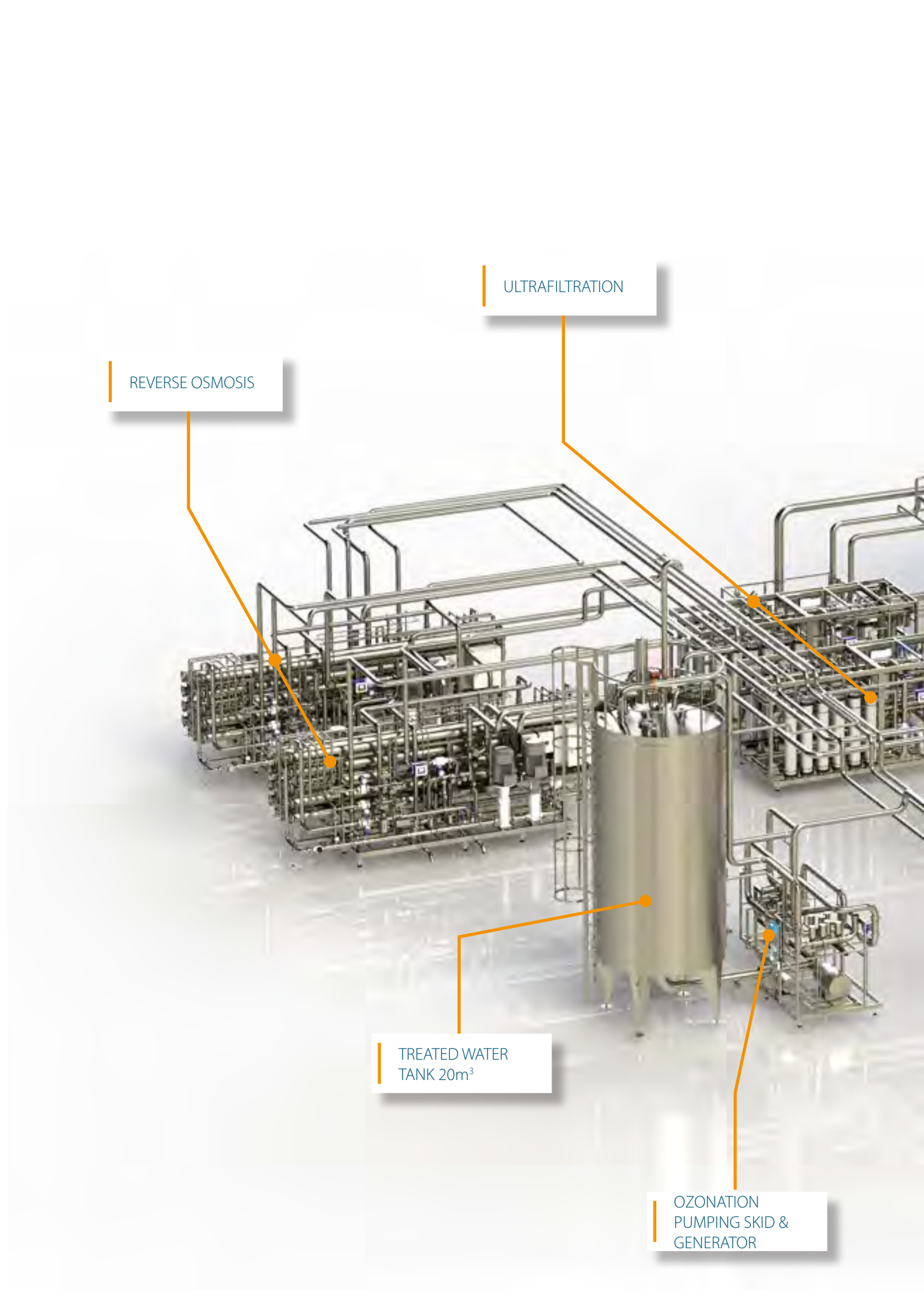
WATER MANAGEMENT

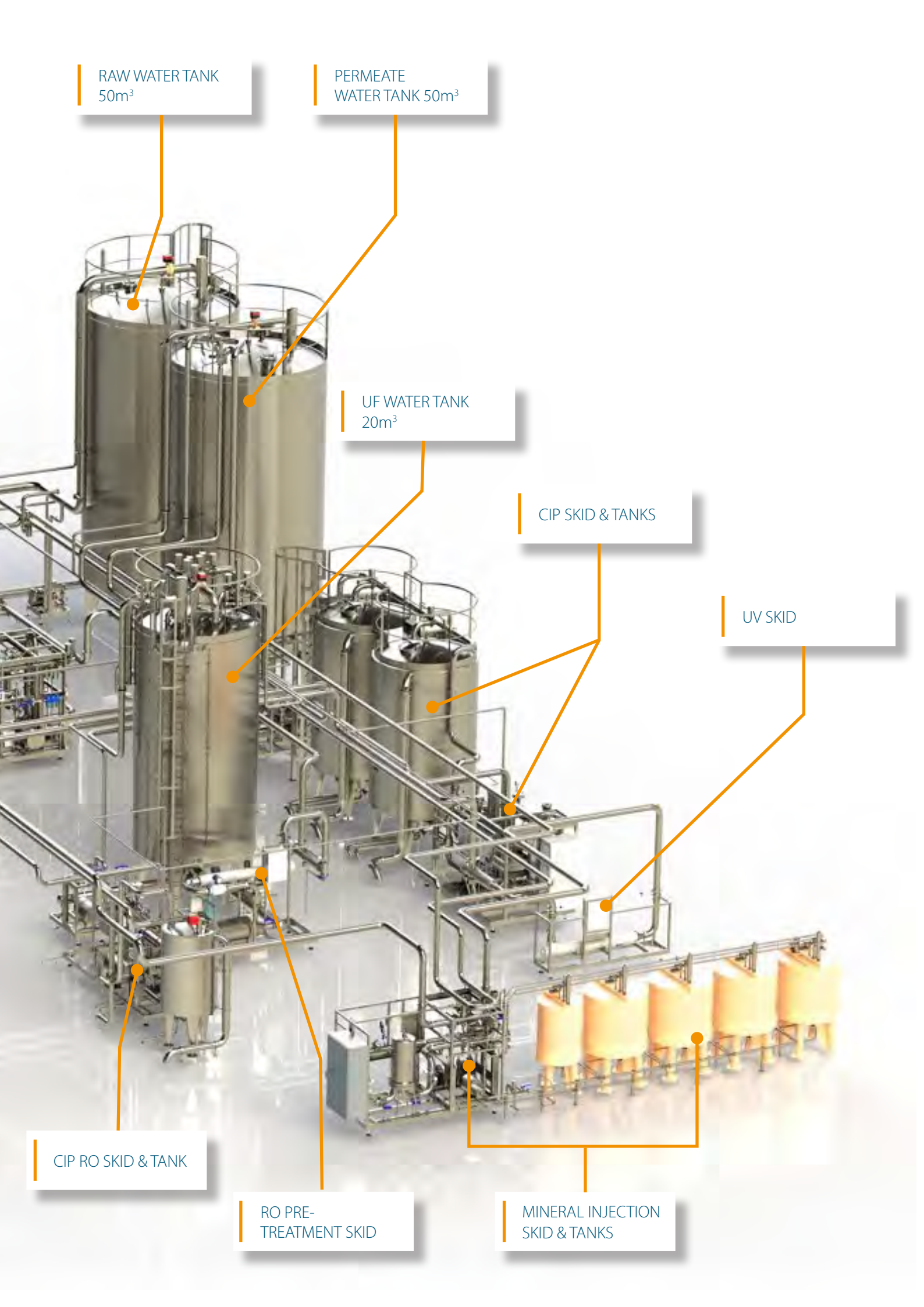
TECHNICAL CATALOGUE

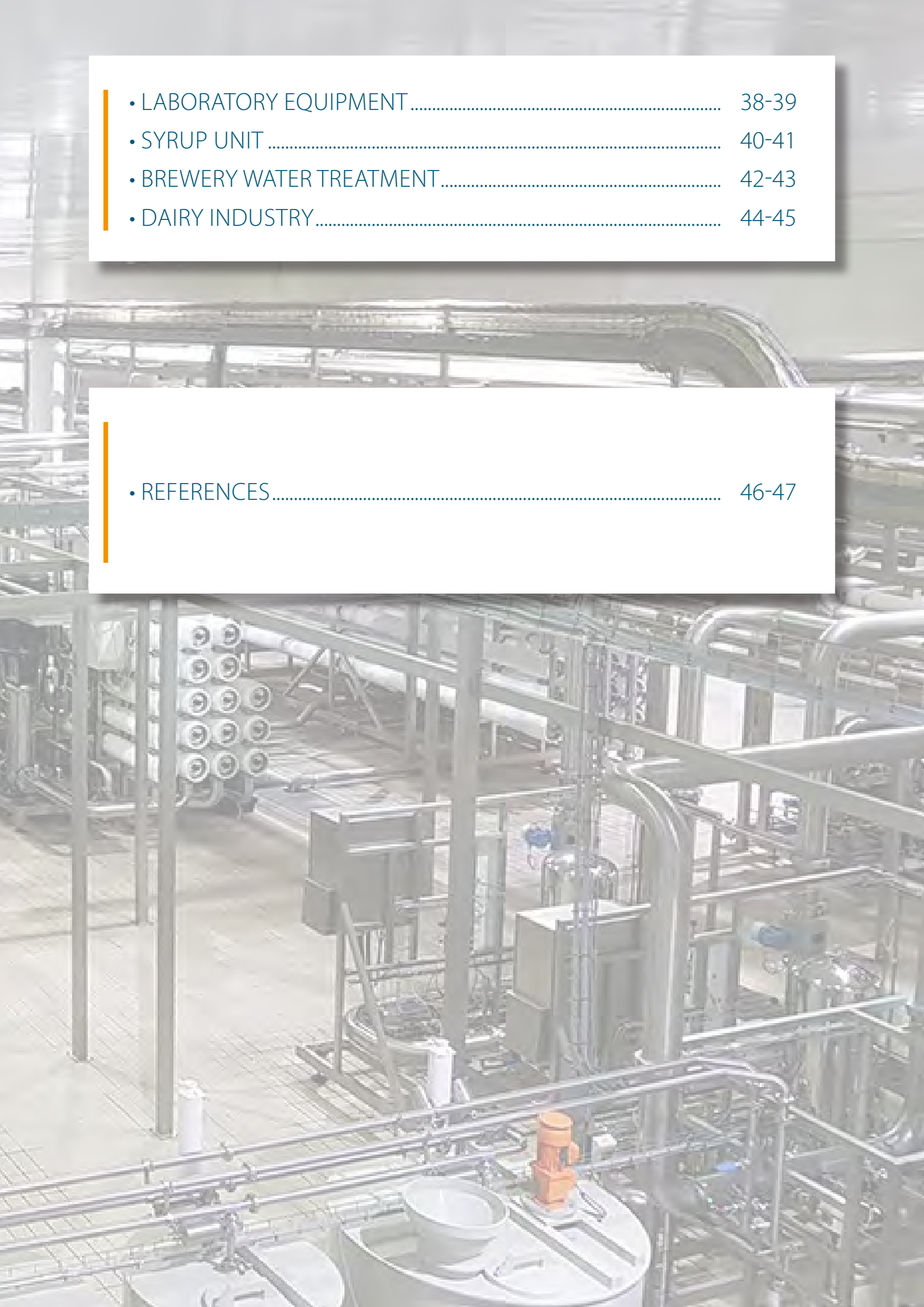
For the total beverage industry

Mineral water | Carbonated soft drinks | Fruit juices | Milk | Beer

www.ice-water-treatment.com


ULTRAFILTRATION
REVERSE OSMOSIS
TREATED WATER TANK 20m3
OZONATION PUMPING SKID & GENERATOR


RAW WATER TANK 50m³
PERMEATE WATER TANK 50m³
UF WATER TANK 20m³
CIP SKID & TANKS
UV SKID
CIP RO SKID & TANK
RO PRE-TREATMENT SKID
MINERAL INJECTION SKID & TANKS



37 YEARS

of experience dedicated to the beverage industry

ICE WATER MANAGEM
BEVERAGE INDU

for **water manageme**

PERFORMANCE MANAGEMENT

- Water and energy savings expertise to preserve resources, increase capacity and reduce operation cost.
- Engineering to care about lifetime, integrity and productivity of the water treatment line.
- Process improvement and maintenance (OPEX optimization, operational support, predictive maintenance).
- Water quality consulting and audits to propose cost-effective solutions, improve quality control schedule, and train QC.
