

EVERY DROP COUNTS

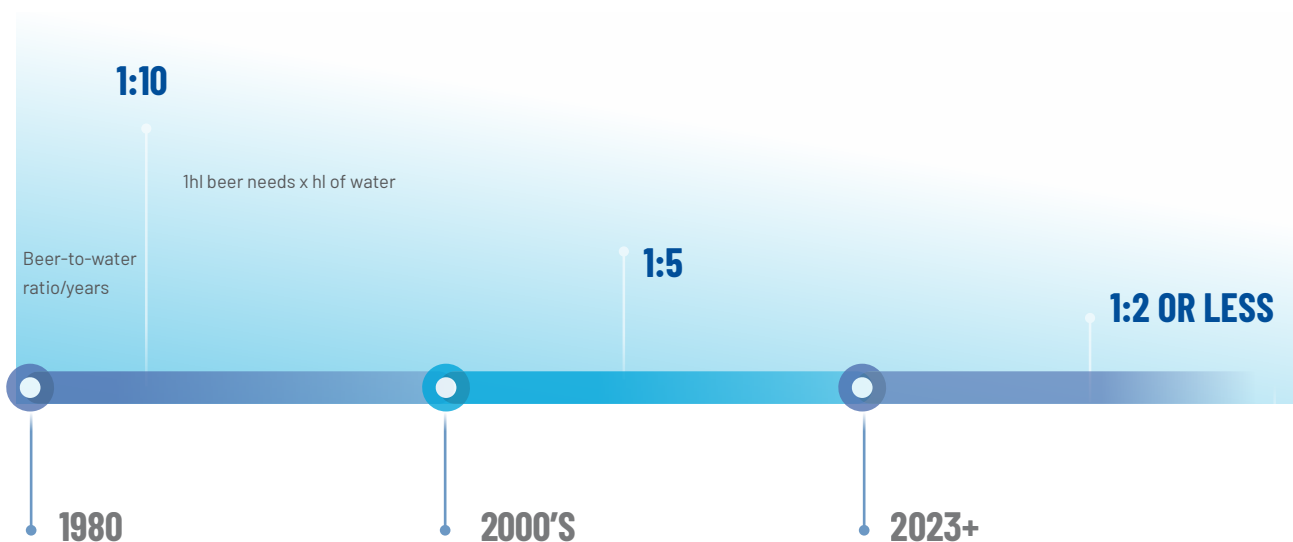
MAXIMIZING BEER-TO-WATER RATIO

Brewing great beer needs clean water. Breweries, caring about the environment, want to use less water for crafting a tasty beer. The trick is to save and reuse water for cleaning purposes. Wastewater can be a cost-efficient and sustainable source of energy, nutrients, organic matter and other useful by-products. Treating high-strength industrial wastewater not only helps to save precious natural resources and comply with discharge regulations, it can also create economic value. By reusing water, breweries generate less waste, whilst keeping process water quality within their desired specification without spending too much money.

With Pentair X-Flow Wastewater Membrane Technologies, we empower breweries to transform wastewater into a valuable resource, reclaiming up to 70% of water that would have been discarded. Making every drop count for a greener future.

