

Circular cooling

Simple by nature



~~Take~~ →

~~Make~~ →

~~Waste~~ →

Reduce

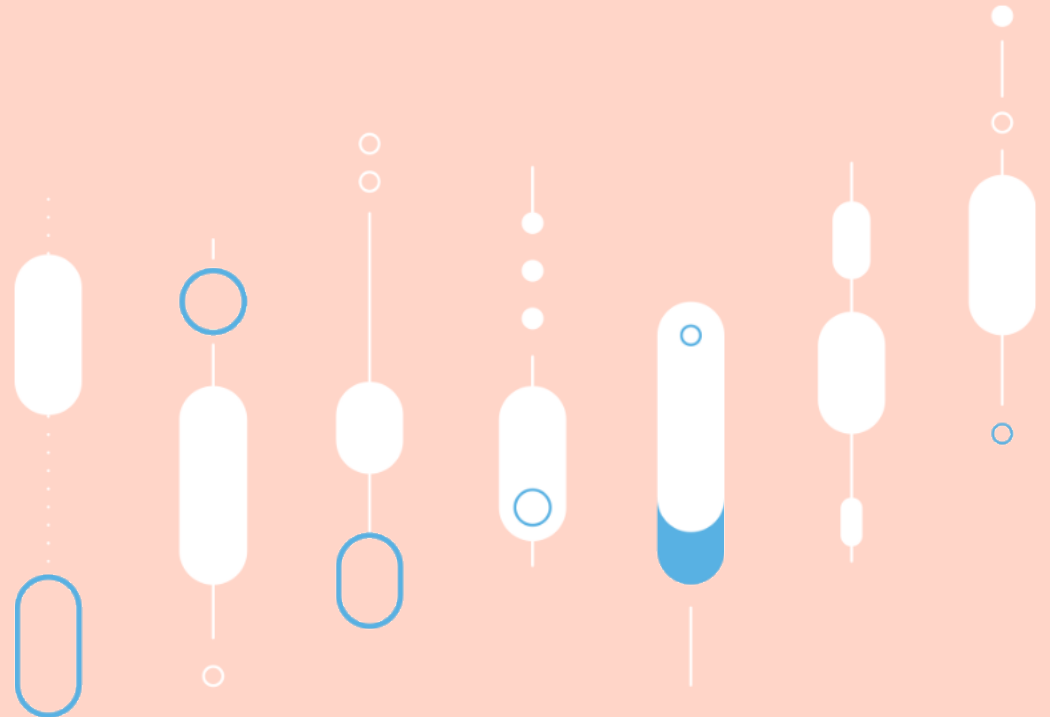
Reuse

Recycle

ACT NOW

The water transition is just around the corner

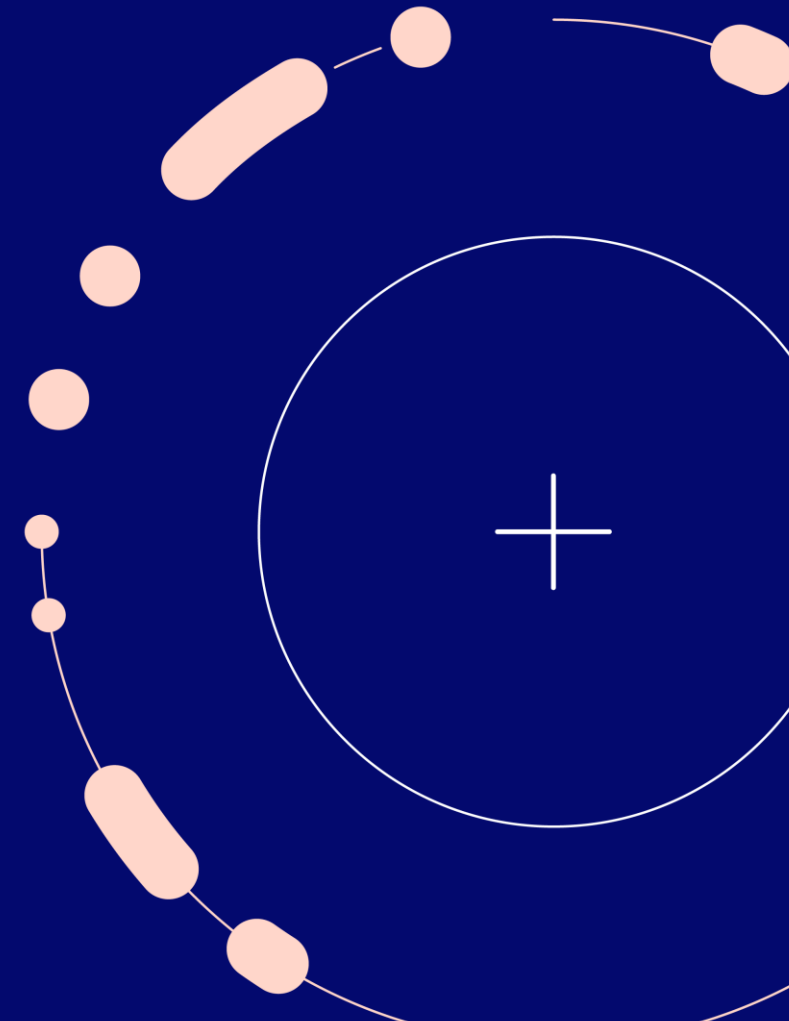
Our mission is to make this water transition rigorously simple. For many, our solution sounds too good to be true. But she certainly isn't. So we are only too happy to prove that. That is why we have a special passion for impact. To show results, savings and performance that show that our solution really works.



FOR A BETTER WORLD

Impact first

Our technology is a solution that makes a complex process rigorously simple through the power of nature. **Take, Make & Waste** is making way for **Reuse, Reduce & Recycle**.

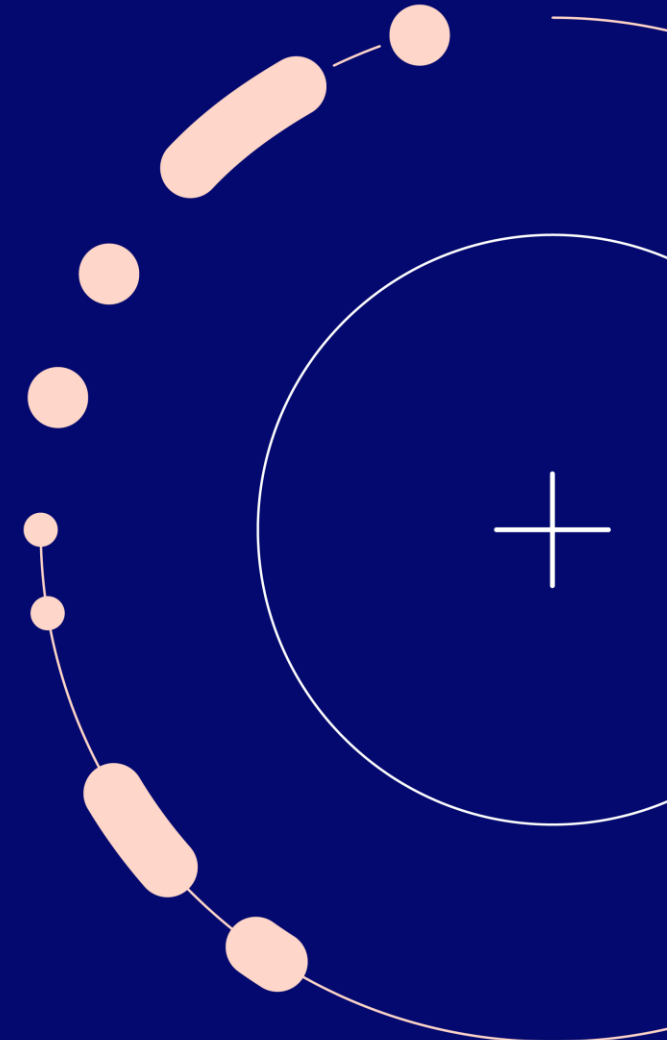


FOR A BETTER WORLD

Impact first

Water is scarce. We will therefore have to deal with water differently. Both from public opinion and from legislation and regulations, the water transition requires a different way of working. This also applies to the cooling of residual heat in industry. Energetically the most efficient way to do this is still water evaporation. This process is circular in principle; the evaporated water returns clean through the water cycle. Unfortunately, many companies use chemicals for their cooling water process. This makes this – by nature circular – process linear and finite. The dirty water has to be discharged at great expense and thus leaves its traces in our living environment. And that is bad for people, animals and the environment.

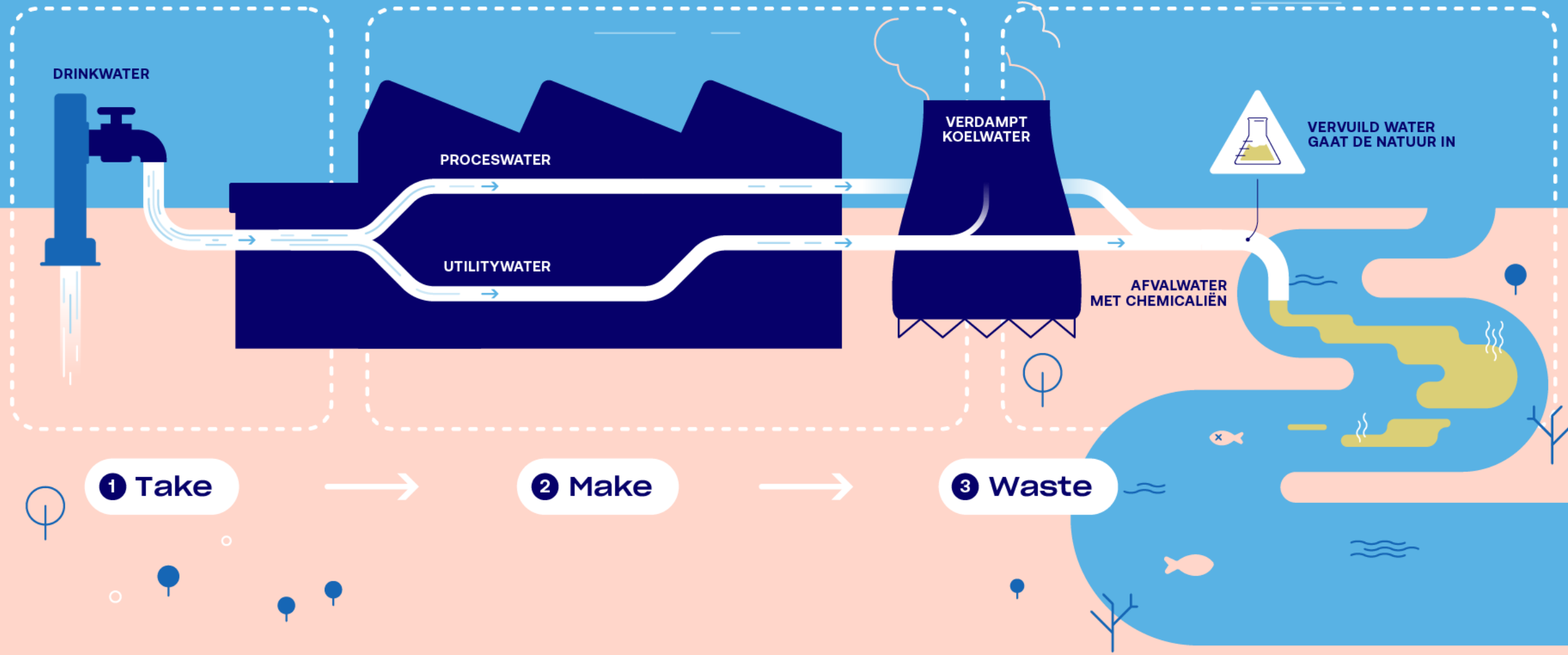
In their transition from 'Take, Make & Waste' to 'Reduce, Reuse & Recycle', the industry is forced to make choices and take measures. Pathema has been offering circular and chemical-free cooling water solutions since 2008. Our cooling water solution removes all complexity, is completely safe and prevents limescale, corrosion and microbiological growth. There are now more than 100 cooling water installations using Pathema's technology all over the world.



