



RUBY HIGH PURITY WATER SYSTEMS



**GROW YOUR
BUSINESS WITH US**

RO+EDI WITH WATER GENERATION SYSTEM

WHO WE ARE



We at RHPWS are dedicated to make best products & services which enables our customer to exceed their expectation beyond limits and provide smooth experience with the help of core industry leading innovation technology and our expertise and excellency we have gained over the past decade.

We are Engineering driven company and committed to provide industry leading solution for the corporations to the world renowned and would like to give you as well as our customer.

RHPWS's ability to offer complete range of products and equipments help customers to have a single source for the complete water systems.

Every business is different.
Our solution too.



INFRASTRUCTURE

Ruby High Purity Water Systems; has excellent infrastructure for plant fabrication and assembly in Haridwar. The facility well equipped with latest machinery and state of art equipment's like orbital welding, electro-polished equipment's, testing equipment's like Borescope, radiography, surface finish test equipment's etc.

Ruby High Purity Water Systems has a well-trained and experienced team of engineers involved in design engineering and project execution. The total employee strength is well above 70 people in various roles and functions. It has successfully executed several projects in India and is financially Strong Company and can easily execute several large projects at a time.

ADVANTAGES OF RUBY HIGH PURITY WATER SYSTEMS

- Cost effective but world class quality systems.
- Innovative solution for pharma water requirements.
- Experienced skilled manpower.
- Quick deliveries and excellent after sales support.

PURIFIED WATER GENERATION



Pre-treatment steps:

- Sand Filtration for Turbidity removal
- Water disinfection with Chlorine
- Hardness reduction by Softening
- Elimination of Free Cl using ACF
- Removal of suspended particulates using cartridge filters

**RO
+
EDI**

Post-treatment steps:

Based on the Water quality, post-treatment plant may consist of all or some of following steps

- Ozonation of Water
- Ultra- violet for removing Bacteria
- Chlorination Systems

Media Filtration

Media Filtration is an important first step to achieve water for RO feed. The sand media is carefully selected and graded to ensure best results. All pre-engineered standard packaged plants have FRP vessels with automatic operation facility. Manually operated filters can be request. Automatic disc filtration in lieu of media filter is also available as an option.

Softener

Softener is necessary to remove hardness and ensure that the RO Membranes are not scaled during the operation. We use uniform particles size IX resin which gives highest regeneration efficiency and lowest outlet hardness. As a standard feature the softeners are supplied with automatic operation facility. Manually operated softeners can be provided on request.

Hi Purity RO & EDI

Before the filtered water is fed into RO, it is dosed with various chemicals to condition the water to ensure trouble free RO Plant operation.

The chemically conditioned water is passed through 5 micron Cartridge filter to reduce the SDI. This fine filtered water is then fed to the Reverse Osmosis Block by means of a High Pressure Vertical Multistage pump.

The RO Block has two passes in which the Pass 1 permeate is treated through Pass 2 RO.

