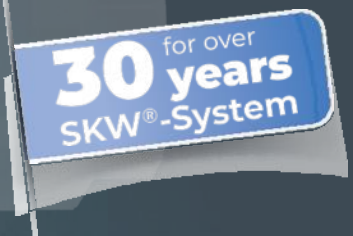
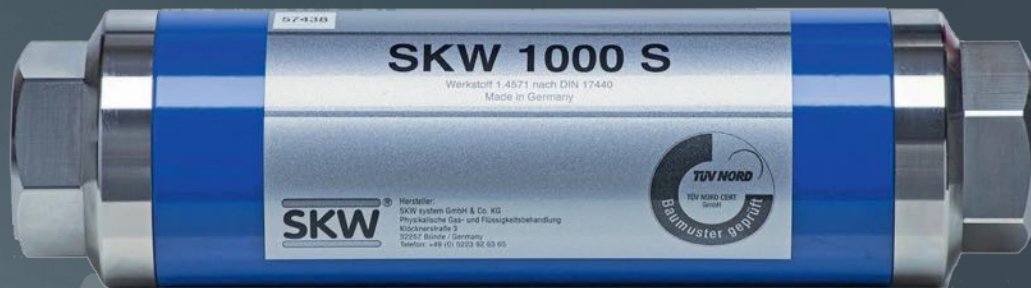


Technology in harmony with physics



**SKW®-system solution
for industry and crafts**



We are here for water!

Award for **SKW®-system** in aviation

BOEING „Performance Excellence Award“ for **SKW®-system**



BOEING honoured 2016 out of over 15.000 suppliers worldwide only 82 with the category GOLD.

This award is annually presented to suppliers for their outstanding performance.

since over

30 years

**we are saving resources and
are increasing benefits**

Application of **SKW®-system solution** for industry and crafts

i

General information



Aviation

Dairy industry



**Vessels and
Marine**

Paperindustry



Beverage industry

Aluminium plants



Evaporators / Compactors

Swimming pools

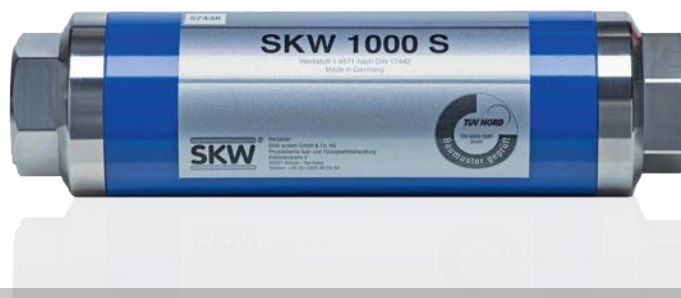


Sewage treatment

Domestic water supply



plant Cooling circuits



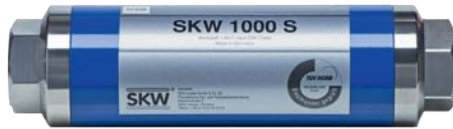
We are here for water!

Functionality of SKW®-systems

The Original **SKW®-system**

Made in Germany

Our product reduces the dynamic viscosity of liquids initiated by lorentz force of liquid-bearing systems. Such improves flowability and wetting.



*TÜV certified and recommended
Made in Germany*

Function:

SKW®-system changes the flow properties and reduces the inner friction of liquids.

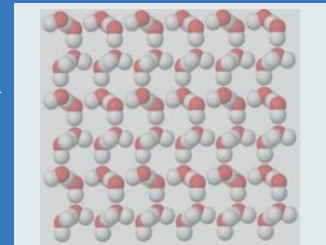
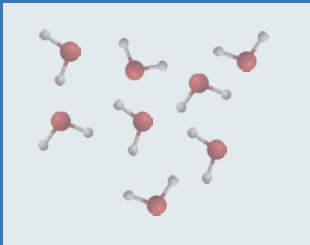
Measurable change of charge potential of the elements in the water.

The properties of water (physical – chemical) are of fundamental importance for an equilibrated water balance.

Oxygen is elementary.