<https://youtu.be/JmoAeQtbBq4>



Linear process

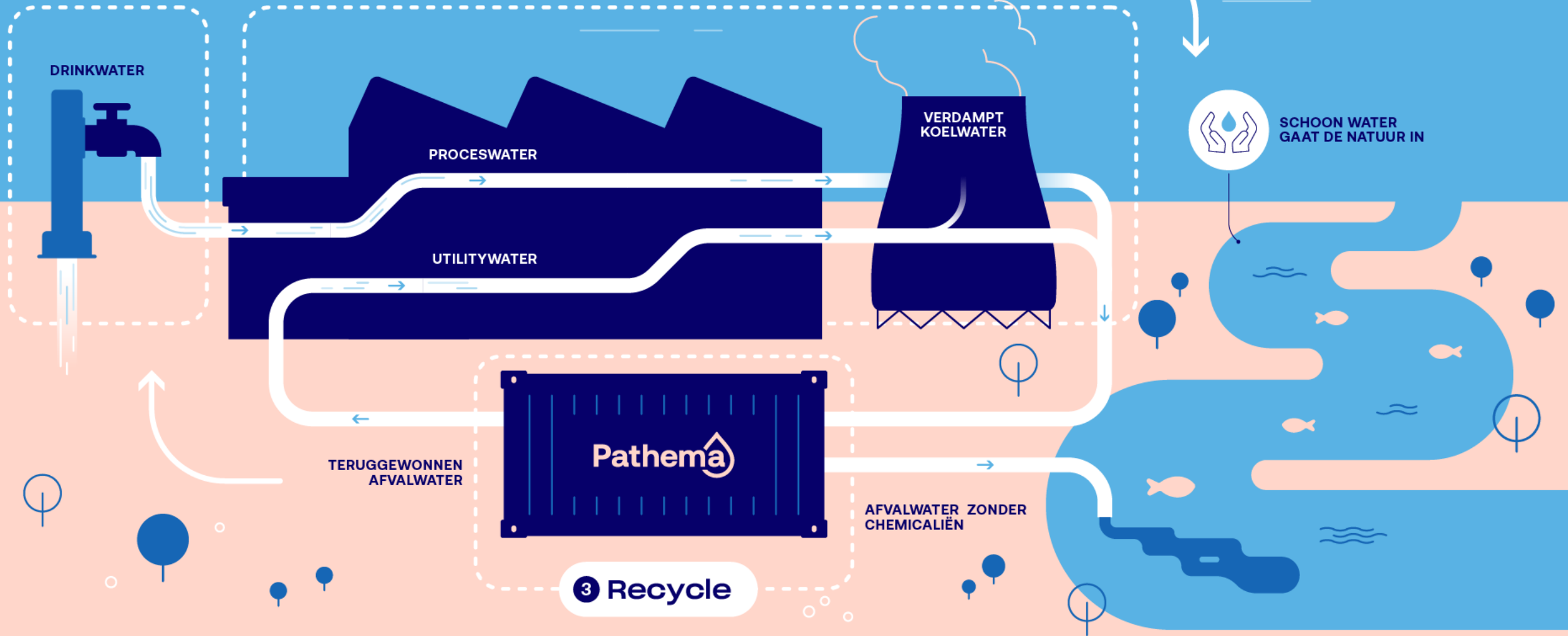


Circular process

1 Reduce

2 Reuse

3 Recycle



Simple by nature

We dream of a world in which industry and nature work together in harmony



Cooling residual heat in industry is most efficient through water evaporation. However, this entails limescale, corrosion and microbiological growth.



These problems have a traditional approach with chemicals that pollute our water, making it no longer usable or reusable. The dirty water has to be discharged - at great expense - and leaves its traces in our living environment. Linear is precious, finite and wastes our clean drinking water. And we don't want that.



It is in our nature not to make things more difficult than they are. Our technology is the greatest source of inspiration in this; a solution that makes a complex process rigorously simple with the power of nature.

NO EXPERIMENTAL
SOLUTION

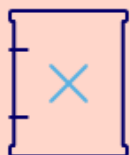


No risks,
no high costs

WITHOUT
PRODUCTION LOSS

FOCUS ON IMPACT

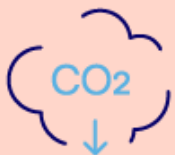
Pathema Technology



100% chemfree or low in chemicals



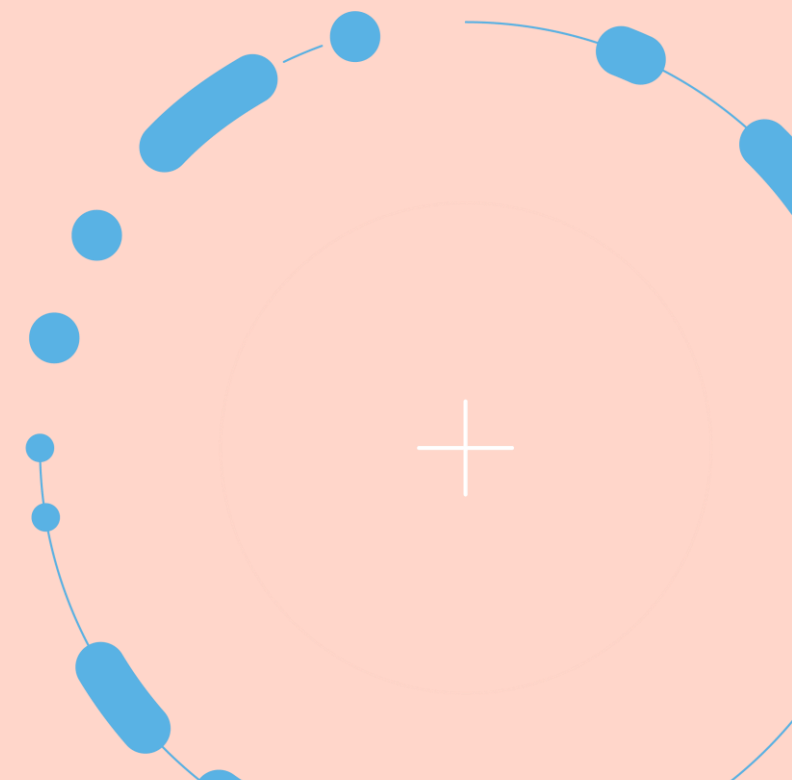
Easy & profitable

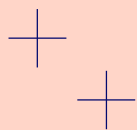


Less CO² emissions



Less drinking water & waste water

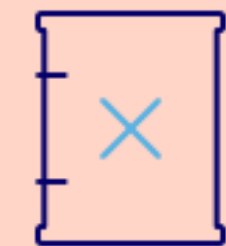




CHEMFREE

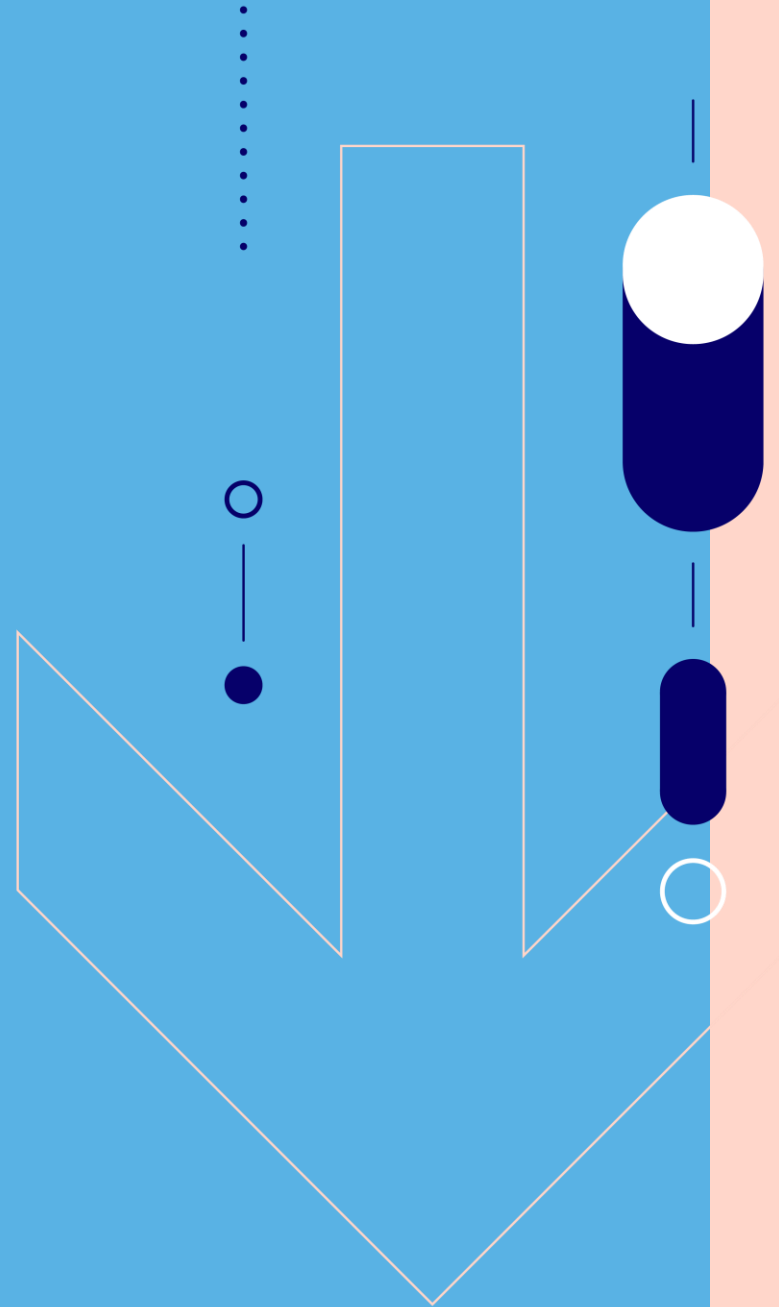
Chemfree & low in chemicals

IF 100% CHEMICAL-FREE IS NOT POSSIBLE
DUE TO WISHES OR CIRCUMSTANCES:
GUARANTEED -90%



CHEMFREE OR LOW IN CHEMICALS?

