

PURE GUARD™

The pure and simple choice



HP Series V-Purge Hydrogen Purifiers

The V-Purge system enhances the performance of our HP Series palladium membrane hydrogen purifiers. The patented system provides improved performance to handle any flow change, superior protection from power failures and pressure surges and fast switching from nitrogen purge to full hydrogen flow.

Any Flow Rate - Anytime

The improved design includes preheating of the inlet hydrogen to ensure stable temperature during purification. This control allows rapid changes in flow rate with no loss of pure hydrogen output.

Fastest Purge Performance

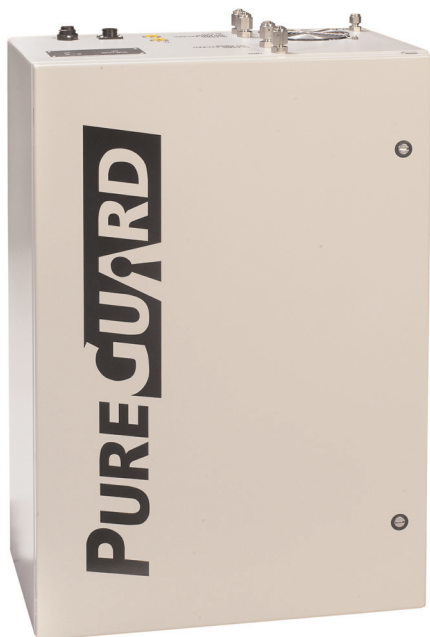
Residual hydrogen must be removed from the palladium membranes upon loss of power to prevent stress in the palladium lattice structure. The patented V-Purge system provides automatic purging to remove all hydrogen in minutes, well before the palladium can cool below 300°C. The patented system (US2004/0182239A1) greatly improves MTBF performance to provide longer lifetimes.

Pressure Surge Protection

Flow orifices and programmed valve sequencing provide slow pressurization of the palladium purifier to prevent unnecessary pressure surges. This system design helps maintain stable operating conditions for the entire purifier to extend operating lifetime.

Rapid Startup

The vacuum-assisted V-Purge System rapidly removes nitrogen when the system is ready for restart. Now, the purifier can immediately restart to full hydrogen flow in <1 minute.



Johnson Matthey
Gas Purification Technology

HP Series V-Purge Hydrogen Purifiers

Design Features:

- Outlet impurities: < 1 ppb, O₂, H₂O, CO, CO₂, N₂, THC
- “Outside In” diffusion cell design
- Automated Purge requires no manual adjustments of bleed flow rate (eliminates bleed and purge bypass flowmeters)
- Separate controller & purification cabinet
- Flow rate up to 220 slpm
- 3 operating modes - purify, idle, purge
- Network capability-modbus slave

Benefits:

- Palladium membrane removes all impurities, provides the purest hydrogen possible
- Purges Hydrogen out of the purifier cell 5x faster than conventional purge system
- Less than 10 minutes to remove all hydrogen when automated purge is activated
- Switches from nitrogen purge to maximum hydrogen flow capacity immediately (vs. conventional system start-up that takes over an hour to reach full flow rate)
 - No delay caused by trapped N₂
 - Minimal temperature variation, ±5°C
 - Faster cycle times
- Eliminates pressure surge when switched from nitrogen purge to hydrogen service
- All H₂ removed prior to cell cooling
- Improved heat management maintains heat longer during power failures, dramatically slowing heat losses and the cooling effect after power to the heaters is lost

Safety Features:

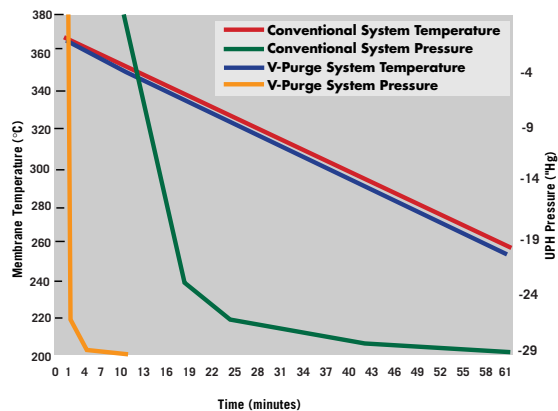
- Latching Alarms-protects equipment and process
- Heater failure alarm
- Low pneumatic pressure indicator
- Remote stop input
- Alarm output contact
- Alarm log display
- Integral ground fault protection
- Redundant over temperature protection

MODEL	CAPACITY SLPM ¹	PURGE GAS	PNEUMATIC SUPPLY	ELECTRIC
HP-200-VPurge	94	Nitrogen 80 psig approx.	Air or N ₂ 80 psig approx.	220-240V, single phase, 50-60 Hz
HP-230-VPurge	105	Nitrogen 80 psig approx.	Air or N ₂ 80 psig approx.	220-240V, single phase, 50-60 Hz
HP-400-VPurge	188	Nitrogen 80 psig approx.	Air or N ₂ 80 psig approx.	220-240V, single phase, 50-60 Hz
HP-480-VPurge	220	Nitrogen 80 psig approx.	Air or N ₂ 80 psig approx.	220-240V, single phase, 50-60 Hz

¹Flow is @ 200 psig inlet pressure and 0 psig outlet pressure
 Dimensions of purifier enclosure: 30" (762mm) H x 20" (508mm) W x 13.25" (337mm) D
 Dimensions of control module: 5.25" (134mm) H x 17" (432mm) W x 13" (330mm) D

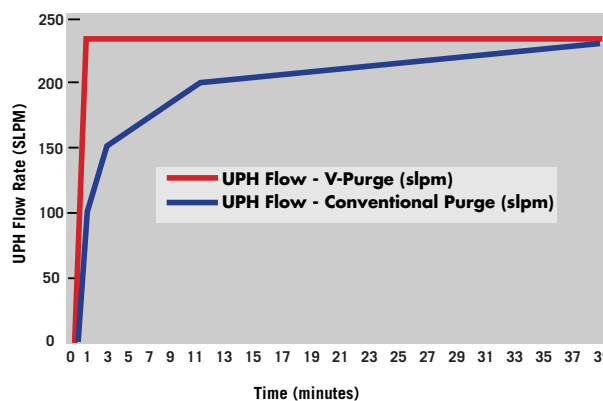
Purge Performance

(V-Purge System vs. Conventional Purge System)



UPH Flow Rate after N₂ Purge

(V-Purge System vs. Conventional Purge System)



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