

HYDROGEN ANALYZER

GO BEYOND THE LIMITS. . .

The Technology

Such results are obtained either by using a high frequency discharge ionization detector in Helium (Hydrogen 1) or by using a flame ionization detector (Hydrogen 2 and 2A). Hydrogen 3 and 3A systems use both detectors.

HYDROGEN



High frequency discharge ionization detector in Helium:

The "HE12" detector has been designed to detect the ionization current produced by ionized molecules. This ionization is produced by a single high frequency discharge within the detector (HF plasma), causing a high energy photon emission (24.5 eV). This emission is capable of ionizing all gases within the cell with the exception of the Helium.

The main advantage of this HE12 detector is that the photoionized discharge is achieved without any radioactive emission and without excessive voltage being applied to the cell.

Another important characteristic of the HE12 is that the detector operates on only one gas. This one gas is used as the carrier, the flushing gas and the purging gas. This gas can also serve to purge and clean all valves. (Injection and sample valve, switching valve, back-flushing valve, ...).

The housing does not require any flushing gas: no contamination of the gas circuits is possible before detection. The input connection is located directly on the cell of the HE12 detector.

The HE12 detector is mainly used to measure and control impurities in Helium (H₂, O₂+Ar, N₂, CH₄, CO and CO₂) but may also be used for the measure and control of impurities in other gases such as Hydrogen, Oxygen, Nitrogen, corrosive gases, ...

Flame ionization detector:

The "FID" detector is mainly composed of a flame ionization detector placed in a temperature regulated chamber. It is designed to detect traces of hydrocarbons. Coupled with a methanizer, it also detects traces of CO and CO₂.

The combustion of Hydrogen and synthetic air creates a flame in which the organic components contained in the gas to be analyzed are burnt off. When burning, these components produce ions which are collected by an electrode. The very weak current obtained in this way is amplified in an electrometer with high gain and directed to a recording system. A polarization electrode is connected on the level of the nozzle and the adjustable collecting electrode makes it possible to achieve the best results.



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The Analytical Systems

To control the quality of Hydrogen, Orthodyne uses different techniques, and by using a modular system concept, Orthodyne will offer you the best adapted analyzer to your analytical problem.

Orthodyne analyzers for measuring impurities in Hydrogen include the following:



SYSTEM : HYDROGEN 1

Analysis of O₂+Ar, N₂, Kr and CH₄ in Hydrogen.

O ₂ +Ar	<	0.01 ppm
N ₂	<	0.01 ppm
Kr	<	0.01 ppm
CH ₄	<	0.01 ppm

SYSTEM : HYDROGEN 2

Analysis of CH₄, CO, CO₂, and THC in Hydrogen.

CH ₄	<	0.1 ppm
CO	<	0.1 ppm
CO ₂	<	0.1 ppm
THC	<	0.1 ppm

SYSTEM : HYDROGEN 2A

Analysis of CH₄, CO, CO₂, and THC in Hydrogen.

CH ₄	<	0.01 ppm
CO	<	0.01 ppm
CO ₂	<	0.01 ppm
THC	<	0.01 ppm

SYSTEM : HYDROGEN 3

Analysis of O₂+Ar, N₂, Kr, CH₄, CO₂, and THC in Hydrogen.

O ₂ +Ar	<	0.01 ppm
N ₂	<	0.01 ppm
Kr	<	0.01 ppm
CH ₄	<	0.1 ppm
CO	<	0.1 ppm
CO ₂	<	0.1 ppm
THC	<	0.1 ppm

SYSTEM : HYDROGEN 3A

Analysis of O₂+Ar, N₂, Kr, CH₄, CO, CO₂ and THC in Hydrogen.

O ₂ +Ar	<	0.01 ppm
N ₂	<	0.01 ppm
Kr	<	0.01 ppm
CH ₄	<	0.01 ppm
CO	<	0.01 ppm
CO ₂	<	0.01 ppm
THC	<	0.01 ppm