Every situation is different, but cooling can always be done **without or with much less chemicals**

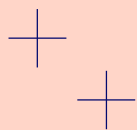


AMPLEY PROVEN

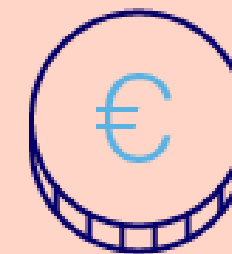


Over 100
installations worldwide

IN PRACTICE



Easy & profitable



WORK SAFER

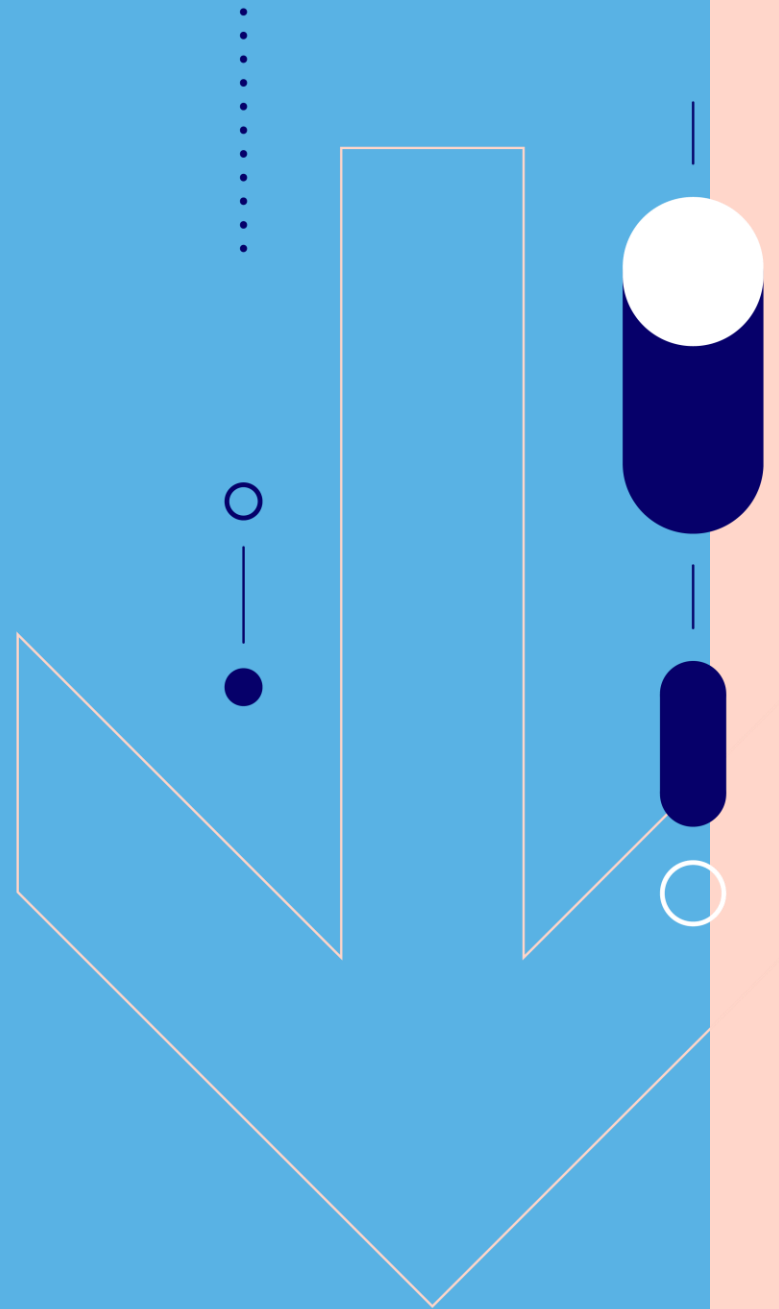
Fewer risks: fewer safety measures required

RESULTING IN
LOWER COSTS



REUSE WASTE WATER

Drinking water
does not cost
much but **waste
water is free and
discharge also
costs money**



COST REDUCTION

More efficient cooling and never buy chemicals again

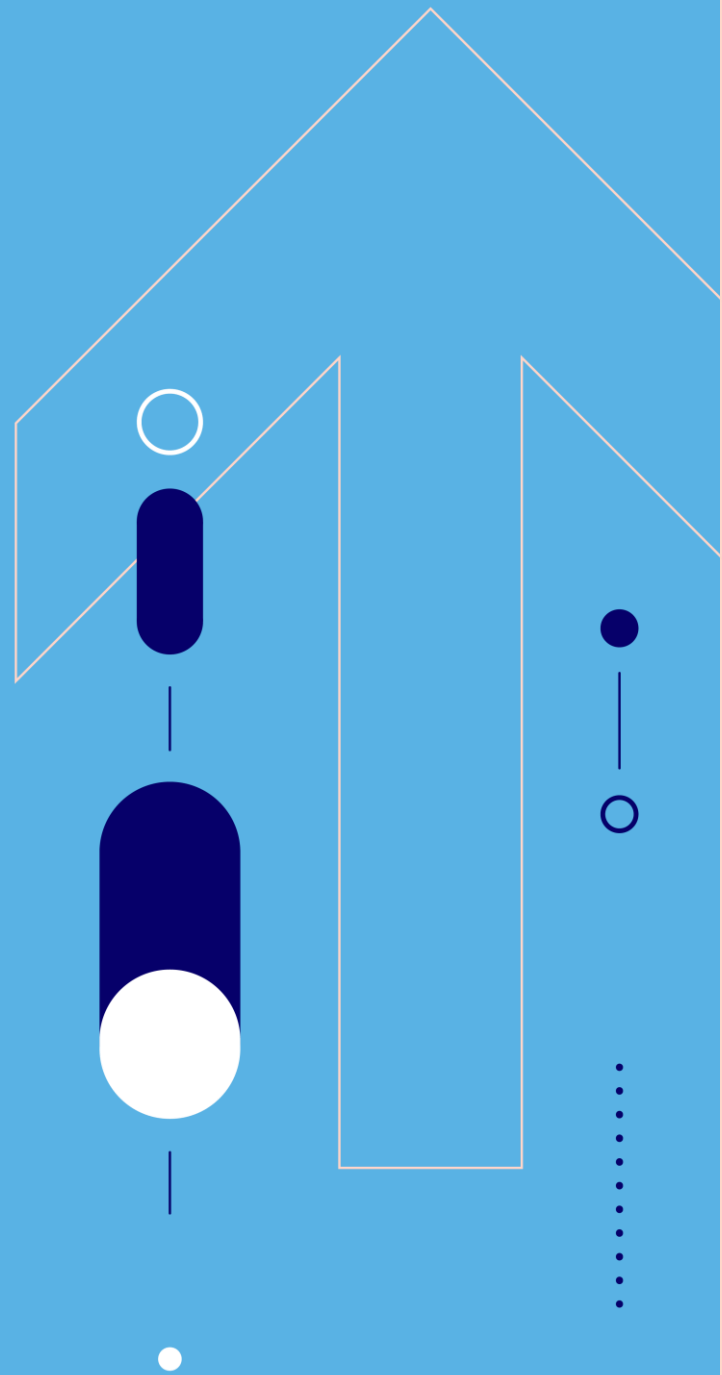
IMPROVED HEAT TRANSFER

LESS ENERGY COSTS
FOR MECHANICAL COOLING



ONE-TIME INVESTMENT

**Payback in 2-4
years, more than
20 years of
sustainable cooling**

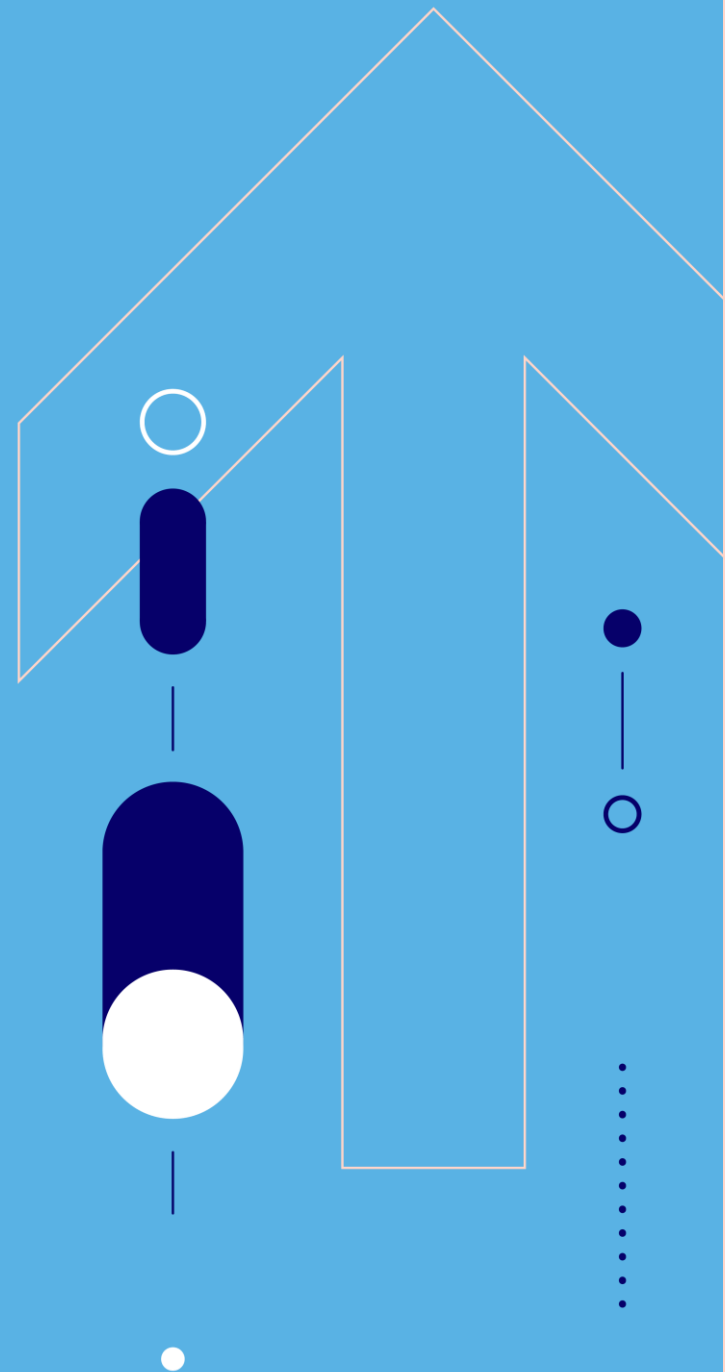


COLD FEET?

