

Dallas's Elm Fork Water Treatment Plant is Fit for the Future with IPEX Piping Systems



Funded through water and wastewater revenues rather than tax dollars, Dallas Water Utilities maintains three water treatment plants and nearly 5,000 miles of water mains to deliver 900 million gallons per day (MGD) of potable water from six different reservoirs to millions of customers in the City of Dallas and surrounding communities.

While the city currently has enough water to meet its needs, Dallas Water Utilities knows that even with conservation and reuse, additional water supply will be needed by 2035. To prepare for the city's future water needs, an improvement plan was recently approved that included renovating the Elm Fork Water Treatment Plant (EFWTP).

Elements of the EFWTP upgrade included improvements to chlorine and ozone destruct unit systems that involved new bulk chlorine storage tanks, evaporator units, chlorinators, ejectors and transfer, booster and recirculation pumps. The plant's East Chemical Building was also expanded to house a third 90-ton chlorine railcar and a new electrical and control room. All associated thermoplastic piping systems for the upgrades were also a part of the extensive project.

With chlorine, ferric sulfate and caustic soda all used in the water treatment process, the piping systems needed to be of the highest quality with plenty of options to meet various requirements for chemical resistance and leak prevention throughout the plant. Fortunately, piping systems from IPEX provided the quality, breadth of product and available options to effectively meet the plant's day-to-day operations.

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JQ Infrastructure

In all underground areas, the piping for the EFWTP upgrade was required to be double contained to protect against leaks. The IPEX Guardian™ Vinyl double containment piping system was selected as

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the system of choice. The Guardian double containment systems were comprised of approximately 2000 feet of 6-inch Xirtec® PVC Schedule 80 PVC carrier inside 10-inch Xirtec PVC Schedule 80 PVC containment. Another nearly 2500 feet of larger diameter 10-inch carrier inside 16-inch containment and 8-inch carrier inside 12-inch containment were also deployed.

For underground ferric sulfate piping for transfer of chemical from bulk storage tanks to day tanks, the Guardian double containment systems consisted of 360 feet of 4-inch Xirtec® CPVC carrier inside 8-inch Xirtec CPVC containment.

To reduce system installation and maintenance costs, the IPEX Guardian system features a patented Centra-Lok™ design, reducing the required joints by 40–60% compared to traditional double containment systems. And less joints means less potential for problems and greater overall system integrity. The Guardian system is also available in spool piece fabrications according to specific application designs.

“Larger diameter double containment systems are not as common and can be tricky to install. The IPEX Guardian system was good to work with and the system passed pressure testing better than what we expected,” said Mike Hughey with Archer Western, a member of the Walsh Group that specializes in general contracting and construction management. “We asked our IPEX sales representative, Bob Dragisic, for training on joint installation and ended up learning about a better solvent cement for the joints that would also be suitable for all piping on the project.

Throughout the underground double containment piping systems, leak detection stations were deployed at various low points to provide the ability to check for potential leaks.

To control flow for redundancy and enable isolation of piping sections for maintenance, the EFWTP used IPEX VXE and VX Series Ball Valves in several different supply areas and branch points throughout the plant. The compact VXE and VX ball valves offer an innovative floating ball flow control system that features a full-port, bi-directional double block design. Their true union style allows the valves to be easily removed from the piping system and fully serviced. Available in both PVC and CPVC for use throughout all areas of the plant, the valves offer a threaded seat stop carrier that provides improved seal integrity under tough service conditions and a removable handle that also functions as a tool for ball seat adjustment.

For use with the ball valves, IPEX EasyFit SXE Series True Union Ball Check Valves were used to ensure reliability by enabling positive shutoff in both vertical and horizontal installations in the presence of back pressure.

“IPEX offers high quality valves and flanges that I would definitely recommend. Plus, they were the only supplier that could meet the specification on some of the valves,” says Hughey. “Due to the need for consistency, we were also able to get IPEX specified for some of the valves that they were not originally specified for.”

Shela Chowdhury, one of the project’s yard piping designers with JQ Infrastructure, the civil engineering firm for the EFWTP project, had never worked with IPEX products before and was ultimately impressed with the company’s responsiveness, material options and range of pipe, fittings, and valves.

“IPEX had the material compatibility we required for some of the chemicals used at the treatment plant,” says Chowdhury. “I would definitely consider specifying IPEX again in the future. The range of material, fittings and valve options to choose from really helps to meet the specific needs of any project.”

With the first phase of construction nearly complete at the EFWTP, the City of Dallas has several additional improvements planned over the next few years for biological active filtration to meet regulatory requirements and rehabilitate a deteriorated pump station to further improve reliability. With IPEX Guardian double containment, Xirtec PVC pipe, fittings, and valves in place, the plant is well equipped to move forward with additional improvements and continue to deliver water to the growing Dallas population.



IPEX PVC & CPVC systems were painted brown with latex paint for chemical identification and UV protection.