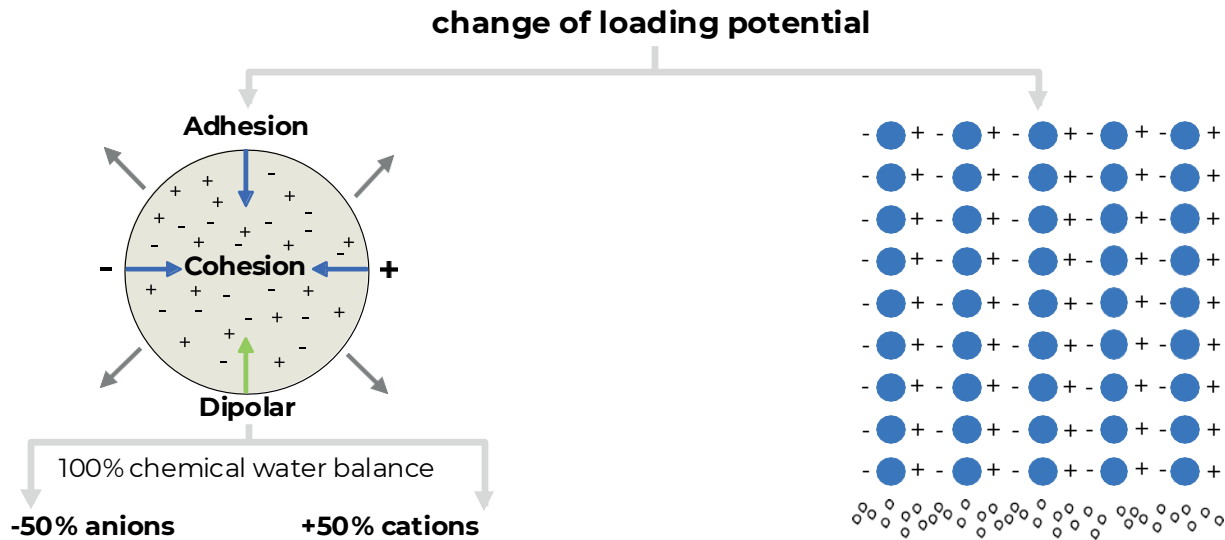
A technology in harmony with physics

Lorentz force



Lorentz force initiates an electromagnetic impulse restructuring molecules.

Influence of substance values of H2O + elements



The water analysis must be coherent. total of anions = total of cations

Substance values of H2O + elements

dynamic viscosity

resistance caused by inner friction of neighbouring molecules

thermal expansion coefficient

same mass higher volume

specific thermal conductivity

Property of heat transfer resp. of overcoming of heat resistance.

cinematic viscosity

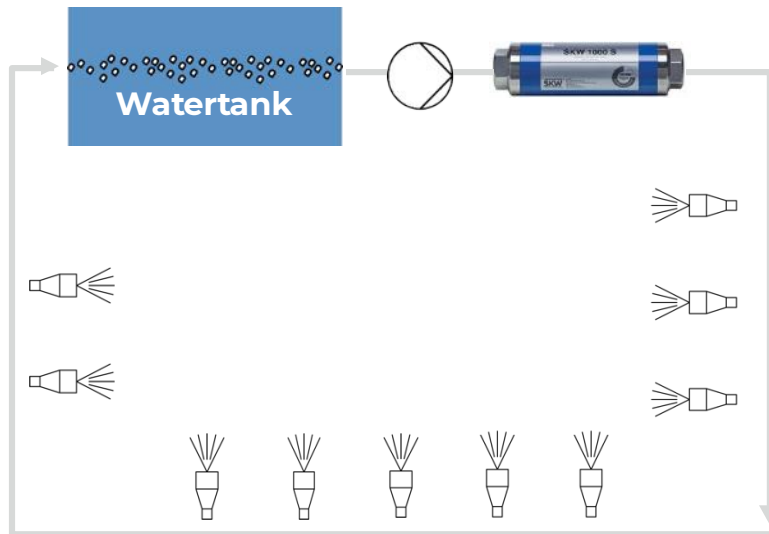
like dynamic viscosity, but related to density