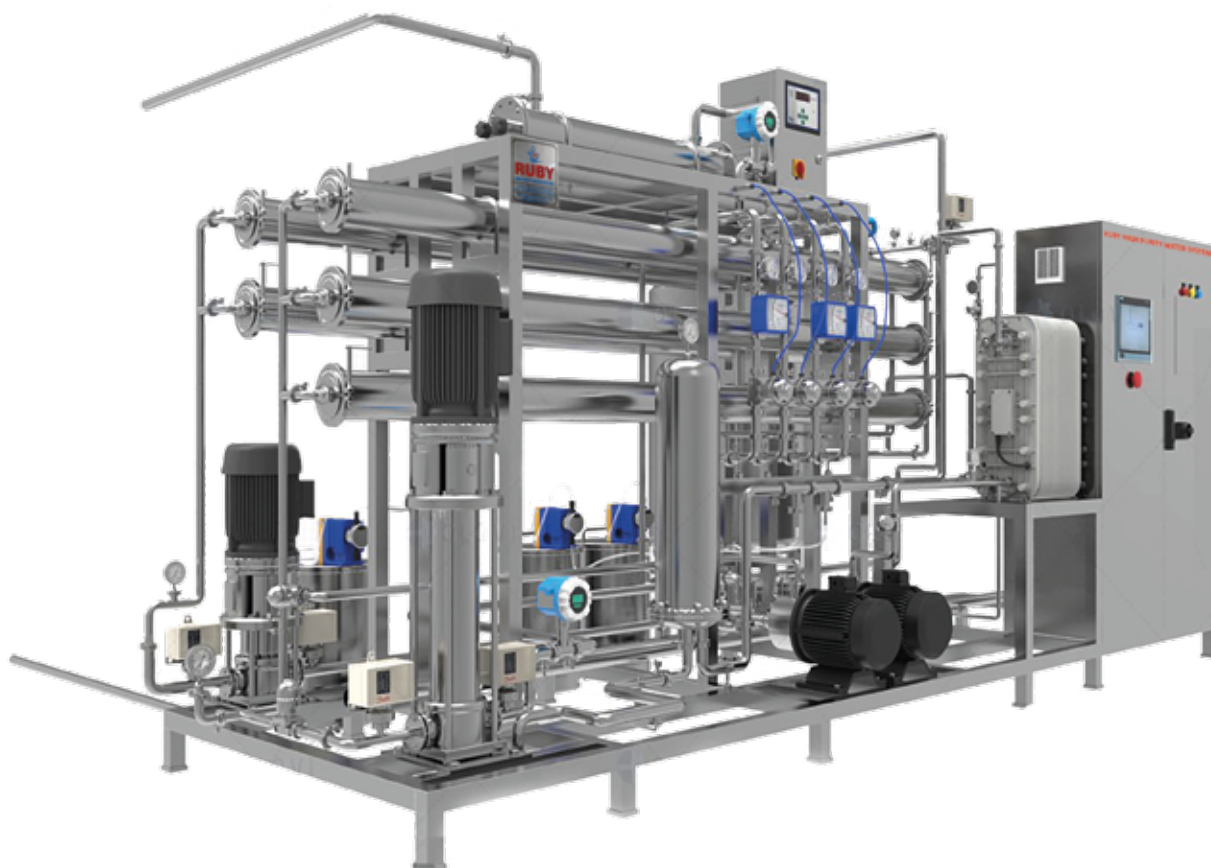
The RO Membranes are housed in electro polished SS316 L Reverse Osmosis tubes fitted with SS316 L piping, valve and fittings. The RO permeate is purified further by an EDI unit to achieve PW water quality. EDI is a process which combine semi-impermeable membrane technology with ion-exchange media to provide a high efficiency demineralization process.

The EDI process produce industrial process water of very high purity, using less than 95% of the chemical products used in the conventional ion exchange processes. With EDI system membranes and electricity replace the million gallons of acid and caustic chemicals that the old processes required daily.

UV Disinfection

Ultraviolet disinfection provides a simple, inexpensive way of destroying bacteria, mold, virus, algae and fungi without the use of heat or chemicals. it disinfects bacterial by ultra violet rays of specified intensity. UV units are provided with two main component parts, specifically the ultraviolet chamber and the main control panel.

Purified Water obtain after UV disinfection and this water will distribute on various section in plant by using separate distribution system.



PURIFIED WATER STORAGE AND DISTRIBUTION



The PW storage and Distribution system is a key part of the water systems and is designed to prevent recontamination in the PW loop. It has online monitoring instruments to ensure that the appropriate water quality is maintained.

Once water, Steam and air for pharmaceutical use has been obtained, it must be stored and distributed to the point for use. This stage is of vital importance to minimize possible contamination and proliferation of microorganisms in sterile water, steam and air.

Optimum Design of Storage and Distribution is of utmost importance as it's the final phase after which water, steam or air to be used for formulation, API's and washing.

Storage tank capacities offered by **Ruby High Purity Water Systems** range from 100 Liters to 20kl and above. Also the Pipe Size selection ranges from 1" OD to 3" OD depending on Peak Load Requirement and running length of piping in meters.

Typical components of PW Storage & Distribution system are:

- Purified water storage Tank with accessories
- Loop piping with instruments and diaphragm valves
- Centrifugal Sanitary pump
- Point of use valves
- Instruments
- UV
- Control Panel.

Standard Features of PW Storage & Distribution System are :

- Complete system designed to meet current USP/BP/EU pharmacopoeia standard and cGMP requirements.
- Unit is completely piped, wired, & assembled on skid at the factory reduces installation costs and startup time.
- Hot Water Sanitizable.
- Durable stainless steel Construction.
- 0.5 Ra SS316L Electro-Polished piping.
- Premium valves and instruments.
- Complete DQ/IQ/OQ validation package with protocol execution support.
- Customizable to meet customer's specification requirements for Valves, Instrumentation & Mechanical devices.
- Distribution Pumps are provided with VFD.
- PLC based controls.
- 304 Stainless Steel Skid.
- Complete system is fully drainable, and no dead legs in Pipe routing.



DEMINERALISATION PLANTS



Demineralization is the process of removing mineral salts from water by using the ion exchange process. With most natural water sources it is possible to use Demineralization and produce water of a higher quality than conventional distillation.

Ruby High Purity Water Systems manufacture a wide range of custom-build Demineralized Water Plant [DM Plant] in India for industrial process water applications, with inherent design to conserve water, and save costs. The DM Plants [Demineralization Plant] are available in different sizes and materials, manually operated or fully Automatic, & ready to install & are available as standard models or custom built version for specific needs.