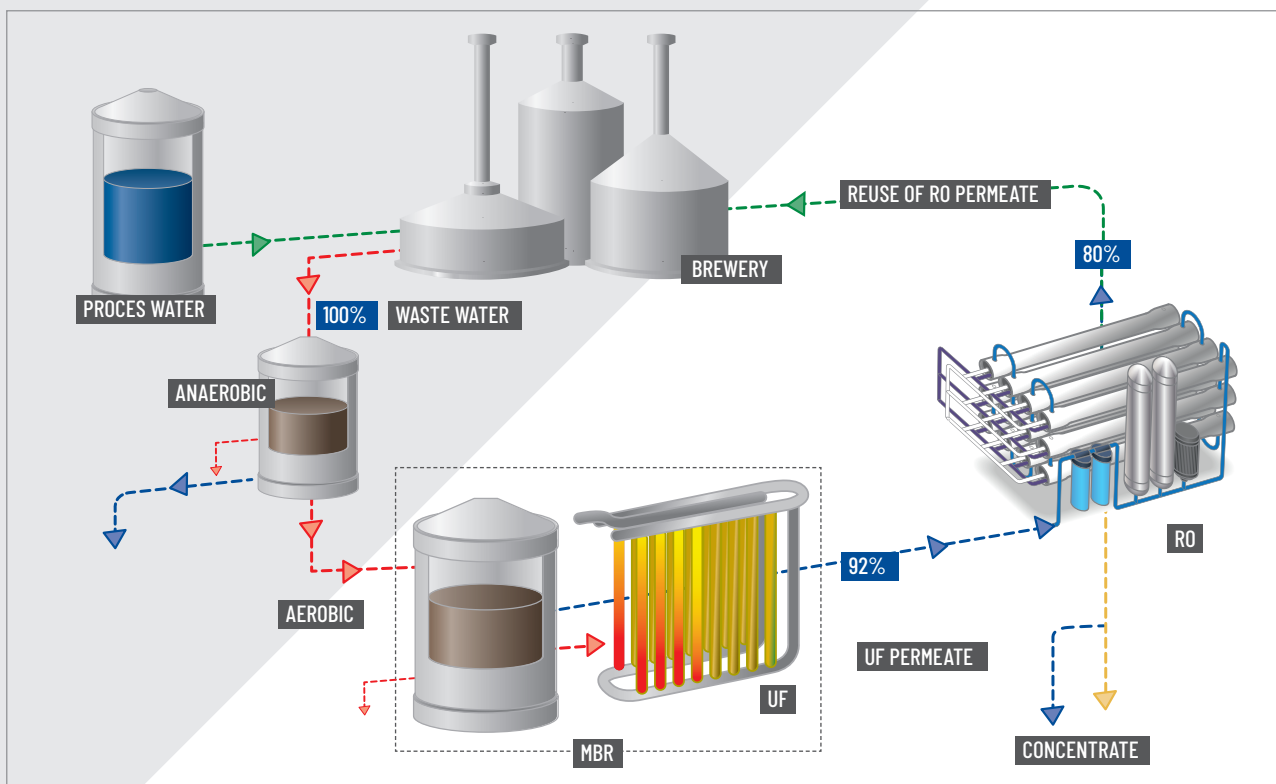
Development of Beer-to-water ratio targets for large scale breweries

Moving from to a 1:10 Beer-to-water ratio in the 1980's towards a 1:2 ratio for 2023 and beyond.



SUSTAINABLE WASTEWATER REUSE

In the brewing journey, water plays a vital role in becoming beer. It's also essential for heating, equipment cleaning, and washing bottles and kegs. The resulting wastewater undergoes a series of treatments in order to recycle back into supporting processes—initially through anaerobic and aerobic biological steps, the water can be enhanced with ultrafiltration and reverse osmosis. This process ensures water quality for reuse, minimizing discharge and promoting environmental sustainability.



PENTAIR X-FLOW SOLUTIONS

With decades of in-house X-Flow membrane technology expertise we are specialized in Ultra Filtration Solutions as integral part of your wastewater treatment plant design. Pentair's water specialists are there to support our OEM partners and system integrators with the right system design knowledge and integration support so breweries can experience firsthand how it is to start reusing up to 70% of their process water.

Solutions	Applicable for medium strength wastewater and anaerobic effluent	Capex	Energy consumption	Footprint	Flow (flux)	Membrane fiber type	Available with Helix Technology	
							UF membranes	Helix*
Crossflow MBR	✓	Lower	1,5-4 kWh/m ³	Low compared to airlift	80-200 l/m ² h	8 mm	x 0.03 micron	✓
Airlift	✓	Higher	<0,25 kWh/m ³	Larger compared to crossflow	40-60 l/m ² h	3/5 mm	x 0.03 micron	✓

* Preventing cake formation on the membrane layer by producing higher permeate flows at lower crossflow velocities and saving energy compared to traditional crossflow membrane filtration systems.



CASE STUDY

In below example the Polar brewery in Venezuela applies an Upflow Anaerobic Sludge Blanket technology as first step, followed by a Pentair X-Flow Airlift MBR Solution, feeding the RO for processing the effluent.

Start-up	2010
Market	Breweries
Application	Reuse - pretreatment RO
Configuration	Airlift MBR
Module	Compact 33V
Capacity	1,800 m ³ /day

**START REUSING TODAY
BY CONTACTING OUR
SPECIALISTS**