

UV Water Treatment
Hydro-Optic™ Technology

Complete Biosecurity for Pharmaceutical Water Production (PW/WFI) Incorporates the Innovative Hydro-Optic™ UV Technology

Biopuremax, a company with more than 20 years of experience in the design, installation, validation and operation of high-quality pharmaceutical water systems, has developed the next-generation of a pharmaceutical reverse osmosis (RO) pretreatment water system — the **Biopuremax** RO pretreatment solution is a combination between ESR™(electrolytic scale reduction) that precipitates all scale forming ions and Atlantium's **Hydro-Optic™** (HOD) ultraviolet (UV) technology to protect RO membranes. The HOD UV technology is proven to remove oxidizing substances and bacteria in the RO feed water that could damage RO membranes.

Biofouling and the precipitation of scale and deposits that build up on RO membrane elements leads to poor permeate quality, low permeate production, unscheduled downtime, increased water consumption and energy costs, and premature membrane replacement. ESR is an innovative technology that replaces the traditional ion exchange softeners and antiscalant chemicals by providing an environmentally friendly, clean, simple, reliable and effective way of supplying chemical free/hardness reduced water for use as RO feed in pharmaceutical applications.

Because the ESR system operates without chemicals, media or resins, the need for regeneration, complicated instrumentation and feedback loops is eliminated. However, free chlorine is generated as a byproduct. Because UV breaks the chemical bonds of free chlorine or chloramine to form hydrochloric acid and other byproducts, a sufficient dose of UV radiation reduces the concentration of free available chlorine (FAC). To protect sensitive RO membranes from chlorine by providing removal of FAC to non-detect levels, Biopuremax integrated the HOD UV technology after the ESR stage. The HOD UV technology also reduces any possible microbial biofilm development by reliably reducing incoming bacteria counts.

"The integration between the HOD UV technology and the ESR technology has enabled Biopuremax to deliver a 'green' RO pretreatment water solution without wastage, disposal, chemicals, organics, waste stream, and with markedly reduced operating costs for the life of the installation. With advanced software for real-time monitoring and control of mission-critical parameters, HOD UV also provides disinfection of the PW and WFI loops, helping to ensure water purity is maintained and complies with PW and WFI standards," said Shlomo Sackstein, CEO, Biopuremax.

Non-Chemical Bioload Control, Dechlorination and Disinfection

The HOD UV technology, equally effective with cold or hot water, provides facilities with an energy-efficient and non-chemical process control solution. It prevents RO biofouling and provides proven disinfection for the PW/WFI loop. The technology protects sensitive RO membranes and CDI/EDI from chlorine by providing removal of FAC to non-detect levels, replacing problematic carbon filter or sodium bisulfite (SBS) dechlorination techniques. Ozone destruction is also provided.



Biopuremax pharmaceutical RO pretreatment water system