & CULLET SYSTEMS
- GLASS FURNACES
- EMISSION CONTROL
- WORKING END & FOREHEARTHS
- PROJECT MANAGEMENT
- INSTALLATION
- REBUILDS

TECO

ENGINEERING THAT FITS YOUR EQUATION.

The Benefits of TECO Float Glass Furnaces

Long Life – Low Cost Per Ton

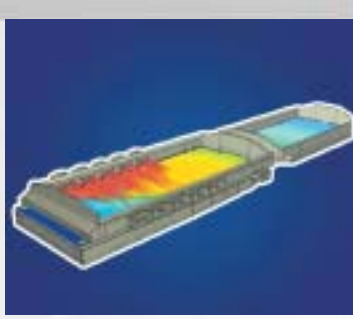
TECO's open regenerator design, incorporating Superflue® technology, has delivered campaigns of more than 16 years. The capital cost savings over a compartmentalized regenerative furnace combined with efficient operation, long campaigns and high pack rates provide the lowest total cost per salable ton. Where circumstances demand a compartmentalized regenerator, TECO's designs minimize the added capital cost without compromising campaign life, energy efficiency or pack rate.

Designed for Performance

TECO's extensive experience and know-how in float glass furnace design, along with performance feedback from the previous 102 furnace projects, provide a high degree of confidence in the use of computer mathematical modeling for optimizing furnace design parameters.

TECO furnaces are characterized by the design from the charger up to Port No. 1. The blanket charger, back wall and port parameters enable fritting of the batch to take place before passing Port No. 1. Slower flame velocity also helps minimize raw material carry-over.

A high degree of glass homogeneity is achieved by good convection flow within the melter and refiner. Stirrers installed in the waist area enhance glass homogeneity.



Computer model assisted design

The Superflue

TECO float glass furnaces are equipped with the patented Superflue system for uniform combustion air and waste gas flow within the regenerator. The Superflue assures uniform checker temperature from port-to-port without the use of division walls. The temperature uniformity is illustrated by the photograph taken under the rider arches immediately after reversal. This temperature uniformity extends checker pack life, improves efficiency and decreases maintenance.

TECO furnaces come equipped with individual port fuel controls for management of the melter temperature profile and hot-spot, by maintaining a specific energy input per port.

Uniform temperature profile under rider arches with Superflue

Glass Color Flexibility

TECO float glass furnaces can be specifically designed for color change. The bottom insulation is easily removed and reinstalled to suit melter bottom temperature requirements.

Furnace Performance/Environmentally Friendly

Furnace performance is at the discretion of the client and the desired method of operation. However, TECO float glass furnaces have been able to obtain 1260° to 1315°C (2300° to 2400°F) combustion air preheat. The average energy performance is 1555 kcal/kg (5.6 MBTU/ton). Today, furnace life is a nominal 12 to 16 years.

The high-quality glass production and long life of TECO furnaces is obtained with a good refractory package and a high-pressure cooling wind system for metal line cooling. Also, a good insulation package minimizes entry of parasitic air, thus allowing furnace operation at a low excess air level. Additionally, the TECO port design optimizes flame geometry and luminosity, thus maximizing heat transfer to the glass. The low excess air, optimized flame geometry and luminosity minimize NOx formation.

Flame photo courtesy of BOC

Isometric of forehearth

Production Flexibility

Glass production flexibility can be obtained with a forehearth system connected to the melter/refiner. The forehearth does not affect normal furnace operation except for the shift of capacity. Pattern and rolled glass are typically made from forehearth-conditioned glass.

Process Integration

TECO is not a manufacturer of materials and equipment and, therefore, is unbiased in its engineering and specifications for a project. Furthermore, TECO is ever cognizant of the interface and integration aspects with the upstream and downstream processes.

The glass melting rate is dependent on raw material characteristics, cullet usage and the glass quality and production requirements.

The furnace design is also compatible with the tin bath by means of canal temperature control via regulation of the dilution air. The glass flow is regulated by the tweel.

545 metric tonnes/day (600 tons/day) float glass batch plant

Batch Plants

TECO batch plants and batch/cullet-handling systems are designed as an integral part of the glass-making process. The quality of the mixed batch produced is commensurate with glass quality requirements. These facilities incorporate the latest in mechanical and pneumatic material-handling techniques and equipment, and are designed and constructed with provisions to conventionally increase raw material storage and mixed-batch output, when required.

At furnace rebuild time, TECO routinely modernizes the associated batch plant.

Cullet Systems

TECO is a designer and builder of cullet-handling systems for the float glass industry. Our scope includes the line breakers, edge trim choppers and collection conveyors that return the cullet to the batch plant or the mat. TECO can also design and build enclosed cullet storage facilities.

End-of-line breaker

Service After Commissioning

All TECO furnace installations are followed closely to assist the client in achieving maximum performance and maximum campaign life.

Float glass

TECO has served the worldwide glass industry for more than 75 years. Furthermore, TECO has proudly served the float glass industry since its inception in 1959. During this period, TECO has:

- Designed and built 56 new float glass furnaces
- Designed and re-built 46 float glass furnaces
- Designed and built 10 turnkey float glass plants

The current total daily production from TECO float glass furnaces around the world is 32,000 metric tonnes/day (35,000 US tons/day).

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