Argon/Chlorine gas mixer
from LT GASETECHNIK

Gas mixer for Chlorine in Argon (Ar/Cl_2) from LT GASETECHNIK:

Both Gases, Argon (Ar) and Chlorine (Cl_2), are fed to LT GASETECHNIK's Gas Mixer in a gaseous phase. To this effect, gaseous Chlorine must be kept at all times at min. 5°C above saturation temperature, and in addition, Argon must be delivered at a temperature level ≥15°C. LT GASETECHNIK can as well heat the gases at the inlet of the gas mixer to the desired temperatures.

Design

Typical inlet pressures are 6 to 10 barg. To keep the temperatures above saturation temperature during the gas mixing process, the mechanical section of the Gas Mixer cabinet is temperature-isolated and actively heated to min. 30 °C in an aim of preventing condensation of Chlorine in the pipes downstream the Gas Mixer. At the same time, this measure contributes to avoiding the formation of "Chlorine Butter".

At inlet of the Gas Mixer each Gas pipe includes a fine-pored filter. Solid particles that might be suspended in the Gases are reliably retained by these filters. The Argon pipe at inlet, up to the argon pressure regulator, is made of copper. The remaining piping equipment (remaining Argon pipe, Chlorine pipe, mixing chamber, outlet pipe for Gas Mixture, as well as all fittings in this section) are made of stainless steel.

Adjusting the mixing ratio

The carrier gas amount Argon and the additive gas amount Chlorine are controlled by MFC (Mass Flow Controller) to obtain the desired mixing ratio. A typical mixing ratio is e.g. 5% Chlorine in Argon. Typical mixed gas volumes depend on individual customer requirements and vary from 1 to 60 standard cubic meters per hour.

The gas mix pressure can be adjusted manually at outlet of the gas mixer (e.g. adjusted between 3.0 and 4.0 barg)

Settings for the desired Chlorine concentration in gas mix are entered on a touch-screen control panel, suitably arranged on the control equipment's cabinet behind a lockable door. The mixing ratio is e.g. adjustable from 0.5 to 7.0 Vol% (Cl_2 in Ar).

On top of the mechanical section there is an additional cabinet holding the control and analysing equipment. It is electrically connected with the electrical instruments inside the mechanical section.
The LT GasAnalyzer tests the concentration of Cl_2 in Ar and shows the value on the screen. If the measured value differs from the set-point the control values for the Mass Flow Controllers are adjusted accordingly.

safe – precise - modular

Cascade-Ratio-Control

Design and programming of the control strategy in every gas mixer from LT GASETECHNIK is proprietary and is called cascade-ratio-control:
The gas flow is measured by the amount of gas withdrawal at outlet. The carrier gas flow rate serves as a proportional indicative for the cascade-based control of the additive gas. At any change of flow in carrier gas, the flow of additive gas is adjusted proportionally.
The gas mixture is continuously analyzed at the gas mixer outlet and the data obtained are used for the continuous adjustment between set values and actual values of the desired concentration. Deviations are used to calculate corrections which are transmitted to the regulating valve in cascade for corrective action.

By controlling the inlet gases with downstream analysis-supported cascade ratio control, a homogeneous and stable gas mixture is produced.

Equipment

The Gas Mixer can additionally be equipped with a gas leakage warning device, automated purging equipment for cabinet and/or Chlorine piping and automated shut off valves. Additionally a fully controlled temperature and pressure management can be delivered to ensure absolute safe start up intervals.

Design according to your needs!
Please contact us...

LT GASETECHNIK
beyond standards

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