

## Green System

There is no bigger buzz today than the green issue. Every environmental group and most public agencies are urging system planners to consider the green issue. How does the system being considered impact the environment? Can it be accomplished with little or no environmental compromises? For example, the use of ozone to condition less expensive surface water versus the use of well field water to save on operating costs and conserve valuable ground water resources. Reducing or even eliminating chemicals not only protects the environment; it creates a safer work area. "Going Green" will continue to be an important component of current and future systems.

Does the company disappear or become difficult to get answers from after the installation? The best test is to interview former and existing customers to find out how the company handled issues and problems after the sale. The best companies concern themselves with successful installations and proactive customer service.

This information has  
been presented by  
**Mazzei Injector Company, LLC.**  
as a service to the water  
and wastewater industries.



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## Introduction

In both the industrial and municipal water and wastewater industries, there are overriding issues that do affect capital costs, system efficiency (operating expense), long-term performance, maintenance and ultimately Total Cost of Ownership. These issues are common to both water and wastewater applications, and while often considered individually in specific projects, they are increasingly being used as a set of evaluation criteria for these two industries. This brief primer is an attempt to summarize these collective criteria for the benefit of those who must make decisions about water and wastewater treatment applications and facilities.

## Footprint

In both water and wastewater applications, a significant cost can be the acquisition of land and the construction of facilities. Moreover, in retrofit situations, the footprint may be more important as older facilities enter the replacement phase. The ability to efficiently increase the treatment capacity of existing facilities can result in significant capital savings. For wastewater aeration, the ability to efficiently aerate deep tanks with a smaller footprint has become necessary. In many parts of the United States, urban development has impacted treatment plant space to the point that expansion is not possible. In addition, the encroaching development creates new concerns that must be addressed when considering retrofit options.

## Reliability

A system that operates as specified is critical in the design criteria. Not only must a system operate as specified, but it must work as effectively on day 1,000 as it did on day 1. Reliability is among the key issues facing plant operators and engineers. Minimizing downtime due to system failure is crucial to maintaining plant compliance. System failure stresses plant personnel, increases overhead costs and poses serious environmental and health risks.

## Efficiency

Two of the most important aspects of any efficient water or wastewater system design are system efficiency and operating costs. For example, how fast and efficiently ozone is transferred into solution during the water purification process impacts the overall size of the contacting system, ozone generator and feed gas system. Reducing equipment and footprint size – as well as operating cost – leads to an efficient and favorable Total Cost of Ownership.

## Application Specifics

One size no longer fits all. Every water and wastewater application or system design has unique requirements. Designers seek a solution to their specific application, not one that is made to fit all. Forcing a pre-packaged system into a specific application can impact reliability and performance and still be more expensive than an application oriented design.

## Vendor/ Company Experience

The level of experience the company involved brings to the system design and installation is critical to the evaluation criteria. There is little substitution for experience in the industry. The best companies will supply references and be willing to share contact information and system installation experience.

## Maintenance

Operating and maintenance costs are significant in water and wastewater treatment plants. Unfortunately, maintenance costs tend to be minimized during the design phase and this can have a significant impact on ROI. The obvious solution is to seek systems that require minimal maintenance. In a wastewater aeration system, the designer will review the potential for equipment fouling. Selecting a system that does not easily foul will allow a plant to allocate more man-hours and capital cost to other projects.

## Total Cost of Ownership/ Return Value (Process Performance)

Total Cost of Ownership has become the focus of most industries. Evaluation criteria should include a component that matches the system cost to the long-term return on the investment. This is more than just the capital cost of design and building. This includes process performance, maintenance, repair costs, potential liability, system uptime and reliability. Engineers and operators want to know what return “value” they are getting. This takes into account all of the factors including footprint, public acceptance and mitigation of liability.

