



saes®
getters

HIGHLIGHTS

General Features

- Designed for UHP applications
- Heated zirconium getter alloy
- Removal of nitrogen and methane
- PLC-controlled operation
- Flow rates up to 150 slpm
- Life Status Sensor
- Exhausted enclosure with separate bay for electronics

Gas Purified

- Argon, helium and other rare gases
- Nitrogen
- Hydrogen

Purity Performance

- O₂, H₂O, CO, CO₂, H₂, THC, N₂ removal
- Particle removal

Applications

- Metalization process (PVD, CVD)
- MOCVD - III-V process
- Analytical zero and carrier gas
- Optical fiber manufacturing
- Photolithography
- Gate oxide
- Silicon epitaxy
- Diffusion processes
- Crystal pulling
- Implant
- Radiation detector tubes
- H₂/He FID fuel
- Stored gas for satellites

We support your innovation

MONO TORR®

HIGH FLOW

PS4 Series

High Purity at High Flow

The PS4 MonoTorr High Flow purifier provides sub-ppb impurity removal in hydrogen, nitrogen and rare gases at flow rates up to 150 slpm. Unrivaled capabilities are packaged into a compact design engineered for reliability.

Continuous control and diagnostics are managed by the user friendly PLC. A complete set of options is available to satisfy the most demanding operator and facility requirements.

The PS4 MonoTorr High Flow extends the point of use product family to new levels and, like all SAES Pure Gas purifiers, has the backing of over 60 years of expertise in getter technologies by the SAES Getters Group.



PS4 MonoTorr High Flow

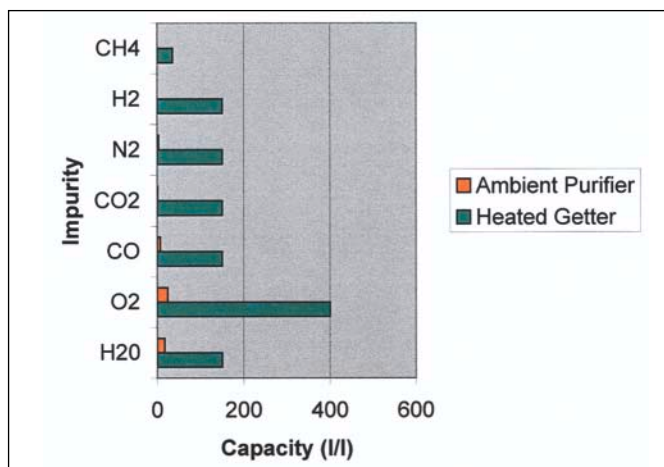
The Advantage of the Heated Zirconium Getter Alloy

Getter materials irreversibly bind with impurity molecules. Heating causes them to diffuse into the bulk of the getter.

Unlike ambient technologies that rely on surface absorption only, the heated getter technology utilizes the entire volume of material. This results in superior impurity capacities and longer lifetime for the purifier, as shown in the comparison chart.

The heated getter technology also allows the removal of nitrogen, hydrogen and methane in rare gases.

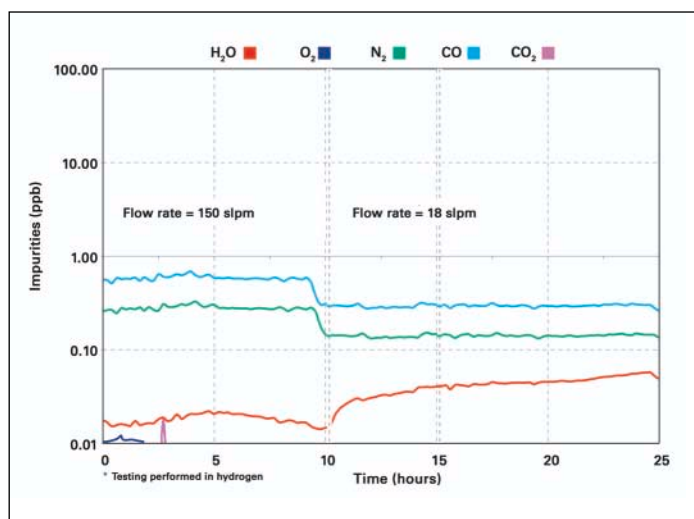
The PS4 MonoTorr High Flow for rare gases and nitrogen features a special Hydrogen Removal Unit (HRU) located downstream of the heat exchanger to ensure a full hydrogen impurity removal.



Heated getter versus ambient technology capacity

APIMS Validation

The PS4 MonoTorr High Flow has been qualified using an atmospheric pressure ionization mass spectrometer (APIMS). Upstream impurities fluctuating in the low-ppm range are immediately reduced to ppt levels.