- Web tool to help customers operate and improve the performance of bottling facilities.

COVER THE WHOLE BEVERAGE INDUSTRY

- Sparkling beverages, juices, bottled water, mineral water, flavoured water, beer, milk.

470 AUDITS

and consulting missions performed

ENT, YOUR STRATEGIC
USTRY PARTNER

nt and **sustainability**.

350 FACTORIES

equipped around the world

& Process
ced Training

DrinksLab
New water concept

Service contract
(Process audit &
preventive maintenance)

Laboratory
Equipment

Spare Parts &
Consumables

CIP for WT
& Fillers

Waste Water
Treatment

ess Improvement
ter & Energy Savings)

Sustainability

END TO END WATER QUALITY

- Reliable solutions based on the latest available technologies, to guarantee quality and safety.
- Fully hygienic process to deliver the best quality product.

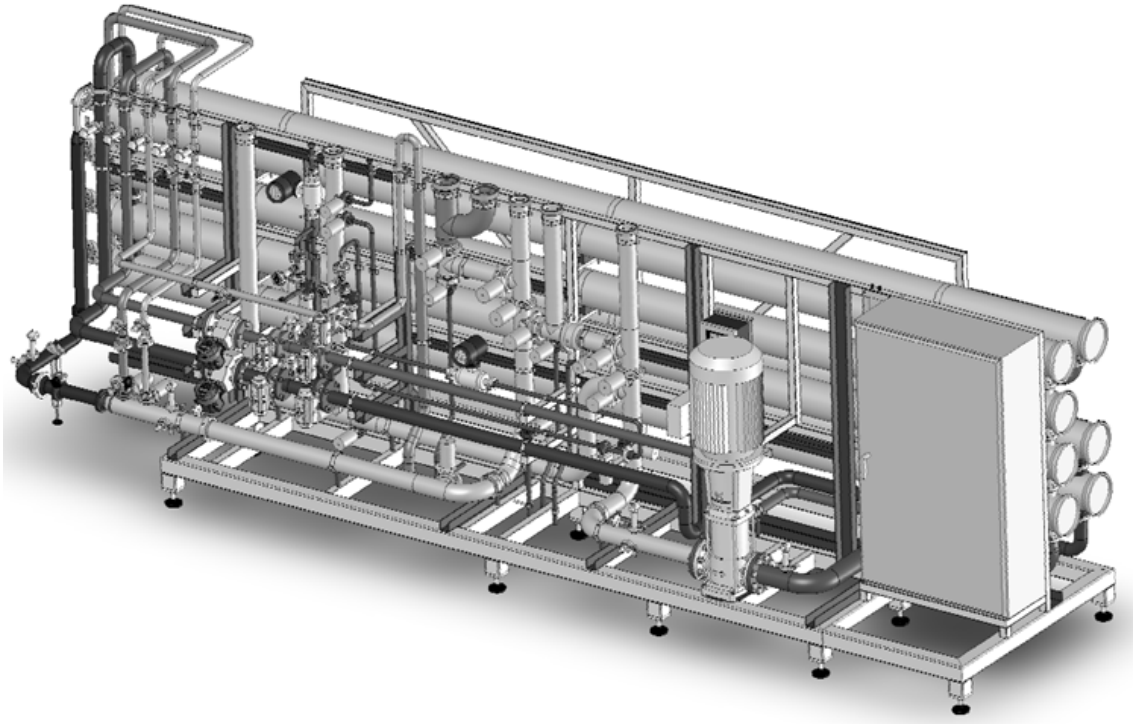
BRAND PROTECTION AND INNOVATION

- Water treatment designed in accordance with the food-grade design principles.
- Innovating processes and decision support tools based on new concepts to reengineer water and respond to the market trend.

