HST-ONH20　0xygen Nitrogen Hydrogen Analyzer

(Picture for your reference)

1. Introduction

ONH-2018 Oxygen Nitrogen Hydrogen Analyzer series is a professional laboratory analysis instrument with high sensitivity,high precision and high stability, and has the ability to upgrade hardware and software in the future.

2. Principles of Oxygen, Nitrogen and Hydrogen Analysis

Oxygen, nitrogen and hydrogen in metal and non-metallic solid materials are detected by inert gas fusion method. According to the different methods of hydrogen measurement,it can be divided into two types.

2.1 Infrared absorption method for hydrogen measurement: when measuring hydrogen by infrared absorption method, a ONH-2018 oxygen-nitrogen hydrogen analyzer can be used to simultaneously determine the content of thre elements of oxygen,nitrogen and hydrogen.Then,the weighted sample is placed in a graphite crucible,and it is melted by high temperature heating in a gas stream (optional argon can be used when nitrogen is not measured). The oxygen in the sample reacts with the carbon in the graphite crucible to form carbon monoxide (CO), and the nitrogen and hydrogen in the sample escape in the form of nitrogen and hydrogen, respectively. These mixed gases are sent from a carrier gas to a high temperature reformer where carbon monoxide (CO) is converted to carbon dioxide(COz),H2 is converted to HzO,and nitrogen does not react.The mixed gasafterpassingthroughthereformerissenttotheCOinfrareddetectioncellandtheHOinfrared detection cell, and based on the detected carbon dioxide (COz) and HzO content, the oxygen and (COz) and water in the mixed gas after the infrared detection are adsorbed,the remaining mixed gas of nitrogen and helium is detected through the thermal conductivity detecting cell.
After separatio,tenitrogengasentersthetermalconductiviyceltodetectthenitrogencontent,The test results aredirectly given by computer data processing.

2.2 Hydrogen detection method for hydrogen measurement: when measuring hydrogen by thermal conductivity detection, only one measurement can measure oxygen nitrogen content or oxygen hydrogen content. The weighted sample was placed in a graphite crucible and melted by high temperature heating in a gas stream of helium (argon gas may be used without nitrogen). Then the oxygen in the sample reacts with the carbon in the graphite crucible to form carbon monoxide (CO), and the nitrogen in the sample escapes in the form of nitrogen (hydrogen in the form of hydrogen),which is divided into twoby the carriergas:one of them is sent to a high-temperature reforming furnace.In the high-temperature reforming furnace,carbon monoxide (CO) is converted into carbon dioxide (COz), and the mixed gas after passing through the reforming furnace is sent to a COz infrared detection tank where the content of carbon dioxide (COz) is detected. Based on this, the oxygen content in the original sample was calculated. Then, anther carbon dioxide (COz) and water in the mixed gas after passing through the normal temperature reforming furnace are adsorbed, and the remaining nitrogen (or hydrogen) is detected through the thermal conductivity detecting tank, and the test result is directly given by computer data processing.

3. Instrument application scope and main technical performance data

3.1Applicable scope of the instrument:
Determination of oxygen and nitrogen concentration in ferrous metals,non-ferous metals, various alloys,zirconium,titanium,molybdenum,nickel, ceramics, rare earths and other solid materials.
Analysis range: (range can be expanded)
Oxygen: 0.00005%~0.1%
Nitrogen:0.00005%~0.5%
Hydrogen:0.00005%~0.0050%
The above is the weighing range based on the weight of
1g sample The analysis range can be expanded by reducing the sample weight.
Minimum reading: 0.000001%
Instrument accuracy:
Oxygen: SDS0.0001% or RSD≤1.0%
Nitrogen: SD<0.0001% or RSD<1.0%

Hydrogen: SD≤0.2ppm or RSD≤2.0% *

Notes:* Subject to standard deviation or uncertainty not exceeding the standard.

3.2Analysis time:

Oxygen: 120~180S Nitrogen: 120~240S

Hydrogen: 120~180s/120 ~ 240s (Infrared absorption method /thermal conductivity method)

(Can be set arbitrarily according to analytical materials)

Weighing accuracy of electronic balance (one in ten thousand): 0.0001g

3.3 Analytical method:

Oxygen: infrared absorption method

Nitrogen: thermal conductivity method

Hydrogen: Infrared absorption method / thermal conductivity method

Pulse heating furnace:

Max current 1500A;

Max power:8KVA;

Max Temperature: 3000℃;

Carrier gas: High purity Helium99.999%, 0.4Mpa

Power gas:ordinary nitrogen(or purified compressed air),0.25Mpa

Chemical reagents: magnesium perchlorate; alkali asbestos

3.4 Overall structure

The whole machine adopts modular and integrated design. The four independent modules Of pulse electrodefunace, Gascircuitsystemcircuitsystemanddetectionsystemare integrated into an integrated floor-standing host,with a simple and generous appearance. With automatic zero adjustment and automatic switching between high and low ranges.

A general-purpose 64-bit computer is used to control the whole machine. The host uses a 32-bit embedded ARM microcomputer control and a 24-bit high-precision data acquisition system to meet the requirements for control accuracy and speed.