Replacing the electrodeionization, or EDI, system at a power plant may not be as simple as changing the batteries in your smoke alarm or installing new wiper blades on your automobile. With planning and preparation, however, technicians can install the latest version of the water purification technology in a matter of days.

Power plants require deionized water as makeup for their high-pressure boilers to produce the steam that drives the turbines that generate electricity. If the dissolved solids in the water are not removed, boiler tubes can experience scaling and fouling, reducing the transfer of heat and the system’s efficiency.

To prevent this damage, power producers traditionally used a combination of membrane separation and ion exchange processes to remove impurities from their feed water. This required the significant use of chemicals, namely acid and caustic; a large footprint; and regular interaction with the systems by workers and sometimes suppliers.

That all began to change in the late 1980s, however, with the introduction of EDI technology. EDI combines ion-exchange membrane technology with ion-exchange media to provide a high efficiency demineralization process. Adoption of this new technology was slow in many cases because significant pretreatment was required for early versions of EDI. Today, EDI units are a common site at power plants because technical advancements have enhanced the efficiency and simplicity of the water purification process.

Nonetheless, the performance of EDI units can gradually and steadily degrade over time. That’s what happened when the management of a gas-fired plant in the Midwest contacted MPW Industrial Services for the purchase and installation of the newest EDI technology through MPW’s Products Direct arm (https://sales.mpwservices.com/), an E-Cell MK-3 from General Electric, now Suez. Plant management said it wanted to switch to the new technology during an upcoming five-day outage.

To ensure the installation of the new EDI units went smoothly, MPW, General Electric and plant management engaged in a series of planning meetings to define the scope of work as well as the details of the assignment.

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Electrodeionization Systems

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