Operating principle

A Typical two-bed Demineralized Water plant or DM Plant consists of FRP/MS Rubber lined pressure vessels connected in series along with its internal fittings. The First unit consists of high capacity strongly acidic cation exchange resin, which converts positive ions of salt and replaces them with hydrogen ions to form respective acids, which are absorbed in next vessel by strongly basic anion exchange resin. The water obtained by this process shows conductivity less than 20 μ S/cm at 25 $^{\circ}$ C and total dissolved solids less than 10 ppm.

Further high purity water can be achieved by Mixed Bed Deionizers, which are designed to produce high purity treated water. They can be used as polishing units after two bed DM plant to obtain high purity water. Mixed Bed Deionizers are single column units, filled with strongly acidic cation and strongly basic anion exchange resins mixed together.

PROCESS PIPING



Pipers Mechanical is a union process piping company specializing in the Food, Chemical and Pharma-industries. We also offer custom metal fabrication, including skid mounted mechanical assemblies. Our industrial and commercial division work at the forefront of technology. We offer process piping solutions that incorporate the latest advances in computerize engineering and design, materials and construction.

We specialize in: Sanitary and high purity process systems industrial and utility piping systems engg and design build.

We provide a complete Range of Process Piping Service to our clients. Whether you need engineering staff or pipe fitters to absorb a spike in your work load, or design build service for a plant expansion project, we can help.

Products Description:

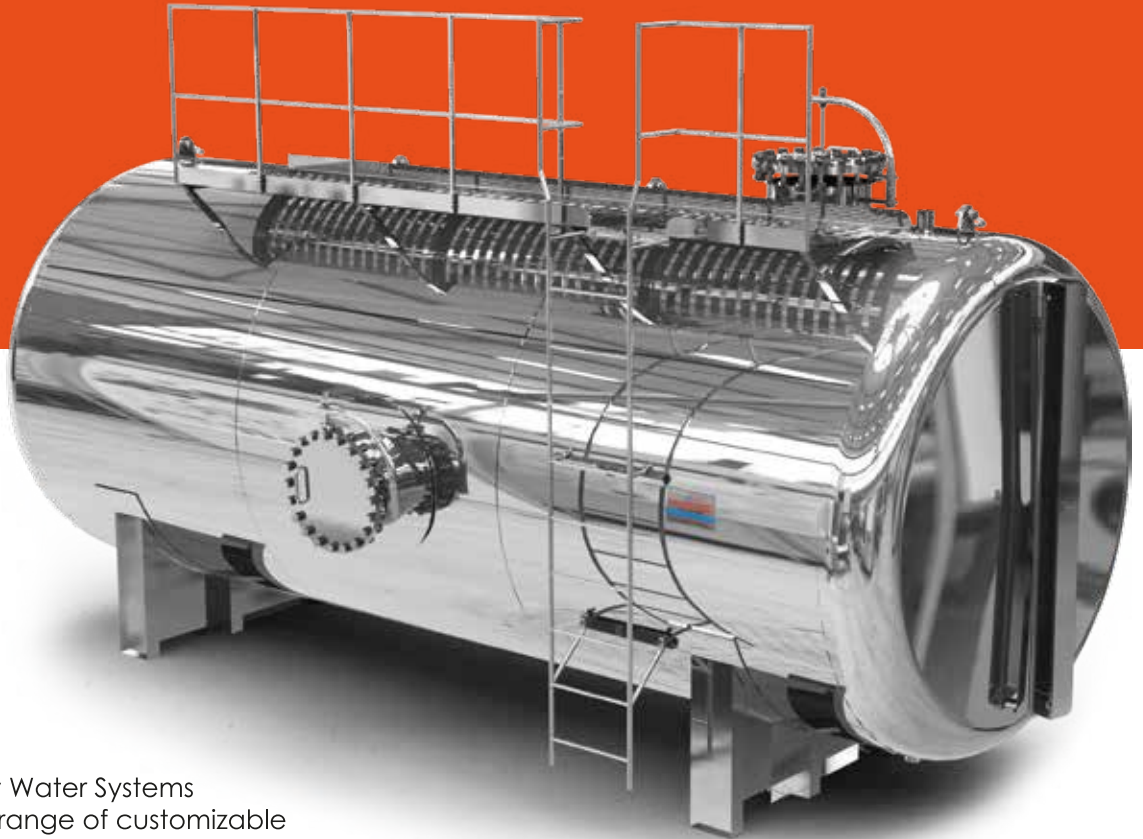
- SS316L Pure Steam Piping
- SS316L/SS304 Compressed Air Piping
- SS316L/SS304 Potable Water Piping
- SS316L/SS304 Nitrogen Piping
- SS316L/SS304 Interconnecting Product Piping
- Clean Room Utility Pendants
- Orbital Welding
- Boroscopy

PENDENTS



Ruby High Purity Systems design pendant to facilitate various service (WFI/DM water piping loops, electrical cabling, steam/chilled water lines, nitrogen/ LPG lines, process media lines, compressed air lines) to be brought into the sterile area or working area in close nesting manner, so as to provide easy access to services.