Lease is also possible: direct savings without investment

NO CAPEX CONS
OPEX ADVANTAGES

HAPPY WITH THE
INSTALLATION?
POSSIBILITY TO
PURCHASE AFTER 1
YEAR

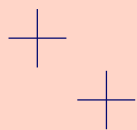


Immediate return

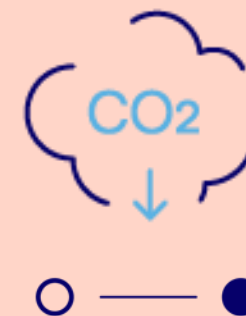
100% CHEMFREE AND CIRCULAR COOLING

COMPLETELY UNBURDENED &
24/7 COMPLETE CONTROL



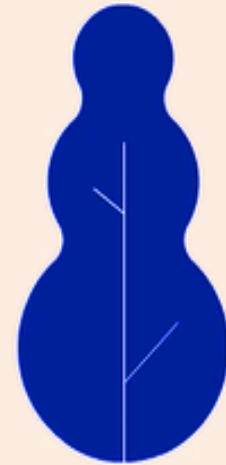
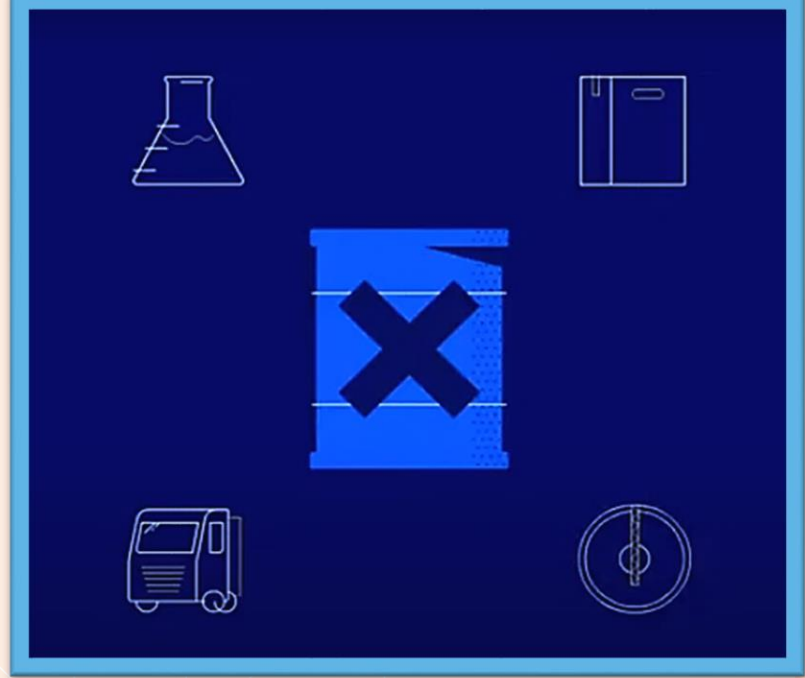


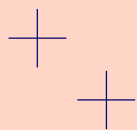
Less **CO₂** emissions



SIMPLE AS NATURE

Significantly less CO2 emissions





Less drinking- & waste water



1 Reduce

2 Reuse

3 Recycle

DRINKWATER

PROCESWATER

UTILITYWATER

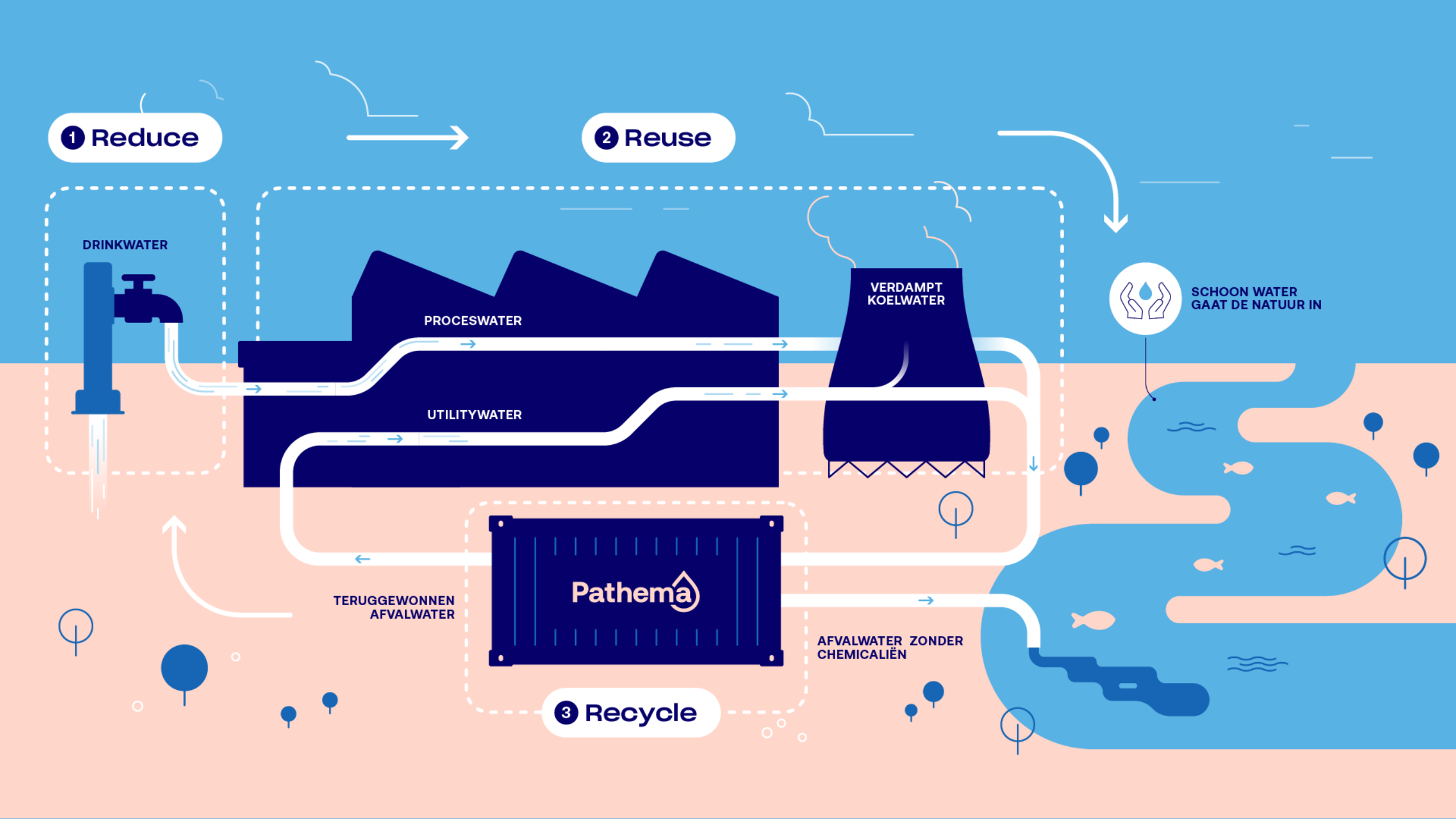
VERDAMPT
KOELWATER

SCHOON WATER
GAAT DE NATUUR
IN

TERUGGEWONNEN
AFVALWATER

Pathema

AFVALWATER ZONDER
CHEMICALIËN





Cooling water reuse

Circular cooling water treatment is the only logical alternative to the current linear model of 'Take, Make & Waste'.

Linear working is not only expensive, it is also finite and wastes our clean drinking water. That is sin and unnecessary.

We don't make things more difficult than they are. With the power of nature, our solution makes a complex process rigorously simple. Take, Make & Waste are making way for 'Reduce, Reuse & Recycle'. We are happy to show you some cases.

