



CASE STUDY

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Wastewater Aeration

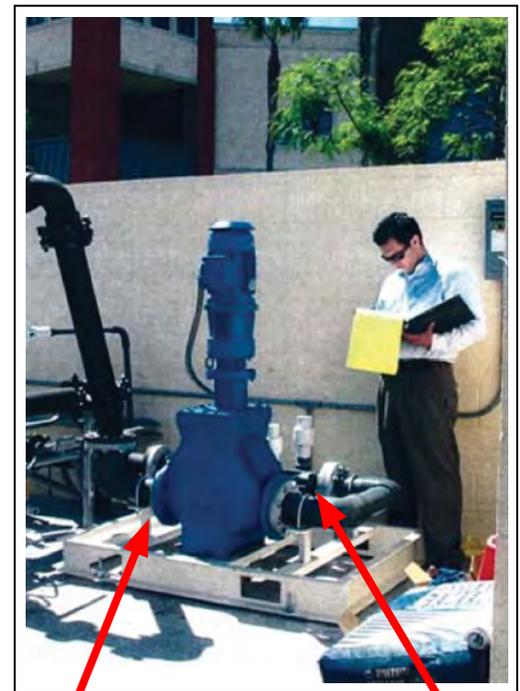
Shopping Center Avoids Litigation by Resolving Sewer Odor Problems

Mazzei Injector Company, LLC is a recognized industry leader in gas to liquid mass transfer primarily from its proven 25 year experience with ozone applications. In addition, Mazzei has installed the same patented *Venturi injector* and *mixing nozzle* technology in many municipal and industrial wastewater systems in applications at lift stations, equalization tanks, aeration basins, activated sludge digesters and in-pipeline post-aeration discharge.

New Problem/Opportunity: A new shopping center in Ventura, California, with several major retail stores, was suffering from a sewer odor problem. Hydrogen sulfide odors flooded the entrances of the stores in the shopping center causing customer and employee complaints. The local and corporate divisions of these retailers initiated lawsuits against the developer of the property citing poor traffic due to the disturbing sewer odors. The engineering firm of Moffatt & Nichol was hired to find a solution to this problem in an effort to resolve all litigation issues and restore local retailer business successes.

The odor problems originated from a trap in the gravity sewer line. All sewer lines from the development gravity fed to a gravity main under the street adjacent to the shopping center. The sewer line was constructed to dip under a telephone duct bank on its path to the gravity main. When sewer water flow stopped at the end of the day, the stagnant water in the trap under the telephone duct bank would turn septic, causing noxious gases to backflow into the center's retail establishments. The engineering firm consulted with CEC of Whittier, California, to design a lift station with aeration to prevent backflow of disturbing odors to the entrances of the shopping center.

The new design for the collection system incorporates an aeration/recirculation loop installed on the wet well that feeds a force main. The aeration loop consists of a solids handling self-priming pump, a solids grinder, a Mazzei model 4091 (4") Injector, and two sub-surface Mazzei (4") MTM45 nozzles. Differential pressure at the injector allows ambient air to be aspirated and mixed with the recirculation water as the first step in the Mazzei AirJection process. The water becomes saturated with oxygen as the two-phase flow leaves the injector and moves back to the wet well basin. At the wet well, the stream of gas and water moves through the MTM nozzles at high velocity to create a jet of micro-bubbles that continues to transfer oxygen to the bulk liquid. This high energy mixing assures high oxygen levels to control odors. All equipment, except for the nozzles, were conveniently skid mounted and installed above the wet-well for easy access and