260 CUSTOMERS

around the world

Some of the differenciations for a Reverse Osmosis simple pass, according to our 3 ranges.



REVERSE OSMOSIS
Essential

- Local process monitoring
- HP pump frequency driven
- CIP all stages
- Flexible pipe CIP
- Manual CIP procedure

REVERSE OSMOSIS
Classic

- Analog or local process monitoring
- HP pump frequency driven
- CIP all stages and stage by stage
- Hard pipe CIP
- Semi automatic CIP procedure

REVERSE OSMOSIS
Premium

- Analog process monitoring
- HP pump frequency driven
- CIP all in one, all stages and stage by stage
- Hard pipe CIP
- Fully automatic CIP procedure

PRODUCTS RANGES

essential | classic | premium

For 35 years, we have been listening to our customers requirements. Each of them has different priorities and constraints. Thanks to our know-how we have been developing 3 products ranges which enable us to meet their needs perfectly.

Each of the ranges, essential, classic or premium, responds to these 2 fundamental points which are hygienic design and product quality.

	ESSENTIAL	CLASSIC	PREMIUM
Production			
Cleaning procedures			
Data monitoring			
Instrumentation			
Performance system (Opex)	■ ■	■ ■ ■	■ ■ ■
Ergonomics	■ ■	■ ■ ■	■ ■ ■
CIP design	■	■ ■	■ ■ ■
Components range	■ ■	■ ■	■ ■ ■
Membranes	FilmTec™ DUPONT Water Solutions	FilmTec™ DUPONT Water Solutions	FilmTec™ DUPONT Water Solutions
Pumps / Valves	Fristam PUMPS KIESELMANN	Fristam PUMPS KIESELMANN	Fristam PUMPS KIESELMANN
HP Pumps	GRUNDFOS	GRUNDFOS	GRUNDFOS

Because of the frequent risk of contamination during drilling and installation operations, it is essential to integrate a cleaning system early in the design.

MANAGE AND SECURE YOUR RESOURCE

WELL UNIT

from 1 to 250 m^3/h

The well unit has been designed to pump water in healthy conditions and to feed bottling water treatment systems. The unit is developed to ensure water quality and continuous monitoring.
Well equipment is your tool for preserving and controlling your water resources.

SYSTEM FEATURES

- Frequency-driven submersible pump
- Exhaust pipes with ZSM couplings (stainless steel)
- Water table monitoring and pump protection thanks to level meter
- Automatic production / discharge with PLC-controlled sequence and automatic valves
- Hygienic design, process & instrument fittings
- Close-loop system for efficient CIP sequence
- Small footprint (3x5m well house minimum)
- Food grade design
- System without compressed air
- Option: remote control from water treatment room (production & discharge).

FUNCTIONS

- Pumping water
- Protecting the resource against:
  - resource decay
  - contamination
  - malevolent action.

BENEFITS

- **Production safety** with a perfect sanitary design for mineral water production
- **Maximum productivity** with a fully automated operation and PLC assistance for reliable CIP
- **Flexibility** with an optimised footprint for installation in well house
- **Quality control** of water ensured from the well
- **Cleaning** of the well and its equipment ensured (sterilisable sanitary well head)
- **Constant follow up** of your resource renewal
- **Monitoring** of water table dynamic level
- **Pumping** speed control
- **Material choice** according to water agressiveness.

BY CHOOSING ICE WELL UNIT, YOU WILL

- Be assured to respect all procedures imposed by catchment, drilling, installation and commissioning operations.
- Be assured to manage and secure your resource.

ICE WATER MANAGEMENT

Our Reverse Osmosis combines maximized conversion rate (up to 97%), ergonomics, safety and automation.

OPTIMISE YOUR BOTTLED WATER PRODUCTION

REVERSE OSMOSIS UNIT

from 3 to 130 m³/h

Reverse Osmosis (RO) technology is used to demineralise water, in a non selective, physical process. This technique allows to remove minerals (cations and anions), and colloïds from raw water. The RO unit, heart of your water treatment unit, is designed for adjusting water composition to your target. The unit is adapted to the quality of your raw water as well as the level of automation of your plant.

SYSTEM FEATURES

- Sanitary design with stainless steel skid and pressure vessels, sanitary connections and all piping in stainless steel 316L (or 904L for specific applications)
- Improved sanitisation with stage by stage cleaning, absence of dead leg and efficient removal of biofilms or scaling
- High level of control with magnetic flowmeters
- Power saving using DUPONT Filmtec RO membranes (BW or SW) and high pressure pumps with frequency controlled IE3 engine
- Complete cleanability
- Online conductivity for process control and production safety
- Automatic quality control and autodump of non compliant product
- Automatic production with PLC-controlled sequence and automatic valves
- Option: hot sanitizable reverse osmosis
- User friendly with easy reading of meters and easy maintenance.

FUNCTIONS

- Reducting TH[2], TAC,[3] sulfates, chlorides, TDS on soft drink production, to avoid undesirable taste, or potentially unwanted chemical reactions in the carbonation process
- Lowering the TDS[1] of raw water to reach potable water standards
- Remove unwanted salts for which no specific technology exists (bromides, boron).

BENEFITS

- **Water saving** by optimising waste water down to 5%
- **Automated operations**
- **Product quality** generating customer satisfaction, productivity, by rising the level of hygiene and cleanability and automatic necessary quality controls
- **Opex optimization** and green image by saving water, chemicals and energy and by protecting RO membranes
- **Low maintenance**
- **Operator and product safety**
- **Trouble-free** by integrating world leading brands equipments.

[1] TDS: total dissolved solids
[2] TH: hardness
[3] TAC: complete alkalinity titration

BY CHOOSING ICE REVERSE OSMOSIS, YOU WILL

- Improve the security of your water treatment plant.
- Save water by reducing your rejection to less than 5%.
- Get access to hot sanitation for your membranes.

ICE WATER MANAGEMENT

A technology particularly effective in the case of water recovery from wastewater treatment plants.

A REAL OPTION FOR REUSE/REUT PROJECTS

CCRO

Closed Circuit Reverse Osmosis

Thanks to its high resistance to biofouling, CCRO new technology deployed by ICE Water Management is particularly effective for treating water that is sensitive to biological clogging, as in the case of water recovery from wastewater treatment plants.

PROCESSING

Closed circuit phase (production phase)

- CCRO is fed with raw water and there is no concentrate release.
- Dissolved solids are accumulated into the recirculation loop.
- Concentrate is recirculated to create a strong tangential flow and flush the limit layer formed at the surface of the membranes.

Plug flow phase

When reaching saturation level, concentrate is released to the drain (plug flow) and a new cycle starts.

BENEFITS

- 10-20 % energy savings.
- Descaling CIP frequency divided by 4 to 6.
- 20 % water savings in case of inlet water with high Silica and/or Sulphates content.
- High resistance to biofouling.
- Self-adaptability to variable influents.

ENVIRONMENT

- Reclaim from RO concentrate (or other high scaling potential waters).
- Water containing Silica and sulphates.
- Reclaim from treated waste water (or any other water with high TOC [1]).
- Variable/multiple resources management.

See our technical data sheet available.

[1]TOC: Total Organic Carbon

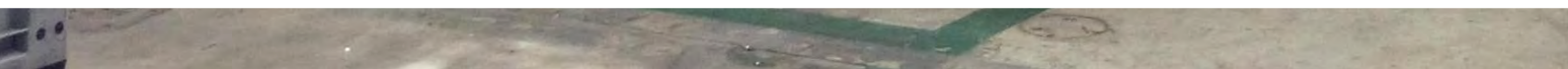
BY USING CCRO TECHNOLOGY,

- Wastewater will be treated, optimised and recovered
- In addition to standard primary treatments, you will benefit from a real option for REUT.

