Achieve Sustainability Goals and Save Money with an Advanced Water Treatment System

The growing population, increasing urbanization, rising incomes, and changing dietary patterns will heighten demand for water over the next several years. With the world's fresh water supply already struggling to meet current demand, the cost of water and associated permits is expected to continue climbing every year.

For food and beverage producers—the largest consumers of water over any other industry—the need to conserve water and maintain low-waste operations will become more critical than ever.

Optimize environmental and economic efficiencies

In response to this reality, many leaders in the food and beverage industry have adopted goals to reduce water use in their operational processes and enhance the cleanliness of discharged water. Limiting dependency on outside water helps lower operating costs and enables producers to inch closer to zero liquid discharge systems, thus dramatically reducing reporting and discharge costs. Both initiatives contribute significantly toward the accomplishment of environmental stewardship goals.

With these new objectives in place, companies are looking for efficient and automated solutions to help them reduce labor and recycle water. Advanced filtration processes can effectively treat wastewater and directly reclaim it as clean water, which can then be reused in factory processes or product water—curbing water consumption and the pressure on water supplies.

58%

of the global food and beverage industry has water cycle / stewardship objectives in place.[1]

The global population is expected to reach nearly 10 billion by 2050, bringing with it a 55% increase in water demand (compared to 2000).[2]

66%

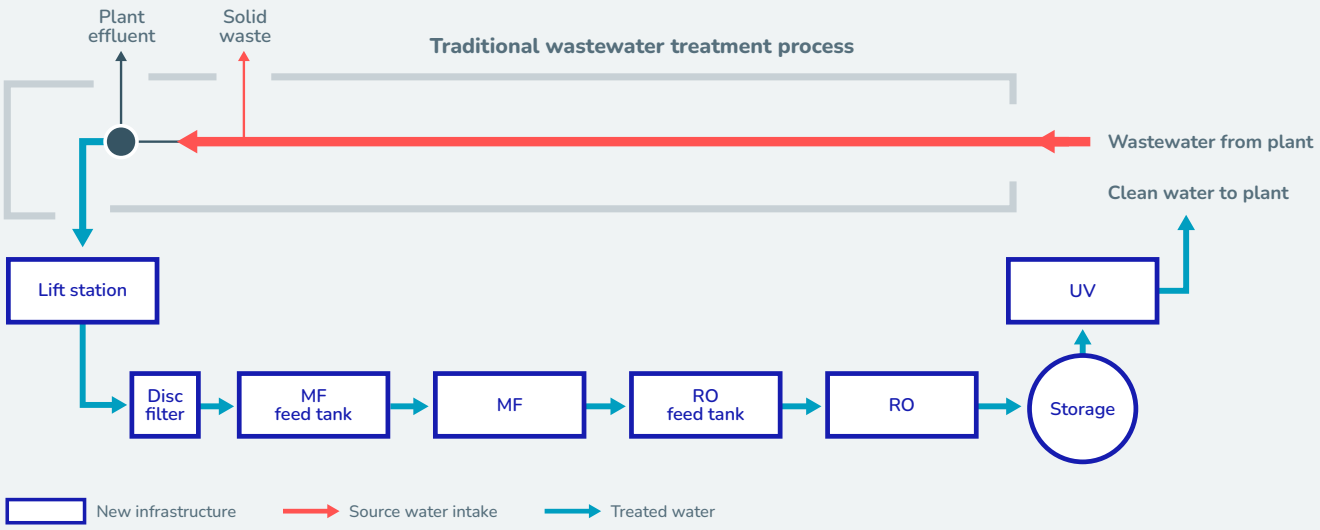
of all non-product water used in a plant comes from clean-in-place systems (50%) and heat exchange (16%).[3]

1 Aria Filtra proprietary research (2020).

2 Islam, S.M. & Karim, Zahurul. (2019). "World's Demand for Food and Water: The Consequences of Climate Change." https://www.intechopen.com/books/desalination-challenges-and-opportunities/world-s-demand-for-food-and-water-the-consequences-of-climate-change

3 Haskell Think Tank. "Recapture and Reuse: 3 Areas to Cut Non-Product Water Consumption Inside Your Plant."

Example tertiary plant effluent system for reuse in food and beverage manufacturing



Identify the best-fit solution

Finding a treatment solution that's right for a company's specific needs begins with answering the question, "What level of water quality must be achieved?" For food and beverage producers, the response is superior-quality water that is fit for human consumption and meets municipal drinking water standards.

Meeting the combined requirement of quality and sustainability can be accomplished by treating effluent generated through the creation of products and the cleaning and sanitizing of food and beverage equipment. An advanced sequential treatment train that brings tertiary wastewater in, utilizing microfiltration (MF) and reverse osmosis (RO) followed by microbiological inactivation / polishing with ultraviolet (UV) and/or chlorine (Cl_2), is an ideal solution for maximizing water reuse and delivering the highest levels of quality water.

This proposed system delivers reliable tertiary treatment, suspended solids removal, and dissolved solids removal. Using MF low-pressure membranes provides manufacturers with the capability to reliably reclaim water and effectively treat it to the standards required for their processes. MF removes suspended particulates (TSS) and coagulated total organic carbons (TOCs) that can foul downstream RO systems and promptly handles and recovers from influent changes and chemical / polymer fouling risks. RO removes the total dissolved solids (TDS) and any remaining metal ions (aqueous salts) from the water. The combination of these treatment steps creates a reliable system that consistently delivers the highest quality of water and is able to easily handle irregular events, such as high volumes of stormwater or variable water quality coming from existing wastewater treatment processes. By implementing this type of advanced treatment system, food and beverage manufacturers can expect water quality that achieves:

- **Net RO system recovery rates:** up to 95% (using IMPRO™ technology)
- **TDS:** less than 250 ppm
- **TSS:** nondetectable
- **Microbiological levels (e.g., chemical oxygen demand [COD] and biological oxygen demand [BOD]):** nondetectable
- **TOC:** nondetectable after UV treatment

IMPRO Technology: Intelligent Maximum Performance Reverse Osmosis

Maximize water recovery—as much as 95% versus 75% with conventional RO.

Minimize membrane fouling and scaling, protecting your assets.

Consume less energy to save on operating expenses.

Make operations easier and more reliable.

Reduce water footprint and waste to achieve goals

The sequential treatment process described above can yield significant operating cost savings. For example, a plant producing 1.8 million gallons of effluent daily can recover 250,000 gallons per day—a 14% reduction in water footprint. Assuming a cost of $1.75 per 1,000 gallons of municipal water, this would save the plant approximately $160,000 per year. What's more, this would reduce the costs associated with discharge regulatory reporting by 80% and reduce the labor costs associated with conventional wastewater treatment plant operation.

250,000 gallons × $1.75 per 1,000 gal

$437.50 in municipal water savings per day

$437.50 per day × 365 days

$159,687.50 in annual savings

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