STAINLESS STEEL STORAGE TANK



Ruby High Purity Water Systems deals in a wide range of customizable storage tanks from 100L to 50,000L for the cosmetic, chemical, and pharmaceutical industry as cGMP guidelines.

Our storage tanks have long lasting durability and also requires less maintenance. These storage tanks are also non-corrosive, light-weight and leak proof. Each system is completely assembled and tested at the factory prior to installation. The units are then reassembled and retested after delivery to their final location. These tanks are constructed of high-quality SS 316 L, SS 316, and SS 304 according to Fluid and customer's requirement. These storage tanks have various designs like single, double, and triple wall design, heatable, insulated, vertical type, and horizontal type.

Documentation & Test

The technical documentation package includes the following:

- Section 1: Design documentation
- Section 2: Component Description
- Section 3: Calibration chart of Volume
- Section 4: Welding Documentation
- Section 5: Operating and Instruction Manuals
- Section 6: Validation Protocols

APPLICATIONS

- Alcohol/ Ethanol Storage
- Hot water Storage
- Shower gel Storage
- Liquid soap Storage
- Petroleum jelly Storage
- Injection Storage
- Oral liquid Storage
- Fine chemical Storage

MANUFACTURING VESSELS AND PROCESS EQUIPMENTS

Ruby High Purity Water Systems Manufacturing & Process Vessels are a result of Pharmaceutical and Biopharma manufacturer's requirement of solution for achieving highest purity, precision and quality.

Custom designed and manufactured by experienced team of engineers, the customer can rely on our vessels for the critical processes. The manufacturing vessels are constructed of high quality SS 316L in compliance with the customer's application and regulatory standards like ASME BPE guidelines.

Functional Specification

- Material: Stainless Steel 316L
- Surface finish: <0.4 um Ra Electro polished
- Volume: 5 to 30,000 liters nominal capacity
- Pressure: Full vacuum up to 10 bar
- Temperature: -20 C to 200 C
- Cleaning option: CIP/SIP
- Design: Single, double and triple wall design, heat able, insulated.

R.H.P.W.S Offers:

- CIP and SIP vessels
- Smart tanks and vessels
- Filtration skids
- Media preparation vessels
- Mixing tanks and vessels



APPLICATIONS

- Liquid Syrup Manufacturing
- Cream Manufacturing
- Chemical Mixing
- Cosmetic Manufacturing
- Liquid injection Manufacturing.

CIP & SIP SYSTEM



CIP & SIP Systems

Clean-In-Place (CIP)/ Steam-In-Place (SIP) technology offers significant advantages to manufacturing facilities from efficient cleaning of process equipment & piping at lower costs to improve product quality CIP System are fully integrated incorporating tanks, pumps, valves, spray cleaning devices, heat exchanger, piping & controls without the need to disassemble all or part of the system, significantly reduces cleaning costs and minimizes the handling of chemicals to provide a safer environment for plant personnel.

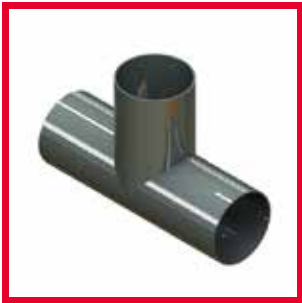
Cleaning and sanitization process for process vessels and interconnecting process piping is one of the most critical aspect in Pharmaceutical, Life-science, Healthcare and Cosmetic to remove residues from the previous batches and ensure contamination-free system

Benefits of system

- Based on Time Action Flow Chemical Temperature cleaning cycle principles
- Defined module and automation
- Compliance to ISPE, ASME-BPE, cGMP guidelines
- Easy to integrate with existing process system with all the essential analytical instruments
- Custom designed as pre-process requirements
- Cost and reliability gains from reduced manual work and reduced risk of accidental recontamination

Applications

- Pharmaceuticals
- Biotechnology
- Food
- Beverage



Tee



Bend



Clamp



Electro polish pipe



Flush Bottom Valve



Reducer



Non Return valve



Zero Deadleg valve



Y-Actuator Valve



Diaphragm Valve



Butterfly Valve



Ball valve



Flow Diverter Valve



BPR Valve



Jacketed vent Filter



Filter Housing

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DESIGN FOR TODAY BUILD FOR FUTURE