ICE WATER MANAGEMENT

Our centralised sanitation system for all your production lines is the only warranty against contamination growth.

THE QUALITY ASSURANCE OF YOUR PRODUCTION FACILITIES



CLEANING IN PLACE UNIT

from 4 to 190 m³/h

Cleaning In Place (CIP) is used to sanitise in the most efficient way and time every single area of the production network. Our CIP unit has been designed for maintaining the cleanliness of the water production equipments.

SYSTEM FEATURES

- Insulated CIP tanks (energy savings and operators safety)
- 3 or 5 Steps CIP automatic procedures
- Electrical or steam heating
- Single or multiple circulation loops
- Automatic preparation procedures: fast and reliable preparation of cleaning solutions
- Automatic chemical injection with continuous feedback: optimisation of chemicals use according to actual needs
- Manual to fully automatic process (Siemens)
- EHEDG certified frequency-inverter-driven pump
- Hygienic design, process & instrument fittings
- PLC assisted preparation & cleaning sequences
- Maximum CIP solution recovery driven by PLC
- Automatic CIP sequence validation
- Option: additional tank for 7-Steps CIP
- Safety enclosures for chemicals dosing pumps
- Limited chemicals handling
- Designed to reach turbulent flow.

BENEFITS

- **Minimize your production downtime** by optimising cleaning operation
- **Water savings** thanks to enhanced rinsing procedures
- **Reduced chemicals consumption**
- **Higher flexibility** on operation, in case of multiple cleaning loops
- **Opex control** avoiding wastage:
  - high chemical dosing accuracy
  - high chemical recovery
  - closed loop system
- **Time and energy optimised** cleaning cycles and step sequences for maximum productivity
- **Generic design** for a safe use of a wide range of commercial chemical containers
- **Advanced operability** by PLC assistance control and monitoring
- **Operators safety**

FUNCTIONS

To the well outlet up to and including the filler(s)

- Removing mineral scaling
- Removing bacteriological contamination
- Removing biofilm
- Removing traces of product (flavors, sugar, grease,...).

BY CHOOSING ICE CLEANING IN PLACE, YOU WILL

- Ensure water quality.
- Increase productivity
- Benefit from an automation of CIP cycles (saving time and chemicals).
- Be sure that every single part of the production network is sanitised in the most efficient way and time.

ICE WATER MANAGEMENT

Mineral injection unit is designed to inject mineral salts into drinking water: among others, calcium, potassium and magnesium...

MAKE YOUR WATER UNIQUE ON YOUR MARKET

MINERAL INJECTION UNIT

from 4 to 155 m³/h

Mineral Injection Unit (MIU) is used to inject mineral salts into water.
The MIU has been designed for adjusting the water composition and reach your composition target.

SYSTEM FEATURES

- A salt dissolving tank with a low speed agitator separated from dosing tanks allows 24/7 operation
- All tanks equipped with sterile air vents preventing contamination
- Product pH and conductivity are monitored on-line. Non-compliant product is rejected
- Automatic preparation and cleaning
- 1µ filtration (99,98% efficiency) for the retention of accidental suspended solids
- Option: fluoride remineralisation
    - Dedicated tank (with hygienic airvent and level sensor) and dosing pump
    - Fluoride concentration monitoring with a fluoride analyser. Guarantees product quality and ensures compliance with legislation
- Possibility to add others components on demand.

FUNCTIONS

- Modify the water composition by direct and controlled addition of minerals (authorised by food industries regulations) to the osmosed water: mineral salts.

In which cases:

- To meet a specific market demand
- To enhance the taste of the water
- To adjust the water composition after RO.

BENEFITS

- **Opex control** high dosing accuracy avoiding wastage
- **Maximum productivity** 24h/7d
- **Product safety:**
    - high dosage accuracy
    - in-line automatic quality control
    - high hygiene level
- **Great flexibility:** wide spectrum of target composition and multiple product recipes
- **Enrich water** with its vital components and mineral salts such as calcium, potassium and magnesium.

To make the difference on the beverages market, see our **Drinkslab** in our services catalogue. A way to offer healthy, innovative, flavoured drinks, while ensuring quality and safety of the product.

BY CHOOSING ICE MINERAL INJECTION UNIT, YOU WILL

- Benefit from the assurance of product quality stability.
- Make the difference on the beverage market by offering healthy and innovative drinks.
- Be ensured that your MIU is composed of equipment compatible with food industries requests.

ICE WATER MANAGEMENT

The resulting treated water is totally aseptic and clear, while the essential mineral salts are preserved.

THE GUARANTEE OF A CRYSTAL CLEAR WATER

ULTRAFILTRATION UNIT

up to 115 m^3/h

Ultrafiltration combines separation and disinfection into a single process. The ultrafiltration unit (UF) is a stand-alone compact unit, ready for connection.

SYSTEM FEATURES

- Sanitary design: absence of dead ends and complete cleanability
- Compact and modular system
- Equipped with ICE'View SCADA
- Integrated CIP with automated cycles
- Stainless steel equipment for a better stability in time and food-grade compliance
- Integrity test in situ, for Quality Control follow-up
- CEB (chemical Enhanced Backwashes): combined cleaning with selection among a list of chemical recipes.

FUNCTIONS

- Retaining (suspended solids) particles such as pollens, algae, parasites, bacteria, viruses, large organic molecules
- Removing all particles: turbidity <0.1 NTU
- Sterilizing by stopping:
  - 99.9999% bacteria removal
  - 99.99% viruses removal
- Replacing a complete filtration chain (sand filter to 0.1 µm filter) in one step:
  - Higher efficiency and safety
  - Lower running costs.

BENEFITS

- **Plug and play**, skid mounted, ready for connection
- **Clarification and disinfection** made in a single step
- **Guarantee of a constant quality** for treated water, regardless of raw water fluctuations
- **High efficiency** for rejection of colloids, bacteria and viruses
- **Savings on operation cost** (no consumable or cartridge replacement, low energy consumption and low chemicals consumption)
- **User-friendly** and simplified cleaning operations
- **Enhance** RO membrane life span
- **Internal and automatic procedure** of integrity testing enables an easy detection of membranes breakdown
- **Optimised process** with large set of automated sequences: flushes, backpulses, backwashes, Cleaning In Place.

BY CHOOSING ICE ULTRAFILTRATION, YOU WILL

- Benefit from one step pretreated water before RO.
- Benefit from elimination of bacteriological contamination.
- Benefit from optimised Opex and reduced footprint compared to standard filtration chain.

ICE WATER MANAGEMENT

Through filtration and adsorption, single or multi-layers filters remove particles, bad taste and odor.

REMOVE PARTICLES, ORGANIC MATTER, UNDESIRABLE SPECIES AND CHLORINE

MEDIA FILTRATION

to purify water

ICE media filters (activated carbon, sand or granular media) have been designed for adjusting the water composition and reach your composition target.

SYSTEM FEATURES

- Single or multi-layers filters
- Stainless steel or painted steel design according to the raw water composition
- Manual or automatic backwash sequences
- Design: flat floor with nozzle
- Option with granular media filtration: specific ions removal. According to the type of filter media, possibility of specific removal of undesirable species:
  - Ammonium
  - Arsenic
  - Uranium
  - Copper
  - Fluoride
  - H2S
  - Iron
  - Manganese
  - Nitrates
  - Nitrites
- Option: manifold for lead-lag arrangement.

FUNCTIONS

- Activated carbon filter:
  - remove organic matter contained in water, odors and chlorine from water. With specific design, chloramines, PFOA and THM are removed.
- Sand filter:
  - remove particles contained in water by filtration through a layer of sand
  - produce high-quality water without the use of chemical aids.

