



CASE STUDY

World Leader
in Mixing and
Contacting
Technologies

Contact us today.

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Post-Treatment Aeration

Pure Oxygen Injection into a Pipeline

Hagerstown, Maryland

The Problem: In 2010, the Hagerstown Wastewater Treatment Plant in Maryland incorporated several plant modifications, one of which was the conversion of their disinfection process from the use of ozone to that of ultraviolet (UV). In their previous system, due to the ozone being produced by an oxygen-fed ozone generator, the dissolved oxygen (DO) levels of the effluent being discharged into a local creek met regulatory standards. With the change in the disinfection process, the regulatory agency was concerned about the environmental impact of the lower levels of DO being discharged. (Due to a de-nitrification step upstream, the treated effluent from the Hagerstown WWTP naturally has 0 mg/l of DO.) A new method was required to achieve the required effluent DO level.



36" Pipeline Flash Reactor

The Solution: Since the compressors and oxygen concentrators that were used in the old system still worked, it was decided to use that equipment to feed oxygen to reach their effluent DO goal (as high as 8 mg/l during certain seasons). A pure oxygen injection system using Mazzei gas contacting equipment was purchased. The equipment included: a booster pump, a 4" stainless steel Mazzei[®] Injector, a stainless steel Pipeline Flash Reactor[™] (PFR), and two oxygen control and instrumentation manifolds. In the new system, a fraction of the mainline flow is taken off the effluent pipeline, directed through a booster pump, and through an injector to aspirate pure oxygen. The oxygenated sidestream is then mixed back into the 36" effluent pipeline through an inline PFR (36" in diameter by 36" long) eliminating the need for an additional tank/basin and drastically reducing the energy consumption and footprint.

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Oxygen Control and
Instrumentation Manifold



4" Mazzei Injector



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

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The Results: Since the startup of the Mazzei injection system, the plant mainline flows have varied from 3.5-30 MGD with an average plant flow rate of 6.5 MGD. The system has successfully increased the effluent DO levels—exceeding the discharge requirements under all conditions—with minimum maintenance and low operator involvement required. The Mazzei pure oxygen injection system has proven to be an effective solution for the Hagerstown WWTP.

*To get a better understanding about how a
[Mazzei Sidestream Venturi Injector-Pipeline Flash Reactor](#)
injection system works, take a look at this animation.*

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