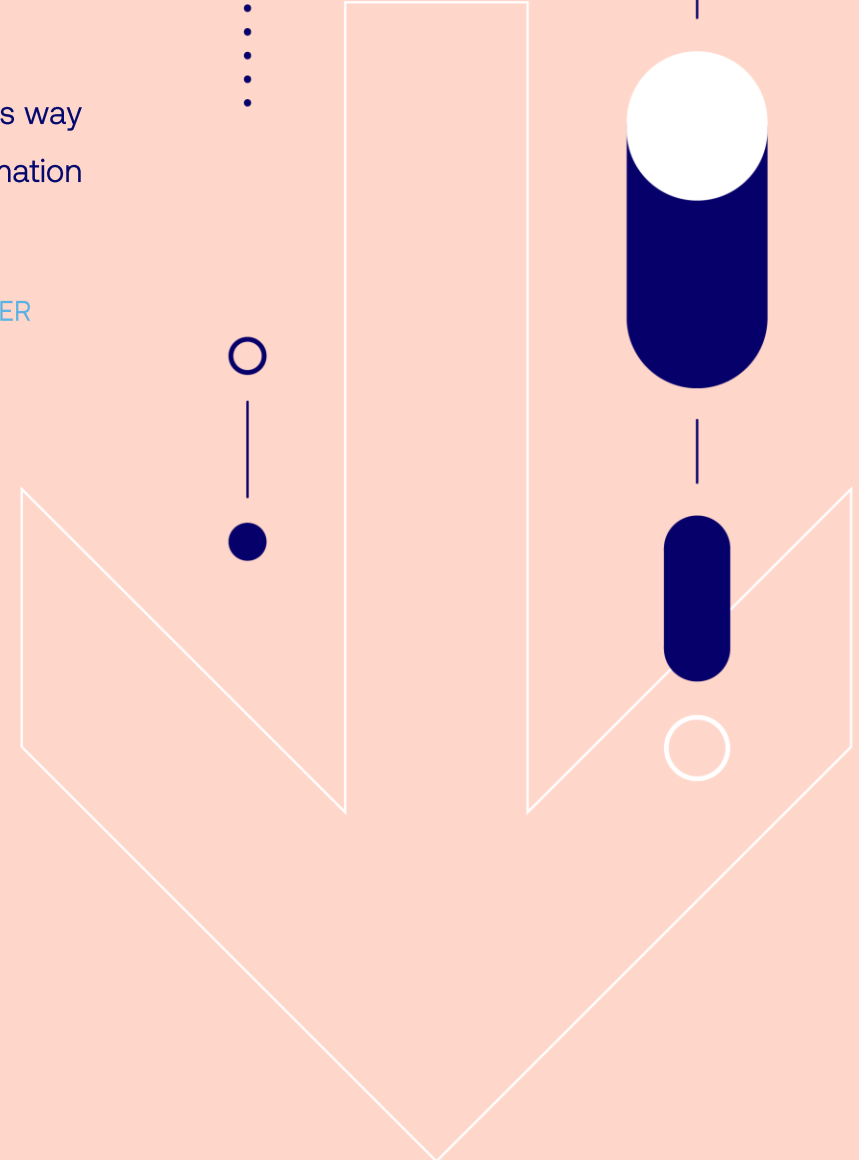
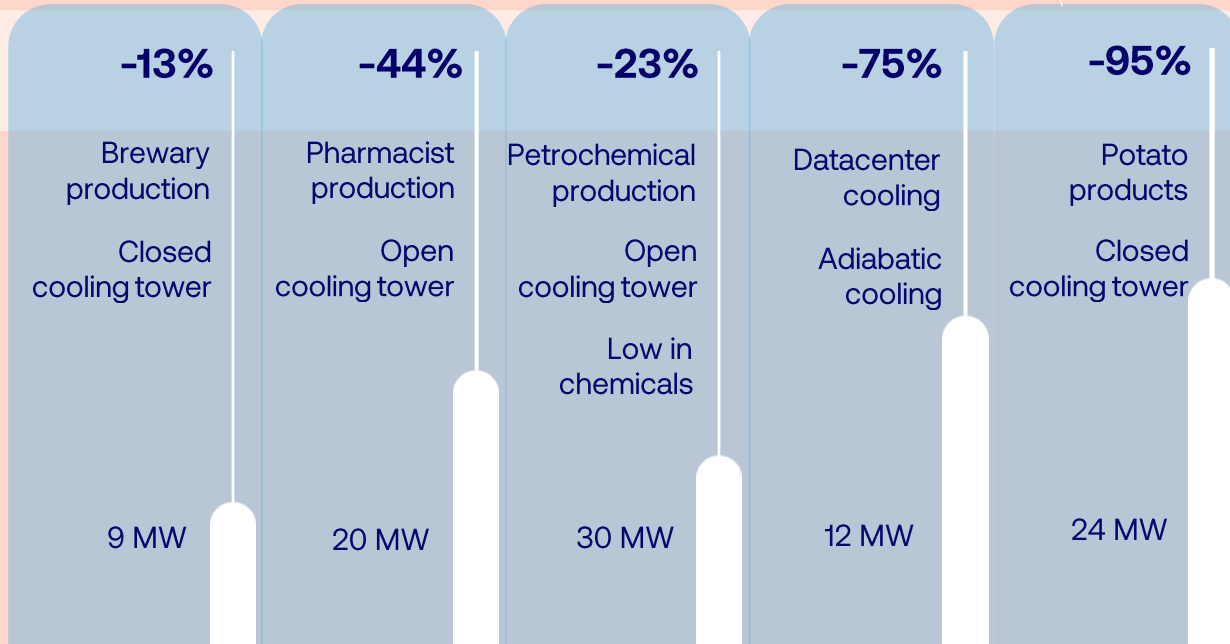
PROVEN IN PRACTICE

Water Savings

Our solutions and working method are focused on impact. On realizing immediate results. In this way we make it easy for our customers to take major steps immediately and quickly in the transformation to circular cooling. Our chemistry-free solution has already been used successfully in various industries, resulting in impressive drinking water savings.

DECREASE DRINKING WATER CONSUMPTION

Decrease cooling water



CASE

Lamb Weston/Meijer

Lamb Weston®
SEEING POSSIBILITIES IN POTATOES

Pathema
CIRCULAR COOLING WATER



Collaboration since 2015, started on the basis of 'no cure, no pay'



Cooling and steam water is now 100% chemfree, sustainable & circular



100% recovery of cooling water and steam water from waste water from the production process



Decrease in drinking water consumption -95%



Water footprint savings of over 40% and significant savings in €

CASE (ANONYMOUS)

Industry: large gas producer



Installation has now been running for over 3.5 years to full satisfaction, considering purchase after lease



92% fewer chemicals; not (yet) completely chemical free



Use of filtered surface water (AFM & NANO)
reduction of water footprint of -36%



Discharge water (waste water, does not contain A substances) decrease in waste water footprint -87%



More than 60 tons of chemicals saved in 36 months



CASE

Data Center NorthC



Since 2020, a start was made to cool all branches free of chemicals



Thanks to Pathema, four of the six installations are 100% chemical-free and with a CO2 saving of 83%



Drinking water consumption reduced by 35% thanks to reuse of their waste water



Water Usage
Effectiveness (WUE)



All systems have been purchased. The OPEX savings provide an ROI of <3 years

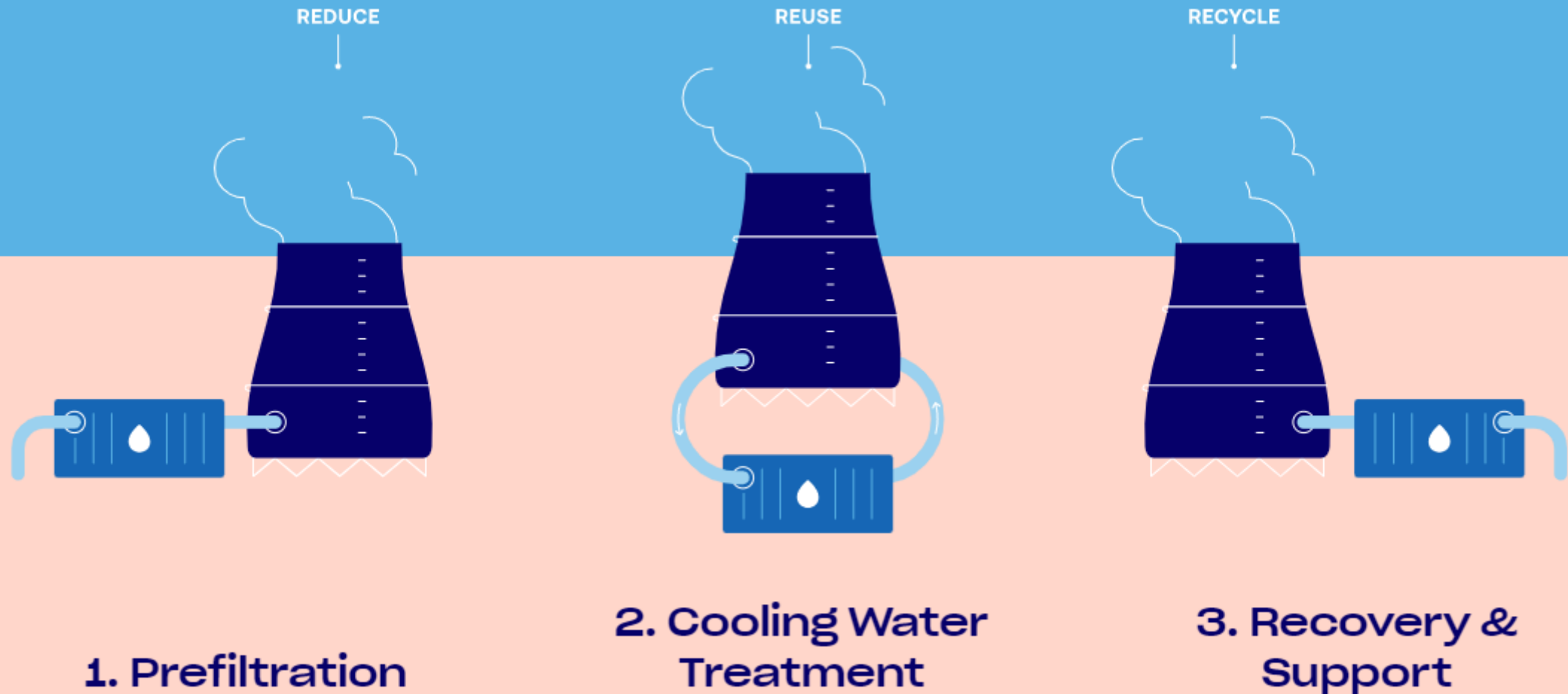
TAKE, MAKE, WASTE



Circular cooling;
simple by nature

REDUCE, REUSE, RECYCLE

Reduce & reuse



One solution, three phases

1
REDUCE

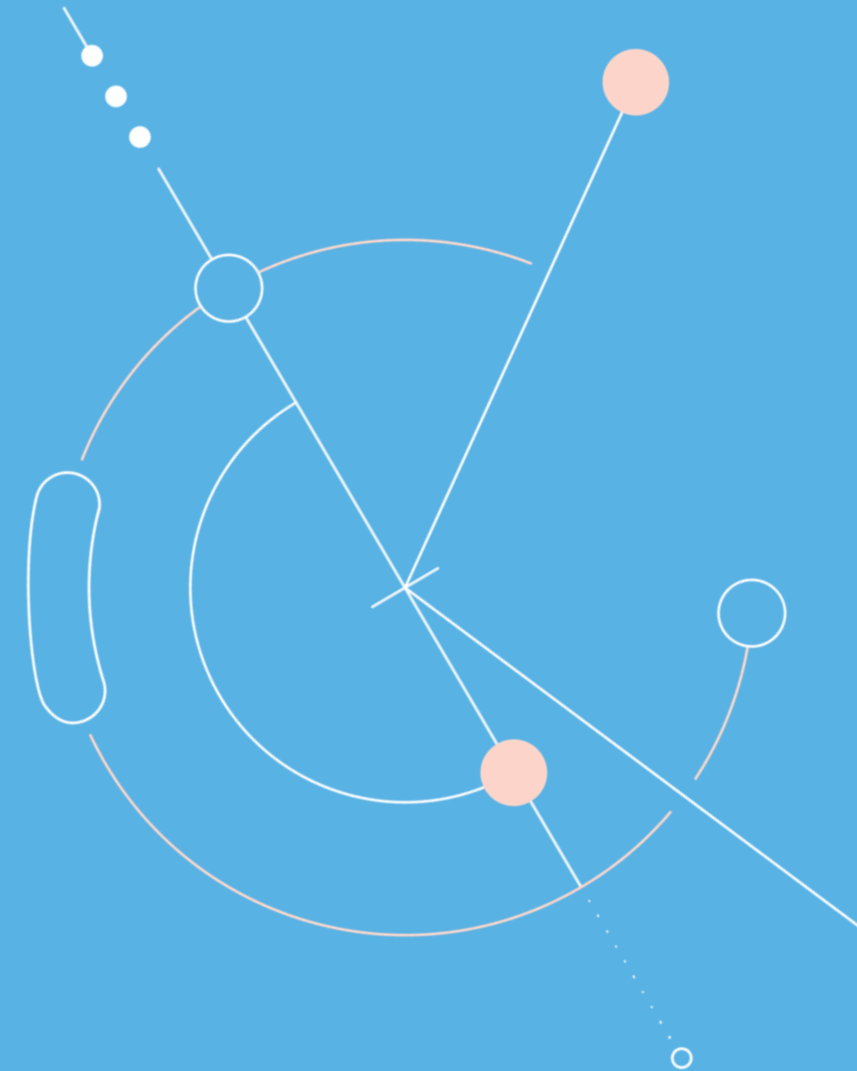
Prefiltration – By applying the right prefiltration, we ensure perfect water quality while using as little drinking water as possible. This reduces your water footprint.