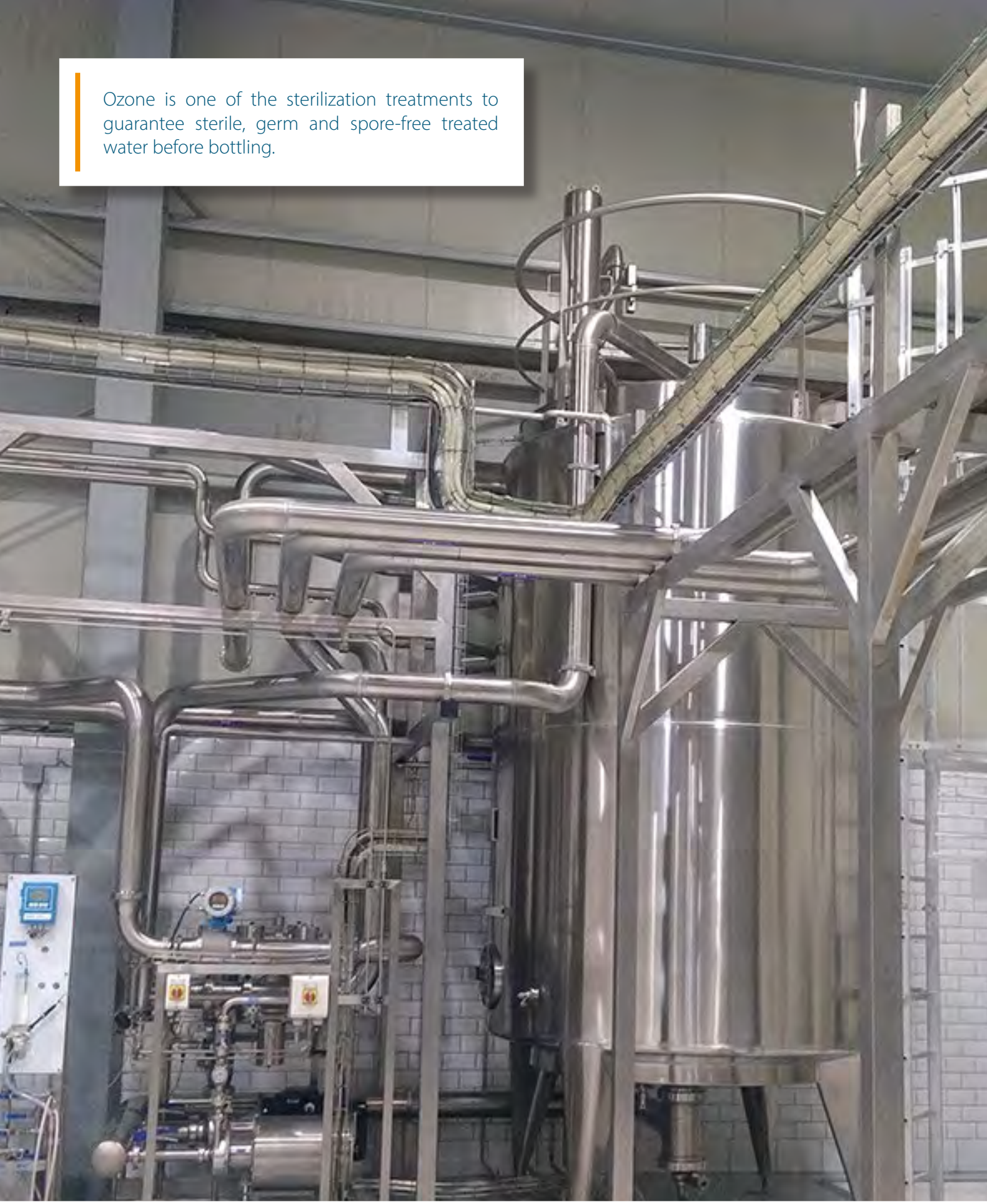
BENEFITS

- **Maximum productivity**
- **Opex control:**
  - automatic control and high accuracy avoiding wastage
- **Easy access and maintenance:**
  - top and down manhole
  - access ladder and safety hand guard.

BY CHOOSING ICE MEDIA FILTRATION, YOU WILL

- Protect your production with a high level of hygiene and hot water or steam sanitation.
- Benefit from efficient elimination of specific elements thanks to a wide range of filtration media.

ICE WATER MANAGEMENT



Ozone is one of the sterilization treatments to guarantee sterile, germ and spore-free treated water before bottling.

BROMATE FREE DISINFECTION

CT CONTROL

final disinfection with ozone

The concentration and contact time control system has been designed to ensure safe bottling without bromates.

SYSTEM FEATURES

- Monitored ozone contact time and concentration
- Automatic quality control and autodump of non compliant product water
- Hot water CIP ability - 3 or 5 Steps CIP procedures
- EHEDG pump frequency inverter driven
- Hygienic design, process & instrument fittings
- Ozone monitoring in ambient air
- Compact footprint to fit with filler room available space.

FUNCTIONS

When oxidized by ozone, bromides which are naturally found in water, are transformed into bromates.

When bromides level is such that ozone can potentially generate an excessive bromates level, solution is "post ozonation with Concentration and contact Time control" (CT control).

The main principle is to inject ozone into a column installed just before the filling line and constantly control 2 parameters:

- the ozone contact time in the column
- the quantity of ozone injected.

The nature of the water itself is taken into account to know the specificic kinetic of bromates creation for this water.

BENEFITS

- Water biologically safe without excessive bromates
- Respected bromates regulation
- Ozone monitoring for product qualification
- Operator safety through ozone monitoring in the air
- Fillers CIP included with CT Control to optimise cleaning cycles.

BY CHOOSING ICE CT CONTROL, YOU WILL

- Keep your production safe with germ-free product and bromates content lower than the current drinking-water regulations.
- Produce germ free water.

ICE WATER MANAGEMENT

ICE has been innovating significantly in the domain of final disinfection.

REMOVE PATHOGENIC MICRO-ORGANISMS FROM WATER

DISINFECTION PROCESS

for a sanitised and purified water

ICE designs its water treatment systems to get sterile water, free of all pathogenic micro-organisms and uses any kind of existing disinfection process.

OZONATION IN A TANK

SYSTEM FEATURES

- Monitoring of ozone concentration
- Hygienic design and optimal cleanability

FUNCTIONS

The solution proposed by ICE is to ozonate the final product tank. By keeping a constant ozone level, this allows the residual ozone level in the bottles to be stable and controlled.

The bromides removal is enough with a double RO design to avoid excessive bromates formation.

BENEFITS

- The final product tank is kept safe even when the production stops for a few hours.

CARTRIDGE FILTERS

SYSTEM FEATURES

- Physical treatment
- Validated retention to industry regulated organisms
- Inert construction materials
- Easy in-situ integrity testing
- Integral depth prefiltration layer
- High filtration area
- Cartridge design validated according to ASTM F838-05.

FUNCTIONS

- Filter cartridges ensure microbiological safety of bottled water.
- Filter cartridges protect the purity and essential characteristics of spring water.

BENEFITS

- Ensure safety of the water prior to bottling.
- Ensure filtration performance.

ULTRA VIOLET (UV)

SYSTEM FEATURES

- Stainless steel
- Hygienic design

FUNCTIONS

- Remove most forms of microbiological contamination from water (bacteria and viruses).
- Sterilize water.

BENEFITS

- Environmentally safe
- Simple and effective
- Chemical free
- Taste and odor free
- Low maintenance
- 99.99% of harmful micro-organisms destroyed

BY CHOOSING ICE DISINFECTION PROCESS, YOU WILL

- Benefit from a process chosen according to the water quality and to the needs.
- Benefit from microbiological safety in compliance with a current regulation.

ICE WATER MANAGEMENT

A complete process to treat water and produce natural mineral water.

RESPECT THE CHARACTER OF YOUR NATURAL MINERAL SOURCE

MINER'ICE

from 15 to 70 m³/h

With MINER'ICE, ICE provides a simple and compact water treatment system with hygienic design, respecting the character of your natural mineral water source.

SYSTEM FEATURES

All MINER'ICE systems are composed with the following features:

- 3 stages pre-filtration 10-5-1µm grade for water source clarification without affecting its mineral character
- Hygienic storage for hydraulic break allowing bottling flexibility
- Final product distribution and polishing through 0.2µ filtration stage
- Hot water CIP ability - 3 or 5 Steps CIP recipes
- EHEDG pump frequency inverter driven
- Hygienic design, process & instrument fittings
- Compliant with directive 2009/54/CE
- Option:
  - upstream sand filtration for turbid water source or iron removal
  - dedicated CIP unit : more cleaning flexibility
  - hard Pipe CIP network : low maintenance and efficient operability
  - filler CIP: maximized productivity through filler combined CIP
  - filler flow meter: filler real consumption totalizer
  - hygienic well head.

