

Ozonation Facilities at the Pierce-Burch and Kubala Water Treatment Plants

HIGHLIGHTS

First community in Texas to have its entire water supply treated with ozone.

68-mgd and 65-mgd water treatment facilities.

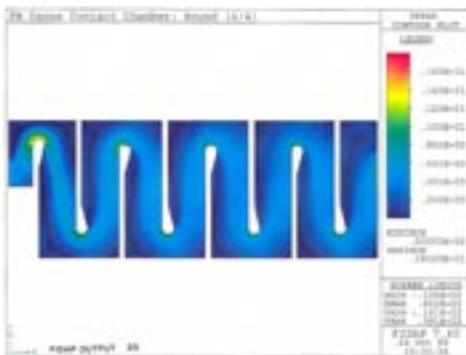
Design of \$20 million in preozonation and intermediate ozonation facilities at two water treatment plants.

CFD used to optimize ozone contactor design.

Reduction in tastes and odors, trihalomethanes, and potential *Cryptosporidium* contamination.

Carollo, in association with others, completed the design of preozonation and intermediate ozonation facilities and filtration improvements for two water treatment plants for the City of Arlington. The design team used computational fluid dynamic (CFD) models to optimize the ozone contactor design. The ozonation improvements include 3,000 pounds per day of generation capacity at the 68-mgd Pierce-Burch Water Treatment Plant and 3,000 pounds per day generation capacity at the 65-mgd John F. Kubala Water Treatment Plant. Liquid oxygen (LOX) is stored in LOX tanks and fed to the medium-frequency generators where ozone is produced at a concentration of up to 10 percent by weight. The design provides for both preozonation and intermediate ozonation contactors at each plant to obtain the maximum benefits for microflocculation and disinfection. Filter improvements involved replacing the existing underdrains with porous-plate air/water underdrains and replacing the filter media with granular activated carbon (GAC) over sand.

These improvements were the result of a year-long treatability study conducted by Carollo, in association with others, to determine Arlington’s best course to comply with impending regulations and address taste and odor problems occurring during the warmer months. The study involved bench-scale and pilot-scale testing of enhanced coagulation, ozonation/sand filtration, and ozonation with GAC contactors. The study concluded that two-stage ozone with GAC/sand filters was the most cost-effective method of meeting Arlington’s water quality goals of eliminating taste and odor problems, reducing trihalomethanes and providing another barrier against potential *Cryptosporidium* contamination.



Through the use of computational fluid dynamic modeling, Carollo was able to increase ozone reactor efficiency 20 percent, significantly reducing construction costs.

