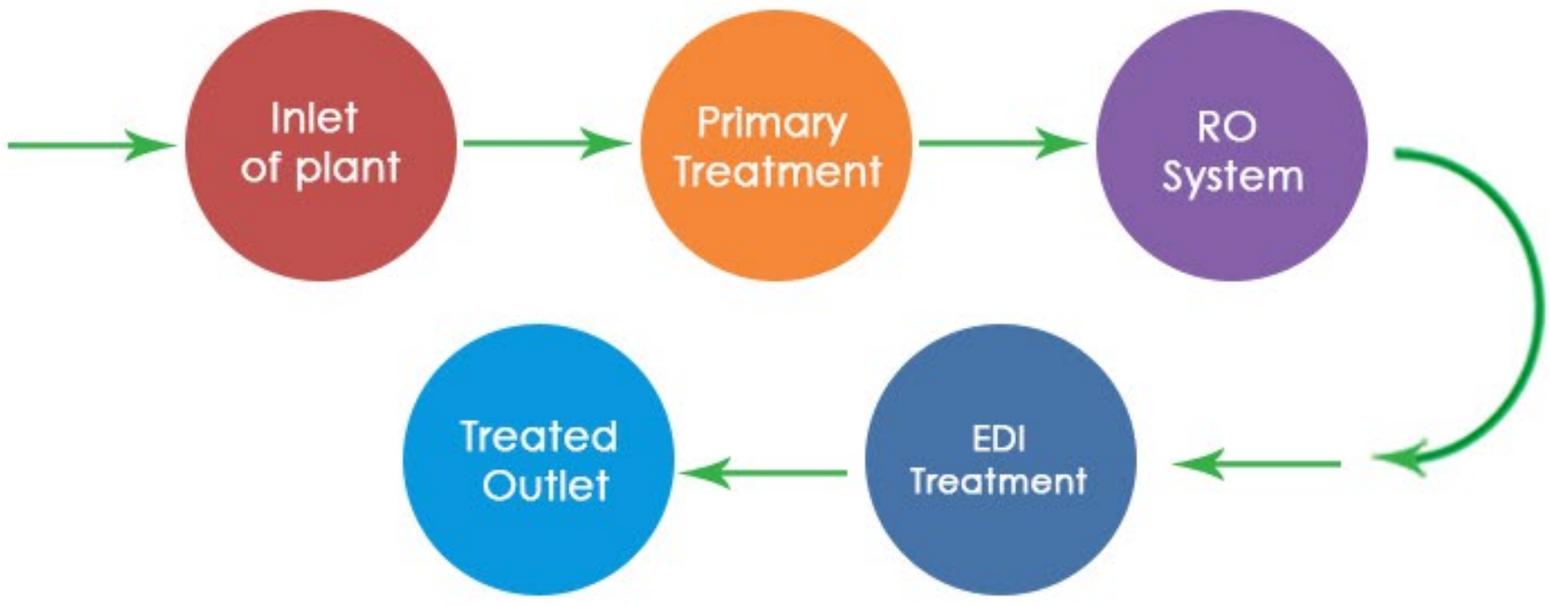
U. S. AQUATREAT CO.

ELECTRO DE-IONIZATION SYSTEM (EDI)

Process Flow Diagram:



Process Description :

High-purity water production using a combination of membrane separation and ion exchange processes was regular adapted process. After technology development, membrane separation concept is adapted as electrodialysis (ED), it uses an electrical potential to transport and segregate charged aqueous species. EDI combines the semi-permeable membrane technology with ion-exchange media to provide a high-efficiency demineralization process. Electrodialysis (ED) dilute cell filled with mixed-bed ion-exchange resin, some complex chemical reactions take place within the resin filled cell. The reactions help to produce the very high purity water required. When flow enters the resin-filled diluting compartment of an EDI stack, processes are set in motion. Strong ions are scavenged out of the feed stream by the mixed bed resin. Under the influence of the strong direct current field applied across the stack of components, charged ions are pulled off the resin and drawn toward the respective, oppositely charged electrodes, cathode or anode. As these strongly charged species, such as sodium and chloride, migrate toward the ion-exchange membrane, they are continuously removed and transferred into the adjacent concentrating compartments. As the strong ions are removed from the dilute process stream, the conductivity of water becomes low producing high purity water.

This EDI system is more advantageneous because,

- EDI is Continuous, does not require shutdowns or changeovers.
- Provides water of consistent quality
- EDI does not require chemicals
- EDI modules are the smallest and lightest per unit flow, EDI skids are therefore compact
- Requires little energy
- Economic use of capital saves operating expense

Application:

1) Solar cell Industry 2) Pharmaceutical Industry