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Hydrogen Gas Pressure Reducing Skid



Important

This Equipment should be operated & maintained only by technicians who are suitably trained, experienced with Natural Gas plant and fully conversant with the specifications.

In pursuing a policy of continuous improvement, the company reserves the right to alter the specification of any product without prior notification

Description

General

HYDROGEN Pressure Reducing unit, which will reduce the pressure from 250 bar (g) (HYDROGEN Cascades) to Filling Pipe line network. The scope of work is limited to the HYDROGEN Pressure Reducing skid, which is a double stream pressure regulating station equipped with inlet manifold header, Gas Master Valve, Gas Filter, Pressure regulators, Safety valve, Pressure Gauges, Isolation valve And Frame structure Ready to use in condition.

- ① Gas receiving from 200 bar(g) to 2 bar(g).
- ② Pressure Reduction unit to reduce the pressure from 200 Bar(g) to 10 Bar(g) to a outlet pressure of 2 Bar(g) with the help of Pressure Regulators along with Slam Shuts. Instrumentation and controls. Electrical items including local panel.
- ③ The components and equipments being installed shall be of a reputed make and the equipments shall conform in all respects to high standards of engineering, design, workmanship and shall meet all requirements as per the relevant standards.
- ④ All the components and equipments will also meet the Technical Standards/Specifications.

Item Description	Hydrogen Pressure Reducing System
Supply Delivery Point	Manifold Header With Four Hydrogen Inlet valve
Design Codes	ASME B31.8, ASME Sec. VIII Div.1, EN and PESO GCR rules 2016
Design Life	15 Years
Material of Construction - PRS	SS 304 /SS316
MAWP	250 Bar. G
MAWP Pressure Reducing Station	1-10 Bar. G

The line diagram of the HYDROGEN Pressure reducing skid is shown in Fig.1



Hydrogen Gas Properties

- It is colorless, odorless, tasteless highly flammable gas.
- Chemical Formula : H₂
- Molecular weight : 2.02
- Boiling Point : -253°C
- Critical Temperature : -240°C
- Critical Pressure : 12.8 Bar
- Density at 21°C : 0.084 kg/m³
- Auto ignition temp: 560°C
- Minimum Energy for ignition in air : 0.017 mj
- Flammability Limit : 4 to 75%

Hydrogen Pressure Reducing System

- Compact designed for Hydrogen bank or cylinder unloading.
- This station is cost effective solution for hydrogen gas application at constant pressure and constant flow rate.
- PRS system use in hydrogenation process of different types of pharmaceutical, chemicals, edible oil and aromatic industries.
- High accuracy at outlet point of supply system is controlled by two stage Pressure Reducing and gauranted control for safe operations.
- Provide High pressure inlet up to 200 bar and various outlet pressure 0 to 10 bar pressure range

Working

- This is a double stream pressure regulating station equipped with inlet Manifold Header, Gas Master Valve, Gas filter, Pressure regulators, Safety Valves , Pressure gauges, Isolation Valves and Frame structure ready to use in condition.
- The cylinders or Bank pressure reduces in two stage regulators to final outlet pressure as per pressure requirement.
- Safety relief valves with full stream capacity are provided at each stage as second line of safety. Outlet of safety valve is vented to atmosphere through flame arrestor.

System Components

- Manifold Header:** Manifold Header with four Hydrogen inlet valve connection and one Nitrogen Valve connection, Valves as per IS 3224. One pressure gauge provide with Range of 0-300 bar.
- Pigtail Hose:** Flexible Copper Pigtails
- Master Isolation Valve:** Make : Rego
- Inlet PG Make Baumer**
- Particle Filter:** 100 micron
- Slum Shutoff Valve:** Make : Nirmal /Vanaz
- First Stage PRV:** Make : Nirmal /Vanaz
- First Stage SRV:** Make : Nirmal /Vanaz
- Second Stage PRV Make:** Nirmal /Vanaz
- Second Stage SRV:** Make : Nirmal /Vanaz
- Flame Errestor:** Flanged connection, as per EN ISO 16852. Proto type tested and certified as per ATEX Directives 94/9/EC. **Non Return Valve:** 3/4" NB size, Threaded connections, Working Pressure 25 Bar, MOC: SS 304
- Piping and Fittings:** SS 304, 80 schedule Seamless pipe argon TIG weld with SS 304 Blocks, Flanges, Gaskets and Fasteners etc.
- Structural Support:** PVC Clamping and MS structure Powder Coated Frame.