

Reverse Osmosis System Fabrication

Overview

Harn R/O Systems uses in-house personnel to assemble all its systems. We fabricate all of our fiberglass framework and plastic piping systems in-house, outsourcing only large-diameter stainless steel piping system fabrication. Control panels can be fabricated in-house or outsourced. All frames are coated in-house. QA/QC inspections occur throughout the fabrication process to assure optimum quality of the finished product. Most systems are fully assembled and hydrostatically tested at our facility prior to shipping.

Frame

Our membrane treatment frames are constructed of Extren 500 fiberglass structural shapes for maximum corrosion resistance. They are then coated with a two-part epoxy coating to prevent any water absorption and to provide an easy-to-maintain smooth finish. After many years in harsh environments, the finish can be wiped down with a damp cloth and be restored to a like-new appearance. We take pride in the appearance of the systems, which is generally appreciated by the end user and maintained when the systems are turned over to the owner. All of the fasteners and supports used within the skid structure are non-metallic (i.e. fiberglass unistrut) stainless or aluminum. The skid structure is assembled with aluminum rivets and stainless fasteners.

Piping

Likewise, piping materials are all either non-metallic or stainless steel. For high-pressure system piping, we use 316L stainless steel which is superior to 304, which will show surface corrosion. After fabrication, the stainless steel piping is passivated and electropolished to remove surface impurities and provide a bright shiny finish. This improves the life of the stainless and minimizes surface corrosion even in harsh atmospheres. The low-pressure piping is Schedule 80 PVC. We are careful to use the same manufacturer of PVC fittings and piping so that the appearance of the skid assembly is uniform and for ease of maintenance throughout the life of the plant.

Instrumentation

Instrumentation suppliers are generally provided as specified by the Owner's engineer. If the selection is left to the OEM, we generally use Rosemount, Siemens, Yokogawa, or equal for analytical instrumentation such as pH and conductivity, for pilot units or smaller systems, Signet flow meters may be considered. Again, uniformity of suppliers is desired for service and maintaining replacement parts.

Valves

Valve manufacturers are utilized as specified. We recommend high-performance, all-stainless steel butterfly valves for high pressure valves on the skids. For flow control applications, we use high-quality stainless steel characterized seat ball valves such as V-port ball valves for improved control accuracy and reduced cavitation and noise.

Pressure Vessels

Fiberglass pressure vessels are the gold standard within the membrane water treatment industry. Stainless steel pressure vessels are still available. However, they will experience corrosion and have lower tolerances for roundness and dimensional accuracy which can make membrane maintenance or replacement more difficult. Learn more about membrane services [here](#). There are two main U.S. suppliers of fiberglass pressure vessels. We commonly use either to maintain competitive pricing.

Controls

We have our own in-house controls capabilities; however, for larger projects, we may work with an outside controls system integrator. We commonly interface with other integrators that may be providing other system controls. We can work with any integrator if the Owner has an existing vendor they prefer. The control components and interfaces can be provided as specified to match the Owner's preferences.