FUNCTIONS

- Treatment of mineral water respecting the character of your natural mineral water source
- Treatment of water without modifying water composition (chemical or microbiological) excepted for some elements (Fe, Mn, NH4+, As).

BENEFITS

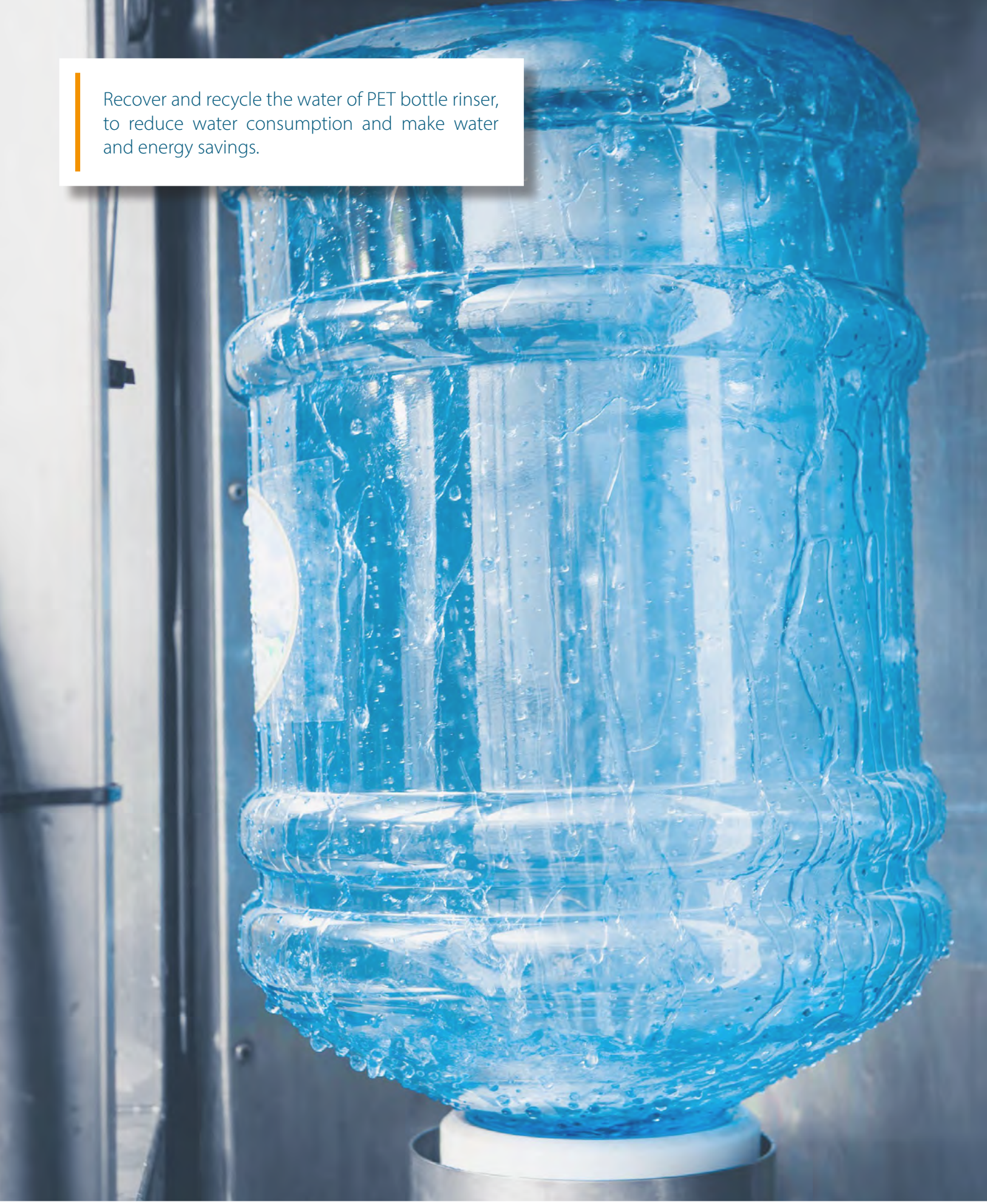
- **Reliability and quality:**
  - constant water quality of the finished product
  - simple and compact system
  - large range of flow rate
  - cleanliness and sterilization simplified.
- **Investment control:**
  - good ratio between OPEX & CAPEX
  - reduced investment
  - consumables longevity.
- **User-friendly turnkey system:**
  - composed by easy-assembly machines
  - advanced operability by PLC control & monitoring
  - optimised ergonomics
  - low maintenance.

BY CHOOSING MINERICE, YOU WILL

- Benefit from a single and complete hygienic process to treat your water source.
- Benefit from one package offer from source to filler.

ICE WATER MANAGEMENT

Recover and recycle the water of PET bottle rinser, to reduce water consumption and make water and energy savings.



A SUSTAINABLE AND INNOVATIVE METHOD TO RECYCLE PET BOTTLES RINSING WATER

PERACETIC WASA

for PET bottles

ICE has been developing a whole range of services and processes to save water in plants, reduce water consumption and running costs. This is a sustainable development approach.
Reduce, reuse, recycle.

METHODOLOGY FOR A SUSTAINABLE DEVELOPMENT APPROACH

- **Audit and expertise**
- **Wastewater optimisation**
- **WASA objectives:**
  - reuse water in the water treatment process
  - recycle water in the process
  - recycle water for utilities.

By equipment improvement

Thanks to global water management

BENEFITS

- **Decrease production costs:**
  - control your benefits
- **Increase productivity:**
  - improve your capacity
- **Resource preservation:**
  - branding, image vector
- **Combination for sustainability:**
  - social, environmental, economic.

$C_2H_4O_3$ removal process

PERACETIC WASA, A PROCESS TO RECYCLE THE WATER OF PET BOTTLE RINSER

- **Aseptic PET bottles washer and rinser**

This is a combination of catalytic and membrane processes used to recycle rinsing water, remove peracetic acid, H2O2, and surfactant components.

