

Addressing Unique Challenges in the Water Treatment Industry

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Introduction

Like all companies, providers in the water treatment industry must balance socioeconomic factors with the cost of doing business. Water treatment services are a necessity in most communities, as a growing number of inhabited areas face shortages caused by changing climate patterns.

Because water treatment is such a vital municipal service, there's a unique pressure to deliver results. And while some have modernized their operations, others are far behind the curve when it comes to operational efficiency.

In order to keep up with growing demand and complicated logistics, the water treatment industry is going to need innovative solutions for handling everyday operations. Since the late 1990s, companies across the globe have begun switching to EHS management systems. While some in the water industry have made this switch, there are still many cities who have yet to explore this possibility.

But modern solutions ease many of the administrative burdens of running a treatment plant. By investing in data management software, facilities can address some of the financial challenges that stifle innovation within this industry.

Top Challenges in the Water Industry

While water companies set internal goals for operational efficiency (and profit as well), they must also address the public's need for their services. Understanding the major external factors that affect water treatment operations helps uncover new ways of offsetting these persistent, constant variables.

Scarcity of Resources

The world's water resources are unevenly distributed, and many countries face increasing scarcity. One of the best examples of this is in India, which has nearly a fifth of the world's population but less than 5% of its water resources.

Although temperatures continue to rise, governments struggle to increase access, making the water treatment industry more essential than ever. Getting clean water to remote areas, let alone those with little access to begin with, is a major headache for all parties involved.

Regardless of how cities manage their resources, the question remains:

How can water treatment companies provide support while also managing the financial challenges that come with serving struggling communities?

Moreover, how can they do this safely and efficiently?

While managing human demands, water treatment companies must also work against the forces of nature which can devastate their operations in the blink of an eye.

Natural Disasters

Most unpredictable of the water industry's challenges are those posed by nature. According to the World Wildlife Fund, "41% of the world's population lives in river basins that are under water stress."

Floods and droughts wreak havoc on resources, leaving those in the water treatment industry with unique problems to solve. When an area no longer has the same access to water, it puts stress on treatment plants—not only logistically but also financially. After all, the government can't simply stop funding these facilities and abandon local populations when problems arise.

While droughts cause water sources to dry out, floods cause large-scale contamination. A single heavy rainfall can drastically increase the water's turbidity, making it even more difficult for the treatment process to work.

Treatment plants must quickly react to these events by adjusting their processes and goals. But because many sites deal with hazardous waste in addition to water, making these quick changes is often easier said than done.

It often requires a detailed management of change (MOC) process. So, even if these companies have the resources to handle major natural events, they're sometimes bound by the time constraints designed to ensure a safe transition from one process to another.

Compounding this unpredictability is the fact that large-scale equipment issues are becoming more common—especially for densely populated areas throughout the world.

Aging Infrastructure

In many developed countries, water treatment facilities have begun to show major signs of aging. The United States is no exception. Publicly owned treatment works (POTWs), another term for sewer systems, can last more than 50 years. But much of the infrastructure in the US has exceeded its recommended lifespan.

The problem is that not all water treatment companies have the same level of support from the government when it comes to making necessary upgrades. And migration to the West and South has contributed to the funding issues that many plants face. As rural communities shrink, the burden of fixing pipes and other components falls on the individuals who are left behind. But without revenue streams (beyond federal infrastructure aid), water treatment systems continue to age without repairs and replacements they desperately need.

The city of Chicago is a notable example of the struggles that many companies within the water treatment industry face. A study by the city found that it lost 22.187 billion gallons of treated water during 2012. And the mean number of gallons lost to infrastructure leaks totaled 44,549,097 for that same period.

If a city like Chicago, which has direct access to a freshwater source as large as Lake Michigan is facing setbacks due to aging infrastructure, imagine the impact being felt in less privileged areas. There's no easy way to handle these issues. Although facilities deal with similar roadblocks regardless of where they're located, each has its own limitations when it comes to fixing infrastructure, preparing for inclement weather conditions, or increasing access for nearby communities.

Automating Operations as a Means of Cost Reduction

When there are so many uncontrollable variables affecting the operation, the best defense is to simplify everything within control. Adopting a digital management system can be difficult, but it's a major investment in the resiliency of a water treatment plant.

In reality, the upfront cost of EHS software provides back-end cost savings on things like injuries, illnesses, operational inefficiencies, and more.

Preventing Safety Incidents

In 2020, the average workplace injury cost \$1,100 per worker. For injuries involving medical services, that figure was \$44,000.



Addressing challenges within the water treatment industry means reducing these types of variable costs. Not only that, but incident prevention has many other benefits, including:

- Increasing employee engagement
- Establishing positive brand perception
- Improving product quality
- Strengthening safety culture
- Promoting continuous process improvement

The easiest way to tackle incident prevention is to implement a digital EHS management system. This allows teams to automate a lot of the administrative work that goes into daily EHS compliance. And it streamlines collaboration across departments, removing the headache of complicated reporting, auditing, etc., and process improvement coordination.

Making More Informed Process Improvements

Cloud-based software gives companies more ways to collect and analyze data on safety incidents. These insights help teams make more informed process improvements which create a more efficient and safe operation.

Oftentimes, facilities make changes to their processes, internal structures, etc., without enough data to support their hypotheses. It leads to weak, ineffective attempts at process improvement which cost time without producing quantifiable results. Sometimes teams must completely undo a process change when it ends up slowing down production or causing more incidents.

If the water treatment industry started collecting more specific operational data, it could tackle some of the larger problems, such as the cost of repairing and replacing decades-old equipment. And because teams wouldn't have to manage paperwork constantly, they could spend their extra time investigating leakages, protecting against natural disasters, and improving the overall efficiency of the business.

Conclusion

Considering the growing threat of water depletion for critical populations, the need for innovative water treatment solutions is more urgent than ever. Rural communities in hot, dry climates will continue to shrink, pushing even more people and more demand into densely populated regions.

Addressing the unique challenges that already exist within the water treatment industry is vital to make room for new and unforeseen challenges in the future. Automating the controllable variables and routines within daily operations is the easiest, quickest solution for encouraging innovation.

Until treatment facilities adopt modern management systems, they will continue to struggle with the same issues. If treatment plants don't adapt to changes in demand, access, and infrastructure, people will continue migrating away from water-poor areas, potentially causing total community collapse in the future.

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