FOREHEARTH COLORING SYSTEM
LEGEND:
1 FRIT STORAGE, WEIGH & DOSING SYSTEM (Shop Floor)
2 FILTER UNIT (Shop Floor)
3 COOLING AND INJECTION AIR BLOWER (Shop Floor)
4 AIR/GAS MIXING UNIT (Shop Floor)
5 DOUBLE STACK BURNERS & MANIFOLD (PRE-HEAT & MELT ZONE) (Forehearth Level)
6 FRIT FEEDING SYSTEM ( Forehearth Level)
7 STIRRERS UNIT (Forehearth Level)
System Description

*The New Revimac Coloring System for glass conditioning Forehearts,* enables the feeding, melting and mixing of the colorant before the final cooling and conditioning of glass. The installation of such a system determines an additional length of the forehearth from 3 up to 6 meters approximately.

**Coloring Area**

It is basically subdivided into the following zones:
- **Pre-heating zone:** its function is to maintain a regular glass temperature that enables the proper melting of the color concentrate. The needed temperature is reached by means of a set of double-stack burners and controlled typically through an optical pyrometer.
- **Melt zone:** this must be long enough to allow sufficient time for the colorant to melt and to exhaust the combustion gases on the glass surface before stirring.
- **Stirrers zone:** it is required to ensure proper mixing of the colored glass.

**Equipment Composition**

**Frit Storage Unit**

It includes one tank of suitable capacity to ensure the frit storage for the pre-determined operation time and is equipped with one chute to convey the colorant into the dosing weigh system.

**Weigh System**

It features one vibrating tube that converts the “batch” weightings into a continuous flow of colorant, upon receiving the signal from a sensor that detects the “empty” status. The colorant is delivered by the gravimetric feeder, an high-precision “weight-loss system” that operates through load cells to weigh and dispense controlled amounts of frit to the transport system. The unit is positioned on the shop floor within easy reach for the operators and reducing potential damages caused by radiating heat and surrounding dust.

**Pneumatic Transport System**

It has the function to deliver the dosed colorant to the feeding unit by air generated through a blower.

**Frit Feeding System**

One cyclone controls the supply rate of the colorant that is conveyed into the feeding system. The excess of frit powder deriving from the process is captured and withheld by one filter unit. The weighed colorant is fed into the forehearth and deposited onto the glass surface. Typically, for this operation, an air-cooled metal feed-tube is inserted through the refractory superstructure. The cooling process is very important to avoid damages to the feed-tube due to high temperatures and to prevent the color melting before its deposit on the glass surface. The temperatures here are usually controlled by two thermocouples, the first to maintain the cooling, the second to maintain the constant melting temperature of the dye.

**Stirrers Unit**

This section is designed to blend the molten color & glass mixture to obtain homogeneously colored glass. The number of stirrer, the configuration of their batteries and the design of the refractory blenders composing the unit depend from tonnage and color of glass to be produced.

**Control System**

The electrical control cabinet is equipped with touch-screen Operator Interface that features the following:
- Supervision & Control of injection and dosing of the colorant (frits or dye concentrates).
- Supervision & Control of temperatures throughout the heating and conditioning process.
- Supervision & Control of stirrer units for rotating blenders speed, direction and torque limit.
- Management of the Alarms System.