Grinder

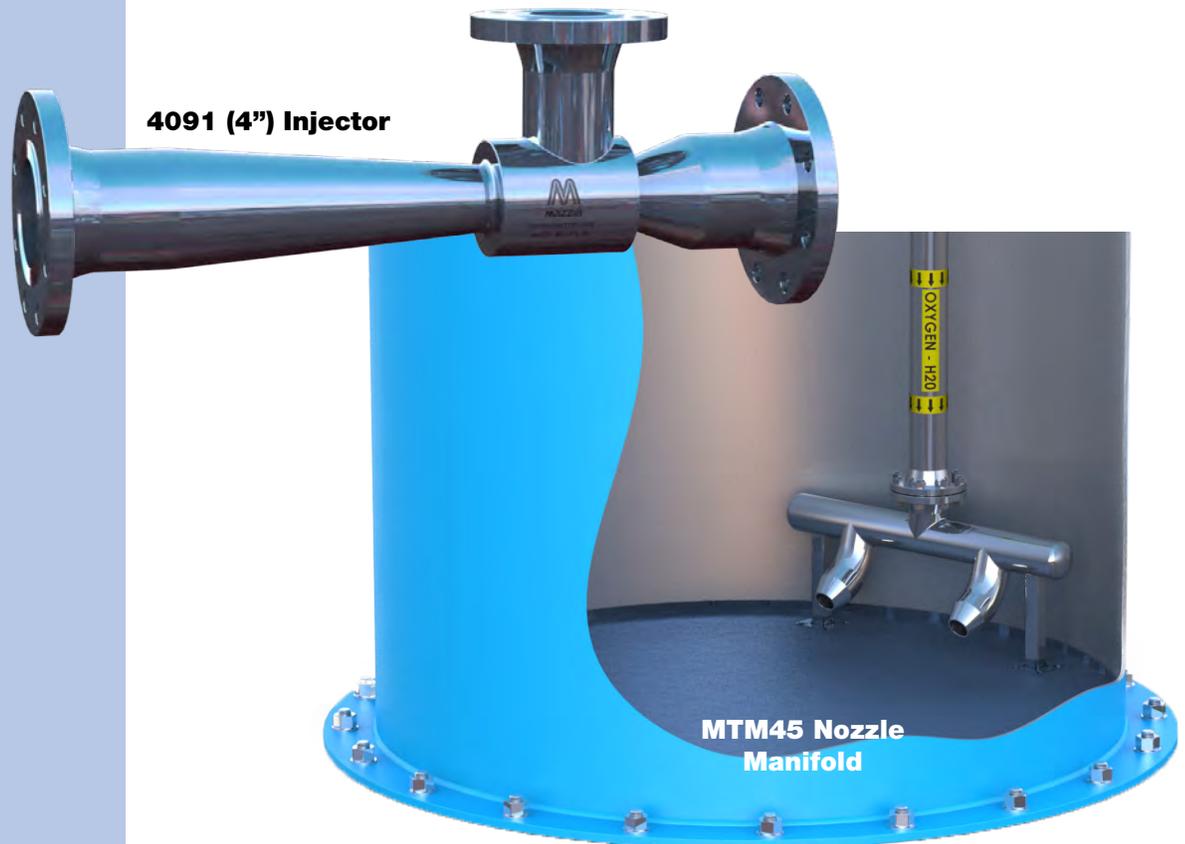
Injector

maintenance. The system was supplied with a local control panel which included an interval timer used to operate the aeration system and maintain an odor-free environment while consuming less energy than a continuously operating system.

The system was designed, not only to prevent odors, but also to operate with minimal maintenance and operator supervision. The system was commissioned in July of 2008 and continues in successful operation with minimal supervision and maintenance.

The retailers and customers of the shopping center are no longer subject to the disturbing sewer odors and court action was avoided.

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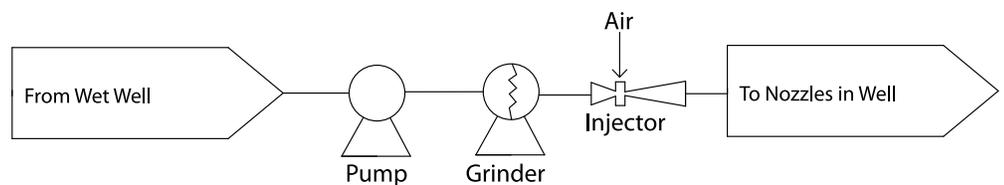
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Line Diagram of Aeration/Recirculation Loop



To get a better understanding about how a [Mazzei injector and nozzles](#) work together to solve this problem, take a look at this animation.