

INDUSTRY:

TAKE THE LEAD ON SUSTAINABILITY THROUGH WATER REUSE

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WHY WE NEED TO EMBRACE WATER REUSE

A DEMAND AND SUPPLY IMBALANCE

With expected population growth of 2bn¹ by 2050, and at least 14 of the world's 20 megacities² already facing issues surrounding access to safe drinking water and sanitation, our water resources are under great pressure. Furthermore, the ongoing challenge of water pollution and overconsumption increase the pressure, which leave the world in the midst of a water scarcity crisis.

Which is where water reuse comes in.

To meet global demand for water in a healthy and sustainable manner, society – and industries in particular – must treat wastewater with the end goal of reusing it. Thereby ensuring our overall quality of life can be maintained.

CREATING A SUSTAINABLE PATH

Today, approximately 80% of wastewater is put back into the ecosystem without being adequately treated³, exacerbating the issue of water contamination. And, with a 2013 industry report indicating global wastewater levels of approximately 1,500km³ per year and rising⁴, it is vital we find new and innovative ways to reuse as much water as possible.

140 L



1 CUP OF COFFEE

16,000 L



1 KG OF BEEF

400,000 L



1 CAR

THE ROLE OF INDUSTRIAL MANUFACTURING⁴

Used in everything from solvents and cooling liquids to the manufacturing of semi-conductors, water is integral to many industries. Take the food and beverage industry alone, with manufacturers using water for cleaning, boiling and cooling, transportation – and so much more. Meaning that as long as people buy and consume goods, the world will require water. A lot of it.

And so, to transform how we use water, industries must take the lead in changing how we view wastewater.

**WATER DEMAND
FOR USE IN
MANUFACTURING
IS EXPECTED TO
INCREASE 400%
BY 2050⁵**





**IT'S TIME TO SEE
WASTEWATER
FOR WHAT IT IS:
A KEY RESOURCE**

THE POTENTIAL OF WASTEWATER

The benefits of adding reused water to industrial processes are clear. However, several challenges must first be overcome to ensure long-term success. With demand for water showing no signs of slowing down, we need to change how the world perceives wastewater so that it can be recognised as a viable alternative – by arming manufacturers with the right tools, information and support.

WASTEWATER TREATMENT REGULATIONS

As more manufacturers become aware of wastewater's potential, governments are tightening regulations around its treatment and reuse in order to support sustainable initiatives while combatting water scarcity. But navigating the rules can be difficult. What local, national and international guidelines must be adhered to, and what limitations surround the reuse of wastewater? Zero Liquid Discharge (ZLD) systems are already mandatory across some industries in India and China⁵ and with the US and EU weighing up similar directives, what ripple effect will this have across the world? For real change to occur, governments must provide clear and simple guidance on treating and reusing wastewater.

COST OF TREATING WASTEWATER

Despite the long-term benefits for industry, society and the planet, treating wastewater comes at a price. Taking into account factors such as how much wastewater needs to be treated, what technology and equipment needs to be incorporated into the supply chain, and how to dispose of byproducts in a safe way, manufacturers need to be incentivised. This includes receiving guidance on the cost of treating and reusing different water sources – and if the difference in price can be justified (see table below for more). How expensive will processes such as ZLD be, and how do manufacturers ensure their wastewater can even be reused? If not, how much will it cost to safely dispose of it?

EXAMPLES OF THE TRUE COST OF WATER⁷

INCOMING WATER USD 1.22/M ³	FILTERED WATER USD 1.28/M ³	SOFT WATER USD 1.30/M ³	WASTEWATER USD 2.29-4.71/M ³
STEAM USD 23.82/M ³	CONDENSATE TO DRAIN USD 5.21/M ³	WATER IN PRODUCT USD 1.28/M ³	HOT WATER 75° C USD 3.64/M ³

PUTTING WASTEWATER BACK INTO THE SUPPLY CHAIN

For most manufacturers, on-site treatment is the most cost-effective way to clean and reuse wastewater – provided the right equipment is on hand.

