

# Система VRx

## Технические характеристики

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## VRx System

### GENERAL INFORMATION

The VRx System is a Hot Water Sanitizable (HWS) system built on a standardized platform for the generation of compendial water.

Designed for minimization of microbial growth, the VRx System employs the use of all stainless steel tubing and chlorine injection at the front of the skid. The VRx System is engineered with the industry leading CDI-LX® module. We also offer our patented S3 capabilities as an option for maximum efficiency and ease of use.

The VRx System has configurable options to match each unique application, process preferences and challenging feed water sources. This evolutionary and robust standardized design eliminates engineering delays and is offered with competitive lead times.

### VRx SYSTEM FEATURES

- Standardized pharmaceutical system with five flow rate options
- Comprehensive GAMP compliant validation documentation package and protocols including detailed engineering/design documents and certifications
- High quality 316 L stainless steel tubing throughout the system
- Chlorinated break tank to minimize bacterial growth
- Modular programming with premium PLC/HMI
- Fully operational wet FAT performed on all systems for ease of installation and fast start-up
- Single point electrical and pneumatic connections, simplifying field install requirements
- High recovery options available on large capacity units
- 24/7 remote monitoring available through our Water One® Services program with access to production, water quality and system performance data



### VRx SYSTEM BENEFITS

- Provides high quality water to meet your needs
- Ease of operation and maintenance
- Minimizes bacterial growth
- Easily integrates with plant wide automation system
- Supports sustainability goals with efficient water and power consumption
- Unsurpassed local service support with industry expertise



The VRx System features a sophisticated design that includes intricate stainless steel tubing throughout the skid to ensure quality.

# Process Components

## PROCESS WATER EQUIPMENT

|                                        |                                                                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chlorinated Break Tank with Spray Ball | Water entry point for the VRx system is a stainless steel break tank which is chlorinated by a metering pump and solution tank on either feed or recirculated water |
| Booster Pump                           | Stainless steel vertical multi-staged centrifugal VFD controlled pump                                                                                               |
| Steam or Electric Heat Exchanger       | Stainless steel shell and tube heat exchanger or stainless immersion heater for hot water sanitization and water tempering                                          |
| Dechlorination                         | 3 options available                                                                                                                                                 |
| Pre-Filter                             | Stainless steel housing with 5.0 micron filter                                                                                                                      |
| 1 <sup>st</sup> Pass RO Pump           | Stainless steel vertical multi-staged centrifugal VFD controlled pump                                                                                               |
| 1 <sup>st</sup> Pass Pressure Vessels  | Stainless Steel or FRP pressure vessels, rated for 450 psig                                                                                                         |
| RO Membranes                           | Full fit thin film composite, hot water sanitizable membranes                                                                                                       |
| CEDI Modules                           | CDI-LX® hot water sanitizable modules                                                                                                                               |
| Controls Panel                         | IP65 rated controls enclosure                                                                                                                                       |
| Power Panel                            | IP54 rated fan cooled enclosure                                                                                                                                     |
| Process Piping                         | Stainless steel tube sanitary, <20 Ra interior finish                                                                                                               |

## OPTIONAL PROCESS WATER COMPONENTS

|                                       |                                                                                                                                                  |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Cooling Exchanger                     | Stainless steel shell and tube heat exchanger for water tempering                                                                                |
| Activated Carbon Filter               | Stainless steel vessel, 100 psig with optional chlorine analyzer                                                                                 |
| Bisulfite Chemical Injection          | Feed forward design, metering pump, solution tank and mixer, low level switch and 2 chlorine analyzers with automatic rate controlled by the PLC |
| Carbon Block Filter                   | 5.0 micron hot water sanitizable carbon cartridge placed in the pre-filter if this option is selected                                            |
| Pre RO-Ultra Violet Lamp              | Stainless steel chamber with 254 nm lamp (minimum 30 mJ/cm <sup>2</sup> )                                                                        |
| 2 <sup>nd</sup> Pass RO Pump          | Stainless steel vertical multi-staged centrifugal VFD controlled pump                                                                            |
| 2 <sup>nd</sup> Pass Pressure Vessels | Stainless Steel or FRP pressure vessels, rated for 450 psig                                                                                      |
| Membrane Degasifiers                  | Stainless steel housing X50 hot water sanitizable membranes                                                                                      |
| Caustic Chemical Injection            | pH adjustment unit including metering pump, solution tank and pH monitor with automatic rate control by system control                           |
| Final UV Unit                         | Stainless steel chamber with 254 nm lamp (minimum 30 mJ/cm <sup>2</sup> )                                                                        |
| Final Filter 0.1/.05 UF               | Sanitary stainless steel housing sized for either 0.1 micron cartridge filter or a 0.05 micron cartridge ultra filter                            |
| PLC/HMI                               | Allen-Bradley or Siemens with 15" touch screen                                                                                                   |

## GENERAL SPECIFICATIONS

| Description                              | Model 4                                                                 | Model 8                         | Model 18                         | Model 25                         | Model 45                         |
|------------------------------------------|-------------------------------------------------------------------------|---------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Nominal Product gpm (m <sup>3</sup> /hr) | 4 gpm (0.91 m <sup>3</sup> /hr)                                         | 8 gpm (1.82 m <sup>3</sup> /hr) | 18 gpm (4.09 m <sup>3</sup> /hr) | 25 gpm (5.68 m <sup>3</sup> /hr) | 45 gpm (10.2 m <sup>3</sup> /hr) |
| Nominal Recovery %                       | 75% (2 <sup>nd</sup> pass 82.5%)                                        |                                 |                                  |                                  |                                  |
| Inlet Pressure                           | 20-100 psig (1.3-6.8 Bar)                                               |                                 |                                  |                                  |                                  |
| Inlet Feed Water Temperature             | 40°F-77°F (4.5°C-25°C)                                                  |                                 |                                  |                                  |                                  |
| Nominal Product Pressure                 | 20 psig (1.3 bar)                                                       |                                 |                                  |                                  |                                  |
| Frame Construction                       | Carbon steel or 304 stainless steel—box tube and channel                |                                 |                                  |                                  |                                  |
| Electrical and Power Panels              | Carbon steel or stainless steel (will align with frame material choice) |                                 |                                  |                                  |                                  |



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