2
REUSE

Cooling water treatment – Our high-quality IVG-CT cooling water solution makes it easy for you as a water consumer to cool 100% chemical-free and circular.

3
RECYCLE

Recovery & Support – Waste does not exist. That is why we want to reuse as much as possible. Like the discharge water. By thoroughly filtering water, we can recover at least 85%, where we previously considered this as waste.

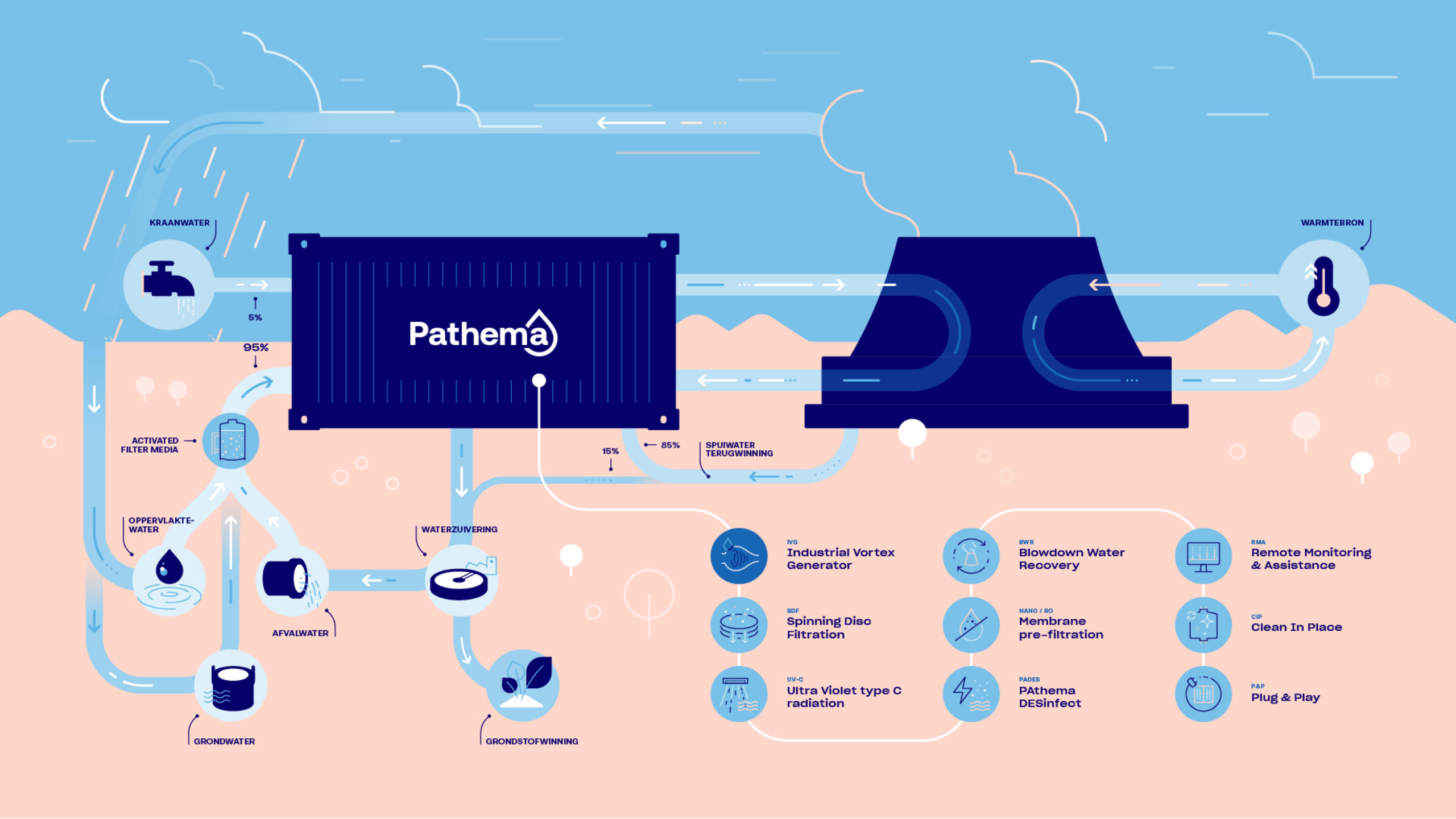


TAKE, MAKE, WASTE



Pathema Technology explained

REDUCE, REUSE, RECYCLE



KRAANWATER



5%
95%

Pathema

ACTIVATED
FILTER MEDIA



OPPERVLAKTE-
WATER



AFVALWATER



WATERZUIVERING



GRONDWATER



GRONDSTOFWINNING



15%

85% SUIJWATER
TERUGWINNING

WARMTEBRON



IVG
Industrial Vortex
Generator



SDF
Spinning Disc
Filtration



UV-C
Ultra Violet type C
radiation



BWR
Blowdown Water
Recovery



NANO / RO
Membrane
pre-filtration



PADES
PAtHEMA
DESinfect



RMA
Remote Monitoring
& Assistance



CIP
Clean In Place



P&P
Plug & Play

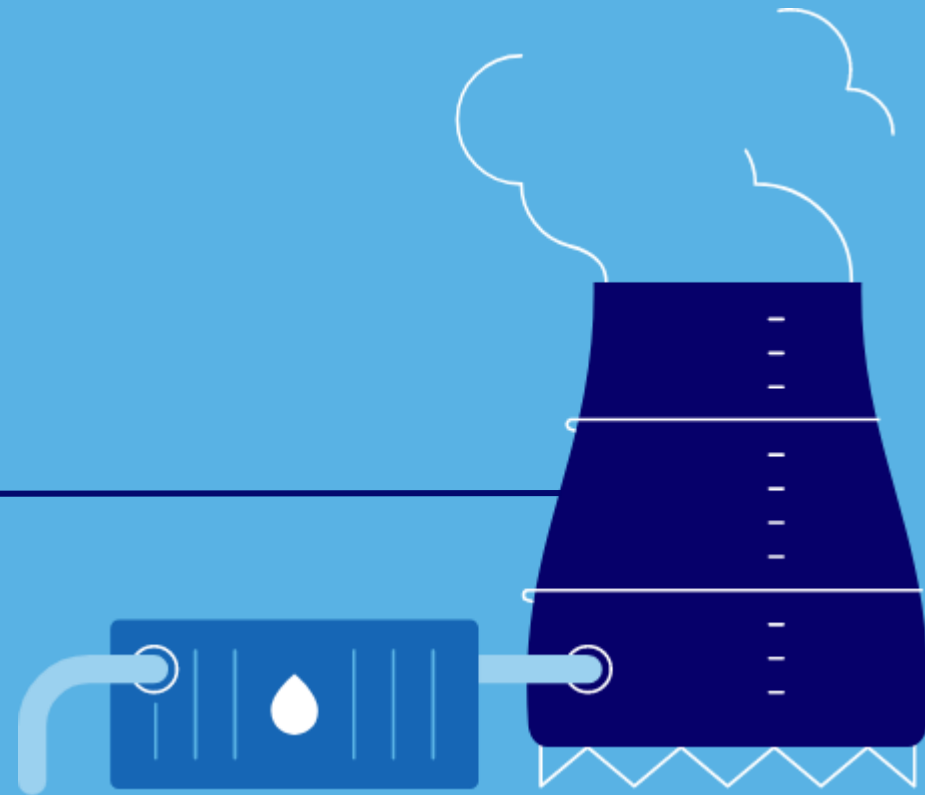
Prefiltration



AFM



NANO / RO

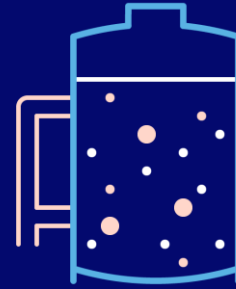


REDUCE

PREFILTRATION

Pathema Technology

[Watch the video on our website](#)



ACTIVATED
FILTER MEDIA
- AFM

- Filters solid particles
- Ecological product, produced from recycled glass
- Lifespan of more than 20 years



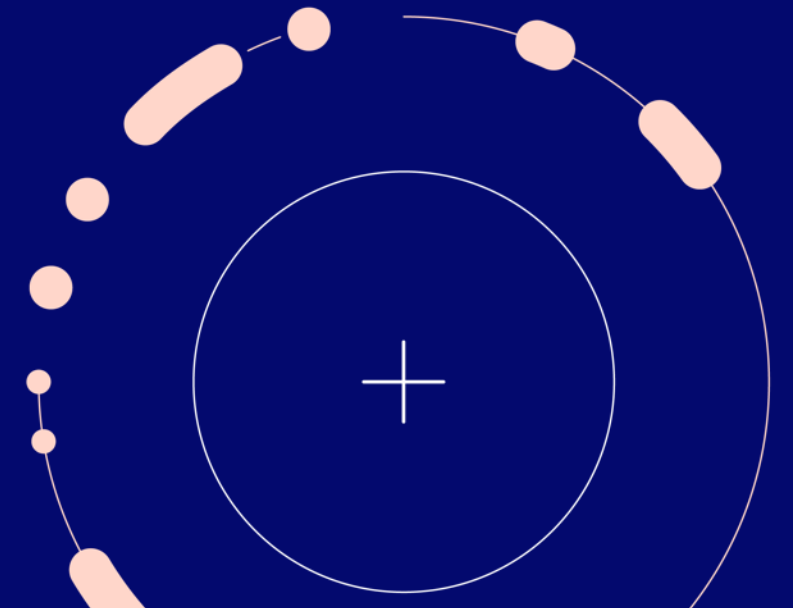
PREFILTRATION

Pathema Technology



MEMBRANE PREFILTRATION - MPF

- Desalts and filters soluble particles such as organic matter, dyes and minerals
- Controls corrosion, acidity and mineral deposits
- NANO or RO filtration





