HbT
The Hydrogen Generation Specialists

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Model 4200 NG-A Fact Sheet

On-Site Hydrogen Generation System

NOTE: All information provided is nominal. SI Units in ( )

SYSTEM PACKAGE

INCLUDED COMPONENTS AND SERVICES

Model 4200 NG-A UOB™ reformer / CO shift reactor skid
Pressure Swing Adsorption (PSA) Purification Unit
Integrated automatic PLC controls
Pressure Vessels to applicable codes
Electrical Components to applicable codes
On-site installation guidance
Operation, safety and maintenance training
All components are skid mounted
Documentation
12 month limited Warranty on all components

OPTIONAL EQUIPMENT

*Natural Gas Compressor
*Air Compressor
*Quench Water System
*Cooling Water System
*Waste Gas Flare
Modular Enclosure
Remote Monitoring Software
Hydrogen Purity Monitor
Weatherization
* (may be required for operation)

PRODUCT HYDROGEN SPECIFICATION

Hydrogen Flow Rate	4200 SCFH (110.5 Nm^3/hr)
Pressure	70 – 100 PSI (483 - 690 kPag)
Discharge Temperature	80° F (27° C)
Purity	99.95+%
	Up to 99.999% optional

Impurities:

Dew Point	-80° F (-62° C)
Nitrogen + Argon	< 500 PPM_v
CH4	< 2 PPM_v
CO	< 2 PPM_v
CO2	< 2 PPM_v
O2	< 2 PPM_v

UTILITY REQUIREMENTS

NATURAL GAS REQUIREMENT

Type	Natural Gas (gas analysis for each site will be provided by buyer)	
Rate (norm / max)	2800 / 3600 SCFH	(74 / 94 Nm^3/hr)
Inlet Pressure	10 PSIG	(69 kPag)
Heat Content	1,000 BTU/SCF (HHV)	(1055 kJ/Nm^3)
Discharge Pressure (Norm/Min/Max)	210/205/300 PSIG	(1448/1413/2069 kPag)
Discharge Temperature (Min/Max)	60 / 300^{O}F	(15.5 / 149° C)

PROCESS AIR REQUIREMENT

Type	Filtered air	
Rate (Norm/Max)	180 / 260 SCFM	(284 / 410 Nm^3/hr)
Discharge Pressure (Norm/Min/Max)	210 / 205 /300 PSIG	(1448/1413/2069 kPag)
Discharge Temperature (Min/Max)	60 / 300^O F	(15.5 / 149° C)

ELECTRICAL REQUIREMENT

Electricity (for compressors)	480 V, 3 phase, 60 Hz	(other voltages and frequencys
Rate	72 kWh	where needed)
Electricity (for controls & PSA motor)	110 V, single phase, 60 Hz	
Rate	1.0 kWh	

INSTRUMENT AIR REQUIREMENT

Type	Filtered, dry air	
Rate	10 SCFH	(0.26 Nm^3/hr)
Pressure (Min/Max)	80 / 120 PSIG	(552 / 827 kPag)
Dew Point	Minus 20° F	(-28.9° C)

(continued on other side)

NITROGEN REQUIREMENT

Quantity	3500 SCF (92 Nm^3) per start-up, 1400 SCF (37 Nm^3) per shut down	
Rate	1800 SCFH (47 Nm^3) (during start-up and shut down only)	
Pressure	70-80 PSIG	(482 – 552 kPag)
Purity	99.9%	
Dew Point	-80° F	(-62° C)

QUENCH WATER REQUIREMENT

Flow Rate normal/design	1.25 / 1.50 GPM	(0.28 / 0.34 m^3/hr)
Pressure (at skid tie-in point) min/max	300 / 350 PSIG	(2069 / 2414 kPag)

Water shall be provided to the skid at constant pressure (+/- 5 psi / 35 kPa) under all operating conditions.

Standard Quench Water Quality

Constituent	Range	Units
Ion Removal	98-99	%
Effluent Sodium	0.5-10	Ppm
Effluent Silica	0.005-0.1	Ppm
Conductivity	2.5-10	Umhos/cm
Bacteria	0	100/ml
PH	6.0-8.0	

COOLING WATER REQUIREMENT

This specification is a general guide to cooling water quality requirements. Water quality will vary significantly by geographic region. PGS recommends that local water quality experts be consulted for water treatment strategies in each geographic region.

Rate	86 GPM	(18.8 m^3/hr)
Pressure (Min/Max)	30 / 150 PSIG	(207 / 1034 kPag)
Supply Temperature (Min/Max)	70 / 90° F	(21 / 32° C)
Temperature Rise (Norm)	20° F	(11° C)
pH	6.5-9.0	
Chlorine	0.4 ppm Max	
Organic Solvents	50 ppm MaxTotal	
Dissolved Solids	5000 ppm Max	

WEIGHTS AND MEASUREMENTS

Equipment	W	L	H	Weight (lb.)
UOB™ Skid	8‘ (2.4m)	15’ (4.6m)	8’ (2.4m)	15,000 (6804 kg)
PSA Skid	6’ (1.8m)	7’ (2.1m)	7’ (2.1m)	5,000 (2268 kg)
Gas Compressor	6’ (1.8m)	6’ (1.8m)	7’ (2.1m)	4,000 (1814 kg)
Air Compressor	9’ (2.7m)	8’ (2.4m)	7’ (2.1m)	3,000 (1361 kg)
Waste Gas Flare	3’ (0.9m)	3’ (0.9m)	6’ (1.8m)	300 (136 kg)
Cooling Water Skid	4’ (1.2m)	5’ (1.5m)	6’ (1.8m)	1,000 (454 kg)
Modular Enclosure (optional)	8’ (2.4m)	40’ (12.2m)	8’ (2.4m)	10,000 (4536 kg)

GENERAL SITE REQUIREMENTS

Elevation	< 500 FEET (150 meters)
Seismic Zone	UBC Zone 0
Ambient Temperature Range	Maximum 110° F (43° C), Minimum 35° F (2° C)
Drain	Required for process condensate and blowdown.
Access	Horizontal and vertical access required for burner maintenance.
Telephone Line	A standard telephone line is required to be wired up to the system for remote monitoring and warranty effectuation.

FOR MORE INFORMATION REQUEST FULL TECHNICAL SPECIFICATION.
ALL INFORMATION IS NOMINAL AND SUBJECT TO MODIFICATION,