Thermal diffusivity

property of transfer of temperature within a body or a system

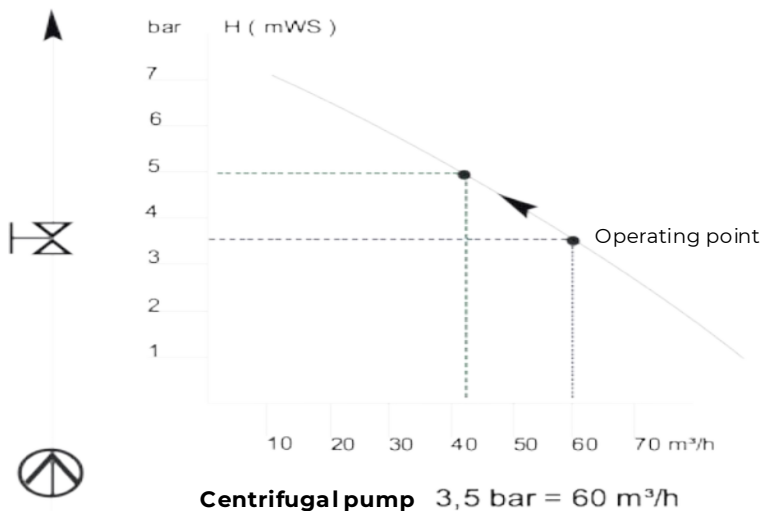
**” Nature does not know problems
– just solutions.**

Carl Amery



**SKW®-system
solves problems and
increases yield
security:**

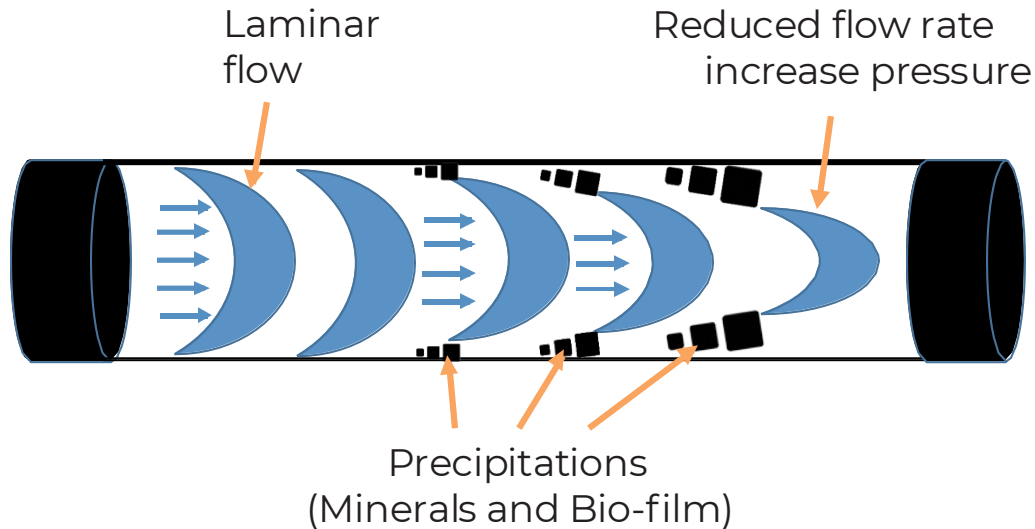
- Improved exactitude of water distribution
- Dissolution of mineral incrustations and bio-film
- Improved water-quality by more efficient oxygen intake
- Reduction of auxiliary products, like lyes, plant protecting products at same or improved efficiency



Pump diagram

The operating point increases with resistance, **SKW®-system** supports lowering the operating point

Incrusted or precipitated piping systems



Caused by:

- Low flow rates
- Sedimentation when system is down
- Heat supported deposits
- Biological process

The Solution:

SKW®-system inhibits precipitation of water-bearing systems with nutrient salts (organic) as well as solid CaCO_3 - deposits (calcium carbonate).