PENTAIR

CODELINE®

Pathema

Innovatief met Water

PENTAIR

CODELINE®

Pathema

Innovatief met Water

Cooling Water Treatment



IVG



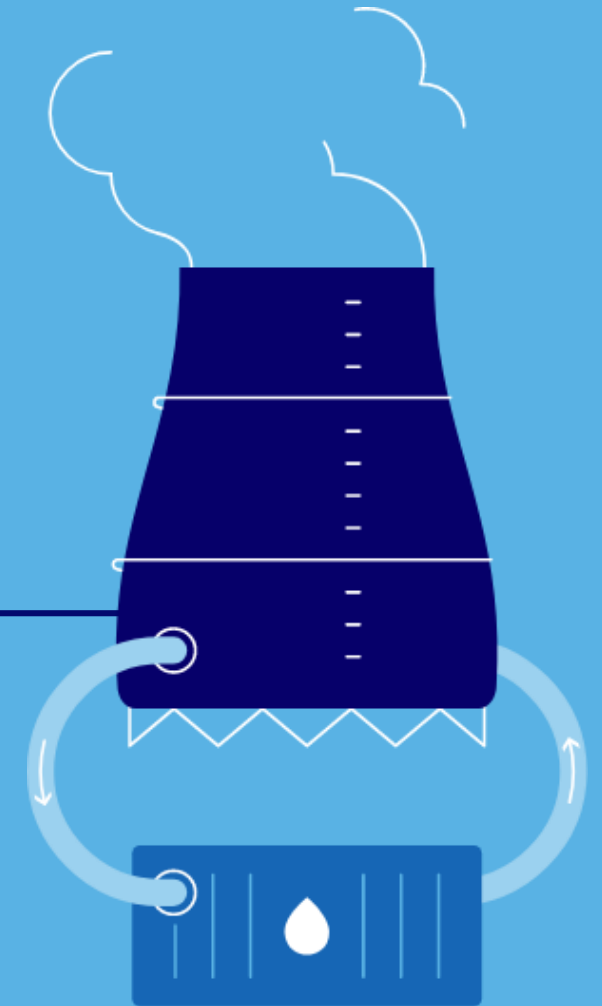
SDF



UV-C



PADES



REUSE



COOLING WATER
TREATMENT

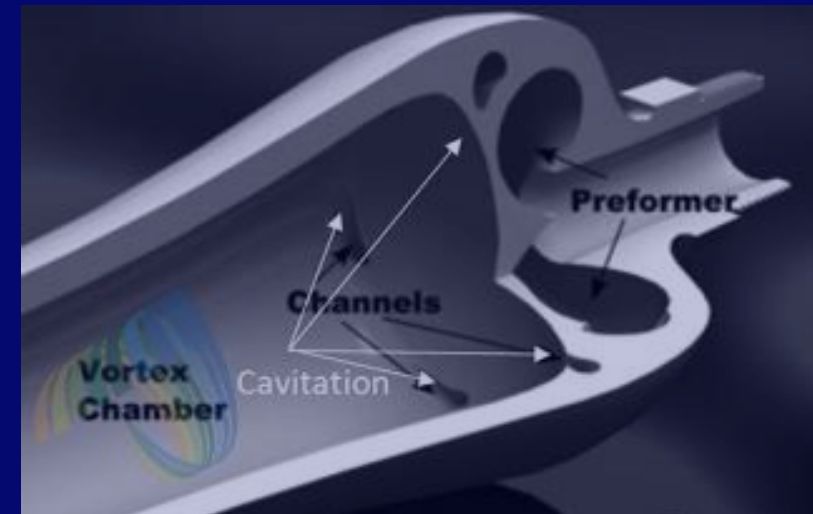
Pathema Technology

[Watch the video on our website](#)



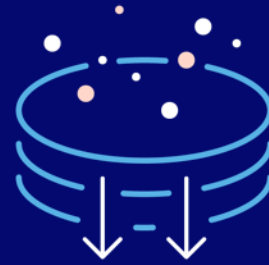
INDUSTRIAL VORTEX GENERATOR - IVG

- Removes unbound gas such as micro and nano bubbles
- Fights microbiology by damaging the cell wall
- Crystallizes minerals and prevents scaling
- Reduces viscosity by 12-20% and improves heat transfer by 3-5% for optimal cooling



COOLING WATER
TREATMENT

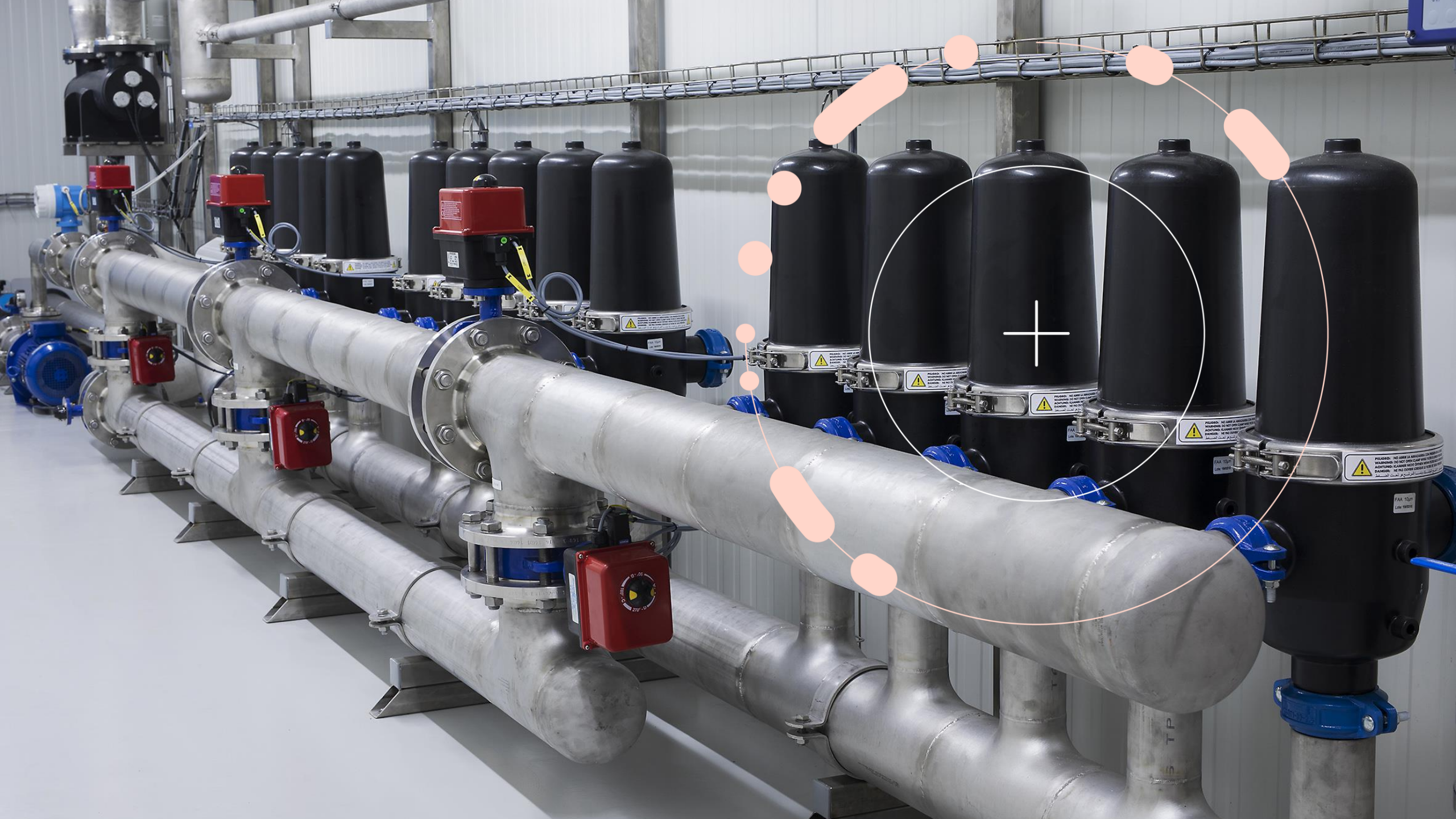
Pathema Technology



SPINNING DISC FILTRATION - SDF

- Continuously filters solid particles of 10 microns or larger from the water in a recirculation loop without additional water consumption
- Improves the capacity of the UV-C reactor
- Reduces the chance of microbiological growth
- Extends the life of materials and pumps and prevents sedimentation and blockages in pipes and heat exchangers







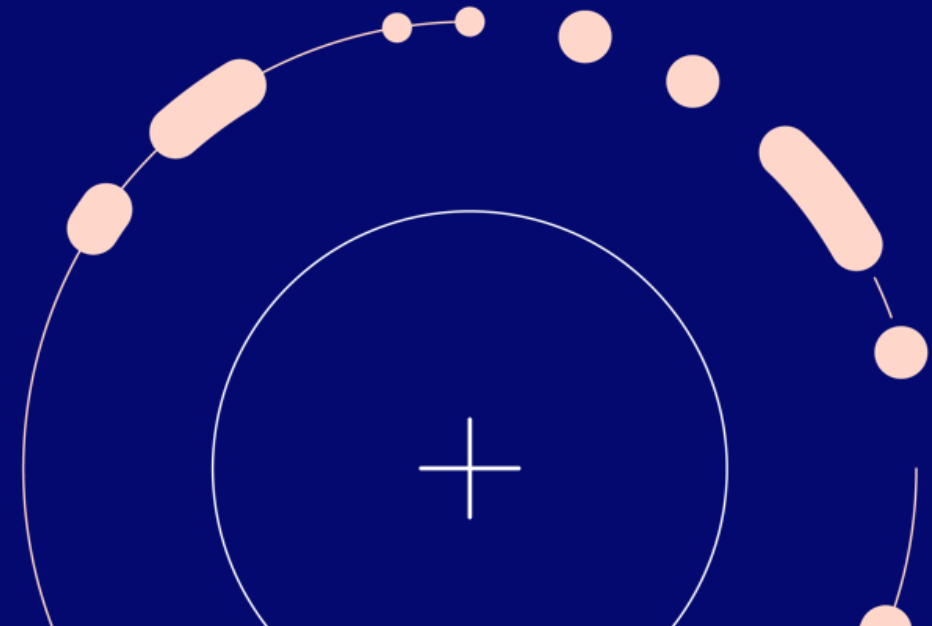
COOLING WATER
TREATMENT

Pathema Technology



ULTRA VIOLET
TYPE C RADIATION
- UVC

- Defuses the micro-organisms (fungi, yeast and bacteria) and prevents them from reproducing
- Prevents biofilm by invisible radiation with a wavelength between 100 and 280 nm

