



CORROSION CONTROL: Gravity Sewer Crown Corrosion

Gravity Sewer Corrosion Control With Super- Oxygenation

- Pure D.O. with No Bubbles
- Increase Remaining Useful Life
- Prevent Corrosion
- Maintain Aerobic Environment

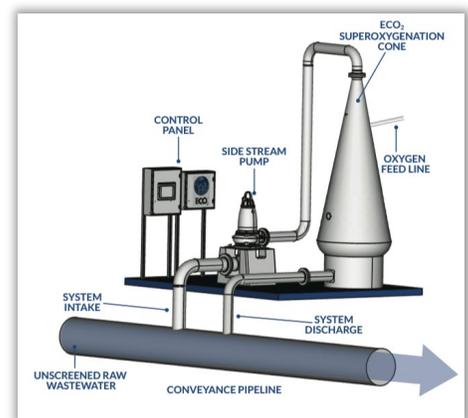
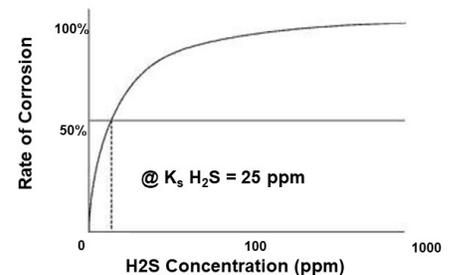
ECO₂
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The high BOD of domestic wastewater and limited reaeration rates commonly found in municipal gravity sewers enhance H₂S production in the flowing wastewater during warm weather so that higher H₂S concentrations in the air head space result. In cooler climates, the H₂S concentration in the head space is considerably less than for warmer climates because the microbial generation of H₂S proceeds more slowly at lower temperature. This has mistakenly led municipalities in cooler climates to assume that they will encounter fewer corrosion problems than their warmer climate colleagues. However, since H₂SO₄ generation

rates are near 50% of maximum at H₂S concentrations in the air above the flowing wastewater at 2-55 ppm, there is only a minor difference in corrosion rate with lower temperatures. Thus, the corrosion rate of the H₂SO₄ reaction with concrete is not dependent on temperature.

Therefore, even though perceptible odors are much reduced by H₂S concentrations in the sewer gas phase below 25 ppm, concrete corrosion rates appear to be minimally reduced. This is particularly germane to cities in the colder climates where odor problems may be less severe than in warmer climates but where corrosion may be proceeding at nearly the same rates. These facts also have strong implications on the overall policy for H₂S. Is the goal odor control or corrosion control? For instance, nitrate supplementation to gravity sewers cannot economically reduce dissolved H₂S in the wastewater below about 0.5 mg/L, which can still result in over 25 ppm in the air space. This can markedly reduce odors but may result in little reduction of corrosion. Whereas, if corrosion control is the objective, there will be simultaneous control of odor. Two to 55 ppm H₂S has been the range of concentrations found to support 50% of the maximum potential rate of conversion to H₂SO₄.

RATE OF CORROSION



SuperOxygenation Diagram