

Case Study

MAZZEI[®] HIGH EFFICIENCY INJECTORS SOLVE BOD PROBLEM FOR CALIFORNIA FOOD PROCESSING FACILITY.

THE PROBLEM: A California food processing facility was having problems in their waste water treatment pond caused by excessive BOD and lack of oxygen. Nine (9) surface aerators (135 combined HP) were unable to provide sufficient oxygen to the pond. The lack of oxygen necessitated operation of the pond at lower than optimum water levels in order to maintain compliance with their existing operation permit.

THE SYSTEM: Effluent from this facility drains into a lined pond of about 7,250,000 gallons (27,444 m³). Influent BOD levels of 4,500 to 6,000 mg/l are common. Water from this pond is diluted with fresh water and used for irrigation of orchards. There are maximum limits on the BOD of the diluted irrigation water and minimum limits on the dissolved oxygen content of the top one foot of the pond water. At times, prior to installation of the Mazzei AirJection[™] System, dilution rates of 7 or 8 to 1 were necessary to limit the BOD of the irrigation water.

THE SOLUTION: Two 40 HP recirculating pumps were installed. Suction for these pumps was taken from the 7 foot level in the pond. A loop of piping, fed by both pumps, was installed around the perimeter of the pond. Twenty Mazzei Model 4090-X (4") Injectors were fed from this loop. The Mazzei Injectors draw in (educt) about 40 scfm of air each, or a total

of 800 scfm. This aerated water is re-injected into the pond through perforated piping at the 8 foot level.

RESULTS: Operating depth of the pond has been increased from 14 feet, with surface aerators only, to 18 feet, its design maximum, with surface aerators and Mazzei Injectors. Oxygen levels have been maintained above 1.0 mg/l at all depths, from 8 feet to 18 feet, thus complying with the operating permit. During a one month test period, a BOD reduction of 68.6% occurred in the pond.

Subsequent testing of the combined aeration system showed that oxygen levels of 2 to 5 mg/l were obtainable. Higher oxygen levels increased the efficiency of BOD reduction. This testing also confirmed the ability of the Mazzei AirJection[™] System to provide sufficient oxygen by itself to satisfy all of the customers requirements.

TYPICAL READINGS-Surf. Aerators Only

Influent O₂: 0.0 mg/l
Influent BOD₅: 4,750 mg/l
Effluent O₂: 0.3 mg/l
Effluent BOD₅: 4,000 mg/l (undiluted)

TYPICAL READINGS-AirJection[™] Only

Influent O₂: 0.0 mg/l
Influent BOD₅: 4,750 mg/l
Effluent O₂: 1.0 mg/l
Effluent BOD₅: 2,300 mg/l (undiluted)

TYPICAL READINGS-Combined

Influent O₂: 0.0 mg/l
Influent BOD₅: 4,750 mg/l
Effluent O₂: 2.0 - 5.0 mg/l
Effluent BOD₅: 1,488 mg/l (undiluted)