GPS central gas purifier

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Introduction & Application

Use of high purity gases in optical fiber preform fabrication is one of the key factors ensuring low losses and proper operation of fabrication equipment. Typical impurities to be removed from reaction gases in preform deposition processes are hydroxyl and any other hydrogen-containing gas, and in draw tower area any oxygen-containing gas. Gas purifiers can be used for other application in semiconductor and industrial processes.

GPS is a centralized gas purifier system, using the following purification technologies:

- heated catalyst purifier and regenerating molecular sieve bed drier for O2,
- heated getter purifier and regenerating molecular sieve bed for He,
- regenerating molecular sieve bed drier for nitrogen,
- heated getter (Zr-V-Fe ceramics) for inert gases (He, Ar),
- cartridge getters for special gases (SiF_4, SF_6, Cl_2).

Description

GPS central gas purifier systems are installed inside standard steel cabinets. Standard configuration GTS includes purification of reaction oxygen. All purifier elements are installed inside the cabinet, with all connections at the cabinet top. Due to the high temperature used in regenerating molecular sieve cartridges and palladium catalyst (300-400°C), the cabinet is ventilated by several low-noise fans with exhaust at the top and air intake ports on cabinet doors. GPS cabinet is made of steel frame and panels, then dust painted to give the cabinet surface protection and pleasant feel and clean look. The standard color is RAL 7035. All covers and doors are equipped with seals. All outlet gas channels are equipped with 0.03 µm particulate filters.

Control system

GPS is turned ON and OFF from the cabinet front panel, where also an emergency stop (EMO) button is installed. Purifier operation is controlled by internal PLC controller with touchscreen monitor. , which can be monitored remotely from any system running OptiFACT control software.

Gases & Specifications:

GAS, SOURCE	input quality	std. flow (slm)	max. flow (slm)	outlet purity
Oxygen, liquid :	20 ppm H_2O, 10 ppm THC	10	20	<100 ppb OH-
Nitrogen, liquid :	10 ppm H_2O	50	100	<100 ppb OH-
Helium (cylinder)	10 ppm H_2O, 10 ppm THC	2	5	<100 ppb OH-
Argon (cylinder):	10 ppm O_2 & H_2O, some THC	25	50	<1 ppm O2
Cl_2 cylinder)	electronic - 99,99 Vol.%	0.2	1	<100ppb O_2 & OH-
BCl_3 (cylinder)	electronic - 99,99 Vol.%	purification not recommended due to condensation		
SF_6 (cylinder)	> 99,996 Vol. %	0.05	2	<100ppb O_2 & OH-
SiF_4 (cylinder)	> 99,996 Vol. %	0.1	1	<100ppb O_2 & OH-

Infrastructure and dimensions	
single cabinet size (mm)	800 x 800 x 2150
dual cabinet size (mm)	1200 x 800 x 2150
electrical power 240V, 50 Hz	per gas channel max 800W
exhaust connection	DN 100
OPTION: fire safe	G60 or G90 on request
fire safe cabinet size	add 50 mm to base all sides

Optional instrumentation

A water trace analyzer is installed into GPS as an option, to measure inlet and/or outlet dew point (hydroxyl content) in the range 20°C to -120 °C. GE oxygen analyzer can be built into getters for inert gases on request. Measured values are logged in the control system.

For more information and quotes please write to sales@bimespro.com·or·info@bimespro.com