DRINKING WATER TREATMENT PLANT

LIQUID OXYGEN SUPPLY FOR OZONE GENERATION

CASE STUDY #3

Company

A water treatment plant located in California is the largest submerged membrane water treatment plant in the world and the first treatment plant built by the San Diego County Water Authority. Located next to the Water Authority's aqueduct in a semirural area north of the city of San Marcos, the high-capacity treatment plant produces up to 100 million gallons of treated water per day — enough to supply up to 220,000 typical four-person households each year. Construction was completed on schedule in April 2008.

Design Challenges

Meet the tank equipment supply specifications for capacity, orientation, thermal performance, flow requirements, and structural integrity to comply with California seismic requirements. Low profile required to stay under adjacent building heights.

Solution

Installed (2) HS-15000NC-175-01 vessels (30,000 gal. total capacity) with stainless steel piping. Cold shock test of vessel at factory, tank mounted pressure and level transmitters, extended warranty, remote fill, (2) Ambient Vaporizers (Thermax SG270, 24hr rating @ 24,000 SCFH), spare parts kit, shipping, install supervision, and on-site training.

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System installation at site
(Note vaporizers in background.)

Design Basis Specific to Site

- 24-7 operation with vaporizers switching every 12 hours to allow for vaporizer thaw
- Flow spec: 21,100 SCFH, 24 hour duty cycle x 365 days/year.

Benefits of Ozone for Drinking Water

Ozone (O_3) is a natural, strong oxidation agent that goes to work immediately reacting with pollutants and if excess is available it breaks down to O_2 before human consumption.

- Effective in the reduction or elimination of odor, after taste, and color
- Improvement of flocculation (removes solids in suspension (colloids) in the form of floc or flakes)
- Elimination of endocrine substances (micro-pollutants, such as pesticides and pharmaceutical agents which have leached into the water supply from human waste)
- Expedites Iron & Manganese oxidation for removal (rust & black plumbing stains)
- Improves Disinfection (killing of microorganisms)
- Reduction of halogenated compounds (i.e. THMs (trihalomethanes), which are formed when chlorine is added to the raw water containing humic materials (organic matter))

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