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CASE STUDY

Ozone Resolves Hydrogen Sulfide and Color Issues in Well Water

Mazzei GDT™ Ozone Contacting System in a Potable Drinking Water Plant

Four Way Special Utility District (SUD) — Water Plant Number 3
Eastern Angelina County, Texas

The Four Way SUD operates multiple potable water plants, serving both urban and rural customers.

The Problem: Well Number 3 flows at 750 GPM and serves over 2,000 rural customers. The Utility District faced aesthetic issues with Hydrogen Sulfide (H_2S) and color due to the presence of tannic acids in the source water. While the presence of these contaminants is not uncommon, the conventional treatment methods being utilized — aeration and chlorine injection — were ineffective at color, taste and odor control and held the potential for exceeding regulated disinfection by-products Trihalomethanes (THMs) and Haloacetic Acids (HAA5) formation.

The Solution: The Four Way SUD contacted Mike Walker, PE, of Goodwin-Lasiter, Inc. in Lufkin,Texas, to evaluate the water concerns. Goodwin-Lasiter proposed ozone treatment as the solution and consulted with Jerry Clark of Clark Water Treatment in Nacogdoches, Texas, a Manufacturer's Representative for Mazzei Injector Company, LLC of Bakersfield, California.

Working together, the team submitted a design proposal to the Texas Commission on Environmental Quality (TCEQ) which detailed solutions to the problems facing the SUD. After a few months of technical data exchange with the Commission, little progress had been made. Mazzei engineers traveled to Texas to support the consultant's efforts to answer the Commission's questions and concerns on the benefits of ozone to meet the application needs and protect public health. The packaged ozone system design presented incorporating the highly efficient Mazzei GDT ozone contacting

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Mazzei Injector Company, LLC

500 Rooster Drive

Bakersfield, California 93307-9555

TEL 661-363-6500

FAX 661-363-7500

www.mazzei.net

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system was shown to allow tight control of the dissolved ozone levels to reduce color, taste and odor concerns while avoiding the formation of regulated disinfection by-products including THMs, HAA5 and bromate. The process design presentation was supported by laboratory testing which confirmed no excessive disinfection by-product formation resulting in the Commission's approval.

In addition to color, taste and odor control that ozone treatment provides, the treatment process enhancement allowed for reduced chlorine dosage and discontinuation of the current high energy demand air stripping process. The ozone system installed included on-site oxygen and ozone generation, side stream Mazzei GDT-3090 Ozone Transfer Skid and dissolved ozone measurement and control by a PLC PID loop.

The Results: The ozone system, with the highly efficient GDT contacting element, is now in operation at Plant Number 3. The Four Way SUD follows stringent water monitoring and laboratory testing to meet TCEQ permitting requirements and is pleased with the results which were slightly better than projected. The utility, their customers and the Texas Water Commission are very pleased that the negative well water quality parameters could be addressed so effectively by ozone treatment.

To get a better understanding about how the GDT system works, take a look at the Mazzei GDT animation

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For additional information on how Mazzei can assist with your water treatment goals, contact us at:

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