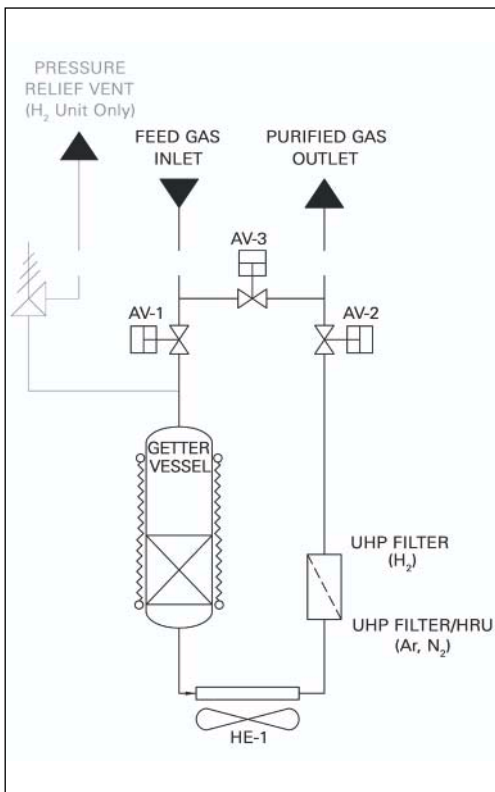


Test performed in hydrogen

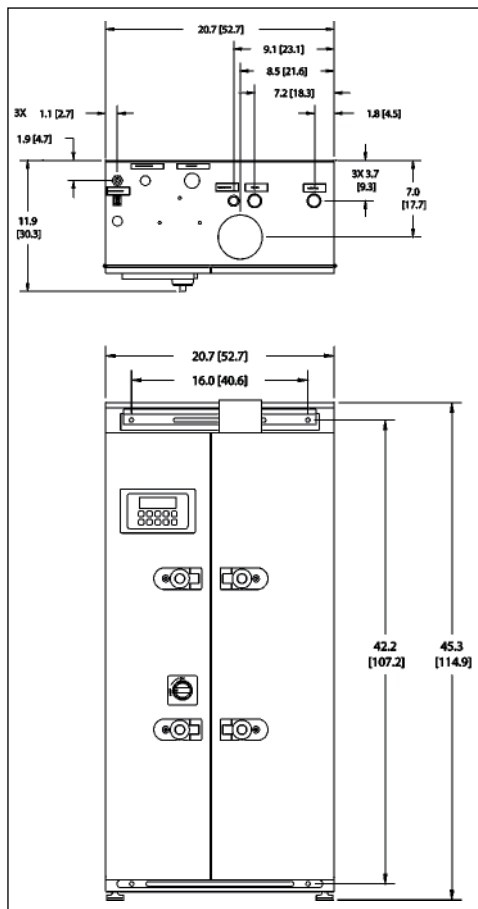
Purity Performance

PS4 MonoTorr High Flow				
	Impurity			Max flow rate (slpm)
	O₂, H₂O CO, CO₂	N₂	H₂, THC	
Rare gases	< 1 ppb	< 1 ppb	< 1 ppb	100
Nitrogen	< 1 ppb	N/A	< 1 ppb	100
Hydrogen	< 1 ppb	< 1 ppb	N/A	150

Product Details



General P&ID



Overall PS4 MonoTorr High Flow dimensions: top and front views. Size given in inches and [centimeters]



Control panel

System Feature and Specification Matrix

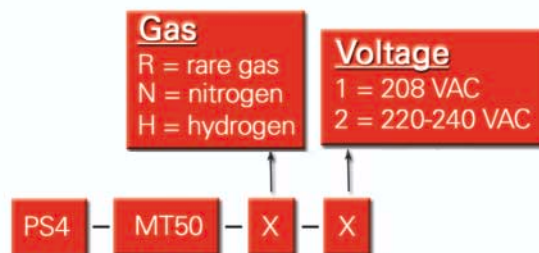
PS4 MonoTorr High Flow			
Additional specifications and features	Rare gases	Nitrogen	Hydrogen
Operating temperature (°C)	400	350	300
Pressure rating (bar)	2.8-10.3(40 - 150 psig)	2.8-10.3(40 - 150 psig)	2.8-10.3(40 - 150 psig)
Heater power consumption (Average/Installed) at 240 VAC (KW)	1/2 .4	1/2 .4	1.1/2 .4
Voltage (VAC)	208 or 220-240	208 or 220-240	208 or 220-240
Pneumatic supply pressure (bar)	5.5 - 6.9 (80-100 psig)	5.5 - 6.9 (80-100 psig)	5.5 - 6.9 (80-100 psig)
0.003 µm metal filter	Standard	Standard	Standard
Hydrogen Removal Unit (HRU)	Standard	Standard	N/A
Typical inlet gas quality	99.995%	99.995%	99.995%
Pneumatic diaphragm valves (inlet, outlet, bypass)	Standard	Standard	Standard
10 µinch Ra surface finish	Standard	Standard	Standard
1/2" VCR male inlet/outlet connections	Standard	Standard	Standard
Life Status Indicator (LSI)	Standard	Standard	Standard
N ₂ purge system	N/A	N/A	Optional
Hydrogen leak detector	N/A	N/A	Optional
Uninterruptible Power Supply (UPS)	Optional	Optional	Optional
Emergency Off Button (EMO)	Optional	Optional	Optional
MODBUS interface	Optional	Optional	Optional
Manual bypass	Optional	Optional	Optional

Lifetime depends on actual inlet gas quality and flow rate. For custom applications and gases please contact us.

Ordering Information



Lainate (Italy)
 Avezzano (Italy)
 Köln (Germany)
 Moscow (Russia)
 Paris (France)
 Daventry (UK)
 Nanjing (China)
 Shanghai (China)
 Tokyo (Japan)
 Seoul (Korea)
 Jincheon-kun (Korea)
 Singapore
 Hsin Chu (Taiwan)
 Cleveland OH (USA)
 Colorado Springs CO (USA)
 San Luis Obispo CA (USA)
 Sparks MD (USA)



Options

MODBUS = Modbus customer interface
 NPURGE = N₂ purge for C1 Div. 2 Environment (H₂ only)
 H₂ SEN-UL = H₂ leak sensor for UL listing (H₂ only)
 H₂ SEN-CE = H₂ leak sensor for CE mark (H₂ only)
 EMO = Emergency Off Button
 UPS = Uninterruptible Power Supply
 MANBYPASS = Manual bypass

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