GAS MIXING

TECHNOLOGY

innovation
ENGINEERED IN GERMANY

HORN
GLASS INDUSTRIES

GAS MIXING TECHNOLOGY

Shield gas, a mixture of nitrogen and hydrogen, prevents the oxidation of tin in the tin bath. Tin is one of the most important components for the quality of your glass which is produced in the tin bath. HORN offers its customers a complete system for the generation and control of shield gas.

Nitrogen is used in the tin bath for rinsing certain equipment parts or measuring instruments and for cleaning the tin bath arches. This procedure serves to cool and increases the operating life and the maintenance intervals of the tin bath equipment.

Shield gas mixing station

The shield gas mixing station is integrated in a 40' sea container. The container is divided into two areas which are separated gas-tight from one another.

The process chamber contains the two shield gas mixing stations and two nitrogen pressure control stations. The shield gas mixing stations mix the shield gas required for the tin bath. Each shield gas mixing station consists of a main line and a spare line.

The electrical enclosure comprises the switch cabinets for operating the gas stations and for controlling the nitrogen and hydrogen detectors.

For the installation of the shield gas mixing station, a double winged door is provided on the front side of the container. On the back side, a door is installed for accessing the electrical enclosure without having to enter the process chamber.

Nitrogen supply must be kept constant at all times in order to avoid any major impairment of the glass quality and damages to the tin bath. At no time is the nitrogen supply stopped automatically. The nitrogen supply can only be stopped manually.

In case of any leakage inside the container the forced ventilation will be activated to ensure that a sufficient amount of oxygen is available in the container and that any explosive gas mixtures between air and hydrogen will be discharged, if necessary.

Shield gas control station

The shield gas control station serves to control the quantity of nitrogen and of shield gas in the tin bath. Each bay in the tin bath has its own shield gas control station.

The shield gas consists of a mixture of hydrogen and nitrogen which is premixed in a special mixing station outside the factory buildings. The purpose of using shield gas is the displacement of oxygen from the tin bath.

Each shield gas control station contains one controlled system for shield gas supply and one for nitrogen supply, so the current flow quantity can be read off by means of flow meters. Control valves enable manual adjustment of the flow quantities, and shut-off valves facilitate complete shut-off.

Adjustable contacts at the flow meter enable monitoring the minimum quantities of shield gas and nitrogen.

Each controlled system is equipped with a bypass for emergencies.

Nitrogen control station

The nitrogen control station serves for controlling the nitrogen quantity for rinsing the equipment in the tin bath.

In each nitrogen control station there are several controlled systems installed for nitrogen supply. The current flow quantity in the controlled system can be read off at the flow meter.

The flow quantity can be adjusted manually at the control valves. The nitrogen supply can be shut off completely via manual shut-off valves.

Each controlled system is equipped with a bypass which can also be shut off by means of a shut-off valve.

Adjustable contacts at the flow meter enable monitoring the minimum quantities of nitrogen.

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- Individual adjustment of N_2 and H_2N_2 ratio for each tin bath bay
- Optimisation of dew point along the tin bath
- Cost effective dosing of the relatively expensive H_2 gas

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