TARGETS

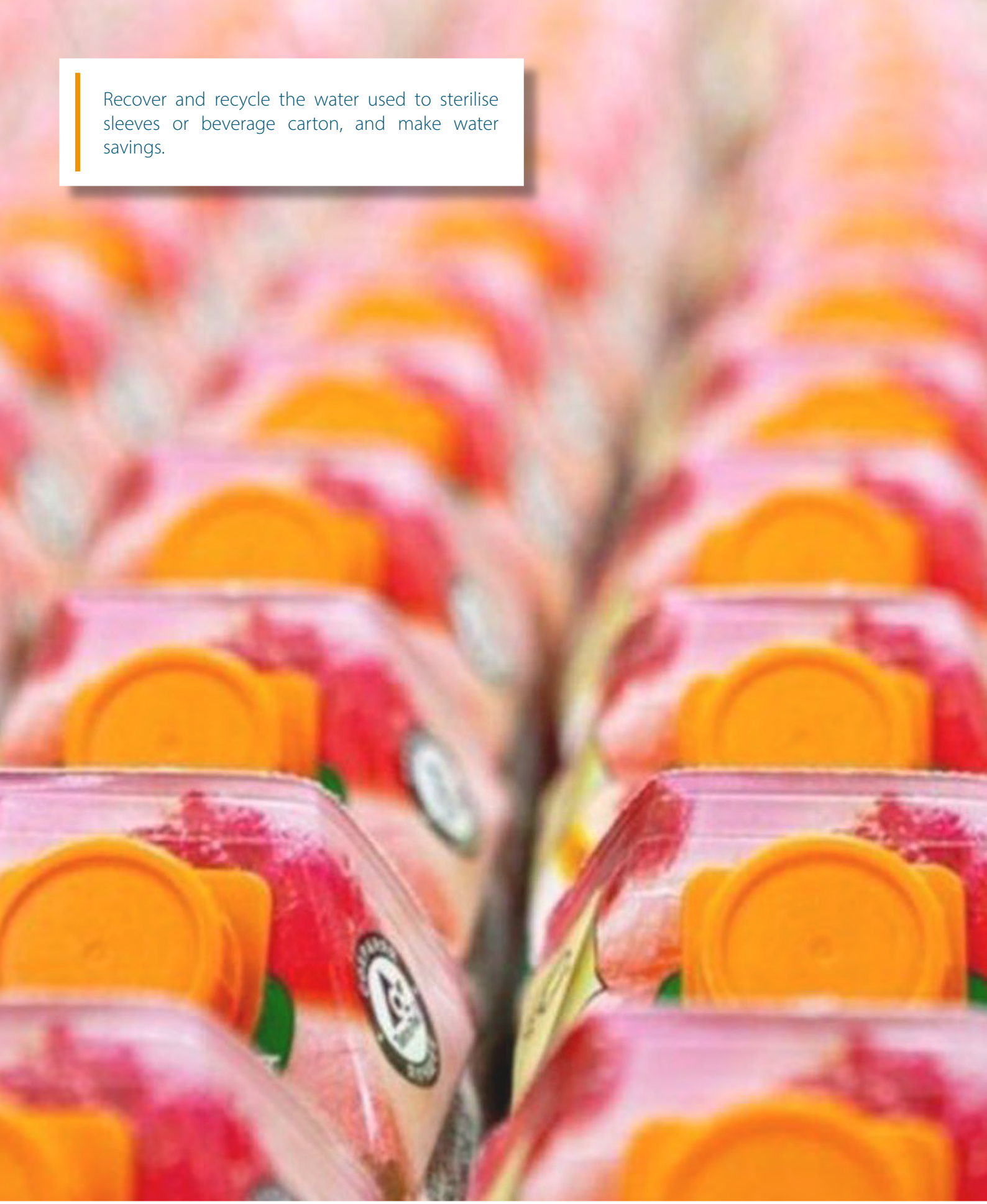
- Water savings (reduction of the water feeding flow)
- Guarantee of a germ free and particle free water re-injected to the rinser
- Low energy consumption.

BY CHOOSING ICE WATER SAVING SOLUTION, YOU WILL

- Benefit from a solution to optimise water production and reduce water consumption.
- Target a zero liquid discharge objective.
- Target the ideal bottled water ratio.
- Benefit from a sustainable development approach.
- Improve the green image of your company.

ICE
WATER MANAGEMENT

Recover and recycle the water used to sterilise sleeves or beverage carton, and make water savings.



A SUSTAINABLE PROCESS TO RECYCLE CARTON ASEPTIC RINSING WATER

H_2O_2 WASA
for beverage carton

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Reduce, reuse, recycle.

METHODOLOGY FOR A SUSTAINABLE DEVELOPMENT APPROACH

- **Audit and expertise**
- **Wastewater optimisation**
- **WASA objectives:**
  - reuse water in the water treatment process
  - recycle water in the process
  - recycle water for utilities.

By equipment improvement

Thanks to global water management

BENEFITS

- **Decrease production costs:**
  - control your benefits
- **Increase productivity:**
  - improve your capacity
- **Resource preservation:**
  - branding, image vector
- **Combination for sustainability:**
  - social, environmental, economic.

H_2O_2 removal process

H_2O_2 WASA, A PROCESS TO RECYCLE THE WATER USED TO STERILISE SLEEVES

- **Brick carton filling machines**

This is a catalytic H_2O_2 removal process used to recycle rinsing water from sleeves disinfection.

TARGETS

- Water savings (reduction of the water feeding flow)
- H_2O_2 free water, reusable for utilities
- Low energy consumption.

BY CHOOSING ICE WATER SAVING SOLUTION, YOU WILL

- Benefit from a solution to optimise water production and reduce water consumption.
- Target a zero liquid discharge objective.
- Target the ideal bottled water ratio.
- Benefit from a sustainable development approach.
- Improve the green image of your company.

ICE WATER MANAGEMENT

Recover lost water and reuse it for service and industrial water, to reduce water consumption.

A SUSTAINABLE PROCESS TO RECYCLE GLASS BOTTLE WASH WATER

BOTTLE WASHER WASA

for glass bottles

ICE has been developing a whole range of services and processes to save water in plants, reduce water consumption and running costs. This is a sustainable development approach.
Reduce, reuse, recycle.

METHODOLOGY FOR A SUSTAINABLE DEVELOPMENT APPROACH

- **Audit and expertise**
- **Wastewater optimisation**
- **WASA objectives:**
  - reuse water in the water treatment process
  - recycle water in the process
  - recycle water for utilities.

By equipment improvement

Thanks to global water management

BENEFITS

- **Decrease production costs:**
  - control your benefits
- **Increase productivity:**
  - improve your capacity
- **Resource preservation:**
  - branding, image vector
- **Combination for sustainability:**
  - social, environmental, economic.

Suspended solids, organics and chemical residues removal process

BOTTLE WASHER WASA, A PROCESS TO RECYCLE GLASS BOTTLE WASH WATER

This is a physical and membrane-based process for the removal of suspended solids, organics and chemical residues.

It is used for the recycling of glass bottle wash water (one-way or returnable bottles).

Water can be reused as industrial water for trucks, cases and floor washing, toilets flushing or cooling towers.

TARGETS

- Water savings (reduction of the water feeding flow)
- Guarantee of a particle free and low TDS water
- Low energy consumption.

BY CHOOSING ICE WATER SAVING SOLUTION, YOU WILL

- Benefit from a solution to optimise water production and reduce water consumption.
- Target a zero liquid discharge objective.
- Target the ideal bottled water ratio.
- Benefit from a sustainable development approach.
- Improve the green image of your company.

ICE WATER MANAGEMENT

Reduce your water feeding by re-injecting the saved water upstream of RO.

A SUSTAINABLE PROCESS TO RECYCLE THE OSMOSIS CONCENTRATES

RO WASA
for RO

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METHODOLOGY FOR A SUSTAINABLE DEVELOPMENT APPROACH

- **Audit and expertise**
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RO concentrates reducer process

ROWASA, A PROCESS TO RECYCLE THE OSMOSIS CONCENTRATES

This is a membrane process which allows to treat, recycle the osmosis concentrates, and increase the RO recovery rate.

TARGETS

- Water savings
- Reduction of the concentrates flow
- Low energy consumption by reuse of concentrates pressure
- Very small footprint (fitted on the osmosis skid)
- Reduction of the water feeding by re-injecting the saved water upstream of the RO
- Improvement of the recovery rate up to 96-98%;

BY CHOOSING ICE WATER SAVING SOLUTION, YOU WILL

- Benefit from a solution to optimise water production and reduce water consumption.
- Target a zero liquid discharge objective.
- Target the ideal bottled water ratio.
- Benefit from a sustainable development approach.
- Improve the green image of your company.

ICE WATER MANAGEMENT

Understand the importance of water quality and monitor it closely to ensure a reliable end product.

A KEY ELEMENT TO ACHIEVE WATER QUALITY OBJECTIVES

LABORATORY EQUIPMENT

for performance and quality control

Thanks to the in-house laboratory equipment, you will control the sanitary quality of the water and its potability (resource, production and distribution). You will also be able to monitor process water and waste water.

MATERIAL FEATURES

- **Glasswork:**
  - comprehensive set of equipment required for laboratory analysis (flasks, tubes, burettes, pipettes…)
- **Chemical and bacteriological analysis:**
  - wide range of instrumentation to qualitatively and quantitatively analyze the mineral composition of each sample
- **Bacteriological analysis:**
  - material to verify the bacteriological quality of drinking water, and the absence of pathogens
- **Chemical analysis consumables:**
  - complete set of reagents and chemical products for analytical purposes
- **Furniture:**
  - complete work benches (metal frame, HPL surfaces) with accessories: power sockets, water taps, gas taps, sinks, electrical trunking,
  - cupboards, drawers, cabinets, desks, stationary cabinets, meeting tables, arm chairs, fume hoods
  - ISO certification and compliance of materials.