On a base level, water reuse systems are designed to remove contaminants from wastewater to a point where the end product can, provided it meets industry regulations, be reused for a variety of purposes: from cleaning and sanitation, to irrigation and pallet washing – and even, perhaps, within production of goods. Overall, such systems can help manufacturers reduce their water and energy consumption, protect the quality of their water, and safeguard their future.

BENEFITS OF WATER REUSE SYSTEMS



LOWER ENVIRONMENTAL FOOTPRINT

As well as reducing overall water consumption, the right water treatment facilities will also lead to less wastewater discharge.



CORPORATE SOCIAL RESPONSIBILITY

As people become more aware – and supportive – of companies that incorporate green principles into their practices, reusing water can help improve brand and public image.



LESS RELIANCE ON SCARCE RESOURCES

Manufacturers can save up to 80% of their wastewater⁸ – vastly reducing their reliance on water as a whole.



COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

Adhering to wastewater discharge regulations is expensive and complex, with incorrect disinfection leading to water pollution, not to mention the financial penalties that can be incurred. By reusing water, manufacturers can make their supply chains smoother and more efficient – while saving costs over the long-term.



**UP TO 80%
OF INDUSTRIAL
WASTEWATER
CAN BE SALVAGED
USING A WATER
REUSE SYSTEM⁸**

REUSE WATER THE SMART WAY

To treat water to the point where it can be reused, it has to undergo a process that typically consists of the following three steps: biological treatment, where bacteria are added to break down organic material, chemical treatment, which involves, among other steps, disinfection and adjustment of pH values, and physical treatment, whereby the water is filtered – closing out the treatment process.

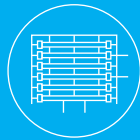
BIOLOGICAL TREATMENT



CHEMICAL TREATMENT



PHYSICAL TREATMENT



Water can greatly influence your business. Inefficient supply may disrupt operations and affect overheads, be it that you have too much or too little, while stricter regulations could make it more complex – and costly – to dispose of wastewater, with an inability to adhere to such rules potentially damaging your image.

At Grundfos, we offer solutions that add value to every step of the treatment process. We're not just interested in helping you reduce your water consumption. We also aim to help you reduce operational costs while meeting discharge regulations and sustainability initiatives. No matter your industry, and no matter the type of wastewater you are dealing with.

Why? To change the way the world uses water. Which means giving our industries

the tools and support they need to initiate and maintain their own journeys – and, ultimately, improve our quality of life for years to come.

With Grundfos iSOLUTIONS, we've combined state-of-the-art technology with top-class support to deliver a range of intelligent solutions that are watertight when it comes to reliability, safety and accuracy. Because, as a full-line supplier, we understand the challenges surrounding water reuse.

Introducing an efficient water reuse system to your supply chain should never be challenging or expensive. Rather more, with our solutions by your side, we'll make it easy for you to minimise water use – while ensuring you always meet your demands for safe and clean water.



"If we can reuse water, we don't need potable water for our manufacturing processes. Our new water treatment system has already resulted in significant water savings, and will allow us to eventually cut the amount of water we use by 50%. Right now, as it stands, every year we save the same amount of water as is used by 100 Danish households."

Klaus E. Christensen

Lead Project Manager

THE SURFACE TREATMENT PLANT THAT USES WASTEWATER AS A RESOURCE⁸

CASE STUDY – GRUNDFOS FACTORY

LOCATION – BJERRINGBRO, DENMARK

At our Bjerringbro production facilities, our heat pumps are put through electrocoating. In 2018, we opened a new wastewater treatment plant to clean water used during this production process, thereby creating a closed-loop system.

After making its way through rinsing tanks, wastewater flows to an advanced membrane filtration system which allows for microfiltration, reverse osmosis and UV disinfection. Following this treatment, the water is then reused during the rinsing process.

A number of pumps, sensors and controls were installed as part of the new system including intelligent pumps, digital dosing pumps, pressure sensors, flow sensors and water quality sensors.

80%

WASTEWATER REUSED

5,000 m³

OF WATER SAVED A YEAR

QUALITY

OF WATER IMPROVED

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