Your challenges are our incentive

SKW®-system solution



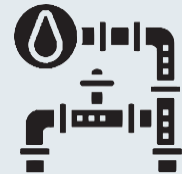
Differentiation
in the market:
Pressure by
maintaining
quality and
profit



Deposits and
Bio-films in the
water-bearing
systems



High costs
caused by
cleaning
products, crop
protecting
products and
energy
consumption



Huge time
expenditure
for machine
cleaning and
maintenance

REDUCING RESOURCES, INCREASING PROFIT

SKW®-system in aviation

BOEING „Performance Excellence Award“

BOEING worldwide using 15.000 suppliers offers this award annually to those suppliers as recognition for their outstanding performance.

SKW®-system is one of only 82 suppliers being honored in 2016 with this award in the category GOLD.

SKW®-system is installed in the central cold water feed of the aircrafts prohibiting precipitations in the water-bearing systems including the vacuum toilets.

SKW®-system - general supplier
Airbus GmbH and BOEING Commercial Airplane Group since 2000.



Production according to national/
international standards

- Quality management – according Manual DIN EN ISO 9001-2000
- Material 1.4571 acc. DIN 17440 resp. DIN EN 10088-1/-2 for parts in direct contact with fluids
- Tested by TÜV NORD CERT GmbH, Essen

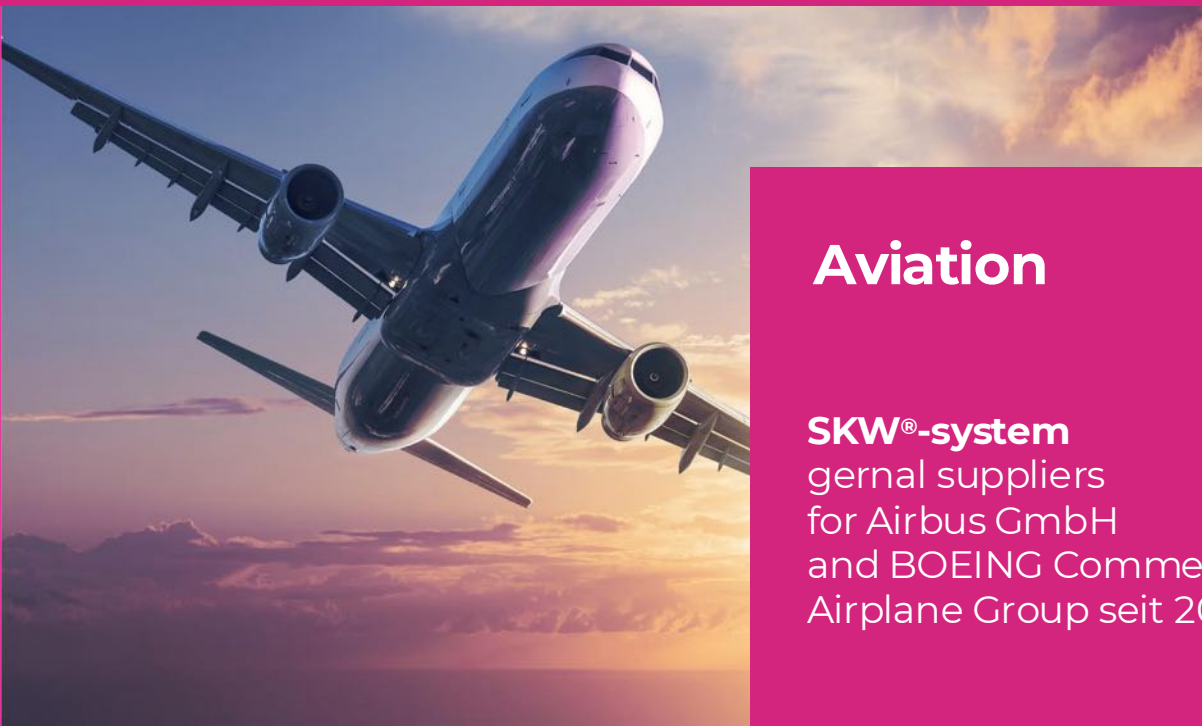


National and International Approval for the aircraft industry

Airbus / BOEING
Water Conditioner, ATA 38 for drinking water § 12 Abs. 4 AVB WasserV



We are here for water!