FUNCTION

- Carrying out analyses and understanding the physico-chemical, biological, micro-biological and organoleptic properties of water.

BENEFITS

- Immediate sample pickup
- Easy-to-use and low cost reagents
- Accurate analysis
- Reliable and immediate results
- Equipment and training included.

BY CHOOSING ICE LABORATORY EQUIPMENT, YOU WILL

- Benefit from the indispensable validation of your production quality.
- Benefit from all the advantages of having an analytical follow-up directly on production site.

ICE WATER MANAGEMENT

Being flexible in both capacity and automation to manufacture syrup needed for all kinds of soft drinks.

THE STARTING POINT OF YOUR SOFT-DRINKS PRODUCTION

SYRUP UNIT

fully taylor-made

ICE Syrup unit can cover the complete product cycle from dissolving, mixing, cooling, carbonating, deaerating and storing. Unit is specially designed and fully built according to customer needs.

SYSTEM FEATURES:

- Hygienic design, process & instrument fittings
- Stainless steel
- Degree of automation: manual, semi-automatic or automatic process with PLC control
- Modular and flexible units
- Sugar dissolver
- Syrup storage tank
- Aroma mixing tank
- Mixing tank for water and syrup
  - equipped with rotary mixers
- Filtration unit
- Cooling unit (option)
- Carbonation unit
- Product tank
- Vacuum deaeration unit.

BENEFITS

- Flexible production process
- Cover the complete product preparation cycle
- Various combinations of process
- Advantages of modular units
- Exact adjustment of the brix value
- Flexible and reliable syrup-based recipes
- Savings thanks to a complete in-house cycle.

FUNCTIONS

- Preparation of syrups by mixing the concentrates with simple syrup (treated water and sugar)
- Preparation of the variants of syrup
- Production of non-alcoholic beverages.

BY CHOOSING ICE SYRUP UNIT, YOU WILL

- Benefit from a tailor-made unit to optimise your production and savings.
- Benefit from a complete process within the manufacturing plant when combined with water treatment (water treatment system, syrup unit and CIP).

ICE WATER MANAGEMENT

Purity and quality of water used in the brewing process is crucial to the clarity and taste of your beer.

A SUITABLE WATER TREATMENT UNIT TO GIVE YOUR BEER A UNIQUE TASTE

BREWERY WATER TREATMENT

fully taylor-made

Since beer is made of 90% water, proper water treatment guarantees the production of quality beer. Water treatment unit ensures the composition of water and therefore the type, colour and overall the unique taste of each beer. ICE brewery water treatment is taylor made so that treated water fits the required beer characteristics.

SYSTEM FEATURES:

- Stainless steel
- Degree of automation: manual, semi-automatic or automatic process with PLC control
- Modular and flexible units
- Filtration, activated carbon filtration or ultrafiltration unit
- UV unit
- Reverse osmosis
- CIP unit for brewing process, maturation, fermentation and utilities process
- Product tank, hot water tank (for wort brewing and for cleaning process), cold water tank (for storage of treated drinking water used for wort cooling)
- Cooling unit (option)
- Water composition adjustment and stabilisation.

BENEFITS

- Flexible and optimised production process
- End to end solution to prepare the product
- Advantages of modular units
- Water savings thanks to enhanced rinsing procedures with CIP unit and by optimising waste water with RO unit
- Optimised cleaning operation: minimise your production downtime
- Advanced operability by PLC assistance control and monitoring, automated operations
- Savings thanks to wastewater treatment and recycling
- Performance improvement and reduced charges
- Opex optimization and green image by saving water, chemicals and energy.

FUNCTIONS

- Filtration and ultrafiltration to remove particles, organic matter, undesirable species, THM, odors and chlorine from brewing water
- Disinfection by UV unit
- Reduction of chlorides, alkalinity and removal of unwanted salts with reverse osmosis unit, to avoid undesirable taste
- Ensuring water quality, efficient cleaning and sanitation of the complete installation with CIP unit.

Wastewater treatment and recycling:

- Ultrafiltration and filtration
- Disinfection before storage
- Treatment with reverse osmosis
- Recycle for other applications.

BY CHOOSING ICE BREWERY WATER TREATMENT, YOU WILL

- Benefit from a tailor-made unit to optimise your production and savings.
- Reduce the environmental footprint of a water intensive sector.

ICE WATER MANAGEMENT

To ensure the health security of its products, the dairy industry consumes considerable volumes of water in cleaning operations.

MAKE SAVINGS BY RECOVERING AND REUSING WASTEWATER AND COW WATER

DAIRY INDUSTRY

water treatment and reuse

In the dairy industry, water usage is one of the major costs in the processing of milk. Thanks to various water treatment technologies, cow water generated from milk process, can be recycled and purified up to a drinking water quality. Wastewater can also be reused for other processes, after adequate treatment and thus reduce the environmental impact.

SYSTEM FEATURES:

- Stainless steel
- Degree of automation: manual, semi-automatic or automatic process with PLC control
- Modular and flexible units
- Filtration, activated carbon filtration
- Ultrafiltration unit (wastewater, cow water and backwash of milk ultrafiltration to avoid membrane clogging)
- UV unit
- Reverse osmosis
- Ozonation
- CIP unit for cleaning operations of tanks, equipments and installations, surfaces
- DROP by DROP (water and energy management system).

BENEFITS

- Water savings thanks to enhanced rinsing procedures with CIP unit and by optimising waste water
- Advanced operability by PLC assistance control and monitoring, automated operations
- Savings thanks to wastewater treatment and recycling
- Performance improvement and reduced charges
- Increase the efficiency of water usage and minimise waste generation
- Optimise and control costs of water usage
- Opex optimization and green image by saving water, and energy
- Thanks to DROP by DROP : traceability, raw material savings, optimised cleaning operation for a minimised production downtime, and an increased productivity.

FUNCTIONS

Reuse of wastewater (generated by production process, cleaning operations, draining operations, and sanitary use)

- Carbon filtration and ultrafiltration to remove particles, organic matter, pathogens, nitrogen, phosphorus, detergents, acidity, oils, greases, and odors
- Disinfection by UV unit
- Purification with reverse osmosis unit, to remove unwanted contaminants and dissolved substances from the wastewater
- Ensuring water quality, efficient cleaning and sanitation of the complete installation with CIP unit
- Ozone disinfection to remove milk residues and bacteria
- Recycle and reuse water for other applications either at the dairy plant or offsite (for cooling, steam generation and cleaning of external areas).

Reuse of cow water (generated by milk process)

- Carbon filtration to eliminate odors
- Ultrafiltration to remove particles and microorganisms
- Disinfection by UV unit to remove contaminants
- Purification with reverse osmosis unit, to remove unwanted contaminants and dissolved substances from the condensate after evaporation process
- Recycle and reuse as water for final cleaning operations with CIP, tanks and pipes washing, boilers filling, products chilling, and as an ingredient of the final product.

BY CHOOSING ICE SOLUTIONS, YOU WILL

- Benefit from a sustainable solution saving a large amount of water and consequently reducing water cost.
- Reduce the environmental footprint of a water intensive sector.

ICE WATER MANAGEMENT

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REFERENCES

for 37 years


OUR SOLUTIONS

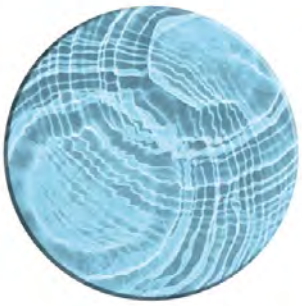
ICE Water Management offers solutions to enhance water quality while ensuring savings at every step of the water treatment process.

Our mission is to deliver the best quality product to your brand with consistency and proven efficiency.

Securing access
to water resource

Starting a new
water treatment project

Increasing
water treatment capacity



Guarantee
water quality

Protecting
your brand

New
to the bottling industry

Improving performance,
productivity & hygiene

Implementing
best practices

WATER MANAGEMENT

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