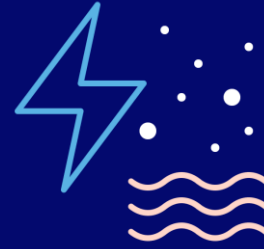






COOLING WATER
TREATMENT

Pathema Technology



PATHEMA DESINFECT FREE CHLORINE ELECTROLYSIS - PADES

- Disinfects water by electrolyzing it, without adding chemicals
- Converts the present NaCl (table salt) into free chlorine, which ensures disinfection, so we keep the pipes, exchangers and the cooling water basin free of pollution
- After the chlorine has done its disinfecting work, it converts back into dissolved salt + oxygen and is discharged



Recovery & Support



BWR



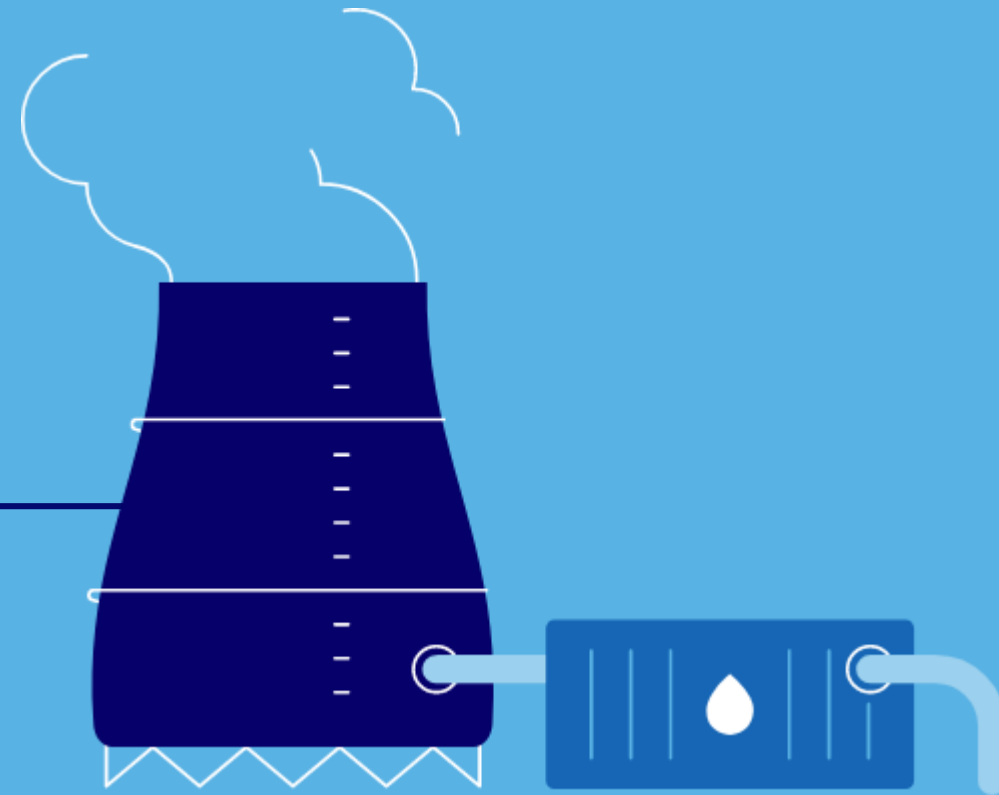
RMA



CIP



P&P



RECYCLE

RECOVERY & SUPPORT

Pathema Technology



BLOWDOWN WATER RECOVERY - BWR

- Filters waste water so that we can recover up to 94% and your water footprint is reduced
- After the filtering steps, we return recovered water as fresh make-up water, so it can be recycled as cooling water and we can reuse this water again for cooling

RECOVERY & SUPPORT

Pathema Technology



REMOTE MONITORING & ASSISTANCE - RMA

- Takes the day-to-day responsibilities for maintenance and support of your business off your hands
- Significantly reduces the risk of downtime through 24/7 monitoring of your cooling water and hardware, anywhere in the world
- Sends an automated KPI report via email in PDF every Monday morning



Pathema
Innovatief met Water



RECOVERY & SUPPORT

Pathema Technology



CLEAN IN PLACE - CIP

- Cleans surfaces of pipes, vessels, process equipment, filters and associated fittings without disassembly
- Reduces the risk of exposure to chemicals
- Automatically determines the best time to clean based on various measurements
- Continuous production is guaranteed by means of buffer tanks, even during a CIP campaign

RECOVERY & SUPPORT

Pathema Technology

[Virtual tour Pathema container](#)



PLUG & PLAY - P&P

- One or more 20/40ft. shipping container(s) will be prepared for you on the company grounds, produced and placed on basis of plug & play



PLUG & PLAY

SKID or container?

> 5 MW
< 15 MW



> 15 MW
< 350 MW



> 15 MW
< 350 MW

100% SINCERE



**We do what we
promise**

TRUE PARTNERSHIP

SIMPLE AS NATURE

Risk-free and effective



REDUNDANCY

The essential parts of our technology have been implemented in multiple times. Continuity assured.



PRODUCTION UPTIME

Everything remains operational during installation! A silent transition to circular and chemical-free cooling.



SIMPLE BY DESIGN

Design that makes processes rigorously simple through the power of nature.



NO CURE NO PAY

We act and communicate honestly, directly and transparently. Obviously.



MONITORING

We are always watching from a distance. A continuous process you can rely on, ALWAYS.



PLUG & PLAY

We keep a cool head and turn complex challenges into solutions, safe and simple.

Awards en certificates



ENERGY INNOVATOR AWARD



WATER INNOVATOR OF THE YEAR



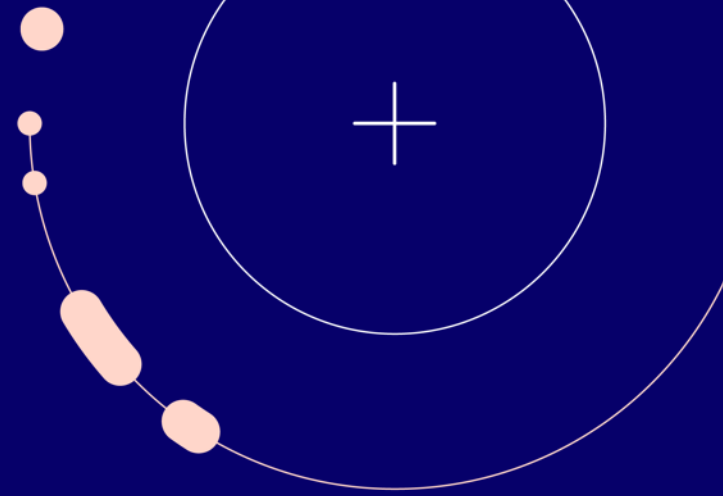
LEGIONELLA PREVENTION IN
COOLING TOWERS



PROCESS INNOVATION AWARD

PROVEN IN PRACTICE

Our customers



AMGEN

★ HEINEKEN

ASML

NorthC

edgeconnex[®]

Lamb Weston 
SEEING POSSIBILITIES IN POTATOES

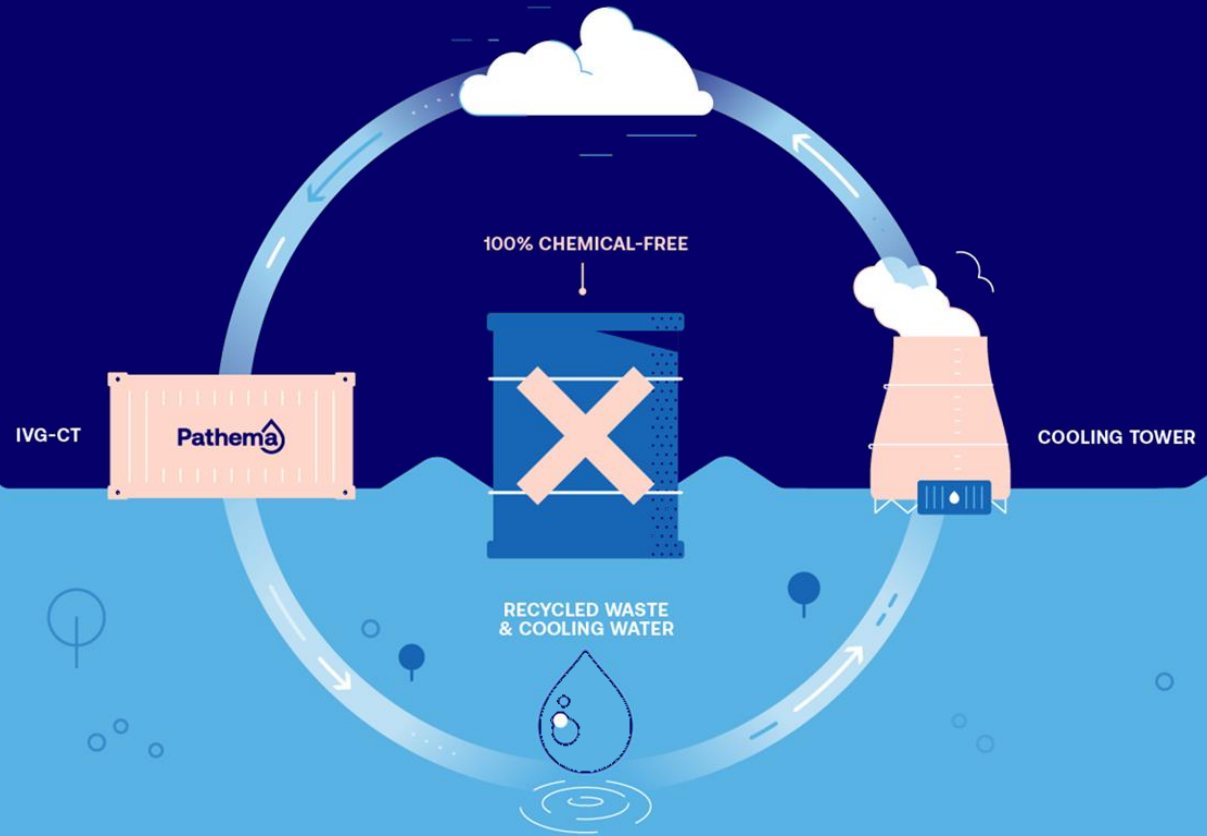
La Trappe

AIR PRODUCTS 

Grolsch

Pathema

CIRCULAR COOLING WATER



CIRCULAR COOLING

**Less cooling water,
less waste water,
free of chemicals.**



REDUCE, REUSE & RECYCLE

Circular cooling, simple by nature

Mark Boeren | CEO

sales@pathema.nl

www.pathema.nl