Aviation

SKW®-system

gernal suppliers
for Airbus GmbH
and BOEING Commercial
Airplane Group seit 2000.

Aviation Certification
SKW®-systems



REDUCING RESOURCES INCREASING PROFIT

Water Conditioner ATA 38 SKW®-system



SKW®-system prevents calcification in the drinking water system of the aircraft, as well as calcification of the water taps. Slight deposits can be removed easily. Required maintenance intervals can be stretched, repair-down-time will be reduced as well.

SKW®-system effects the vacuum system unit of the toilets – linked to the drinking water system; each flushing process requires only 0,2 l water.

In order to avoid clogging of the 50 mm vacuum pipes, the tubes are cleaned every 6 months with high under pressure crushed ice.

Chemical agents are not longer necessary when aircrafts are **SKW®-system** equipped.

Inner side deposits are low, remain soft and will be forwarded to the waste water tank in particles each time when flushing is in use.



We are here for water!



Vessels & Marine

*„Reducing
Resources*

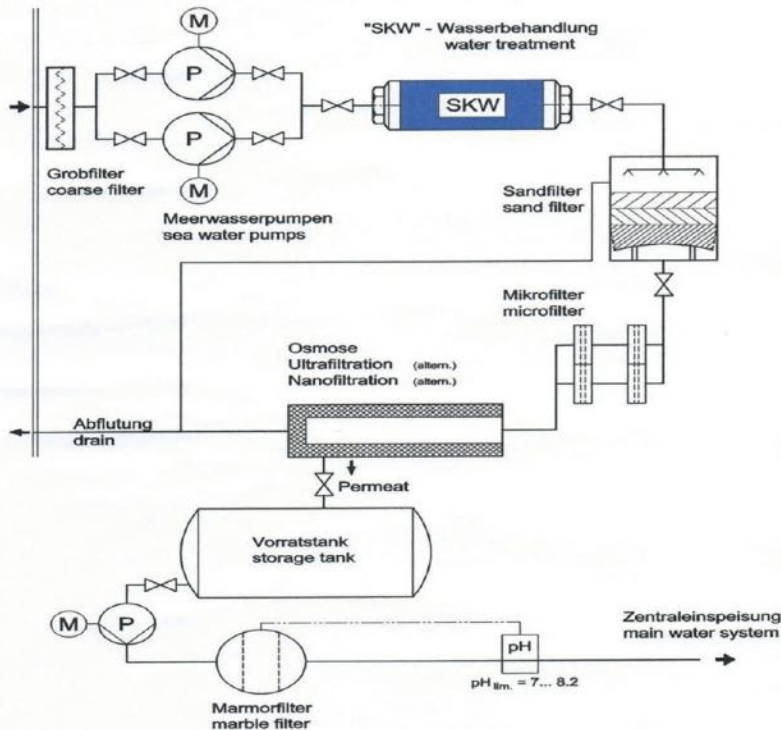
*,
optimizin
g
Revenues“*

SKW®-system Advantages

- Optimized separation performance of undissolved substances
- Significant service Life extension of membranes
- Improved flow of permeate, abt. 10 % higher
- Minimizing chemical agents

REDUCING RESOURCES, INCREASING REVENUES

Efficient use of **SKW®-system** in the different area of cooling devices remarkable increase of life-span of **Membranes**.



Application:

- Desalination unit / RO
- Sea-water-cooling of engines and AC units



Successful use of **SKW®-system** on vessels of the Royal Marine of Bahrain.





Beverage Industry

Use and advantage:

Using **SKW®-system** improves the **exactitude of lye distribution** leading to higher **efficiency of the used lyes**.

Better Revenues

Advantages of SKW®-system

- Reduction of additives / up to less than 60% of anti-foaming agents possible
- Improving intensity of used additives
- Reducing surface tension allows an improved wetting and creeping capacity of the lye
- Better sedimentation of the lye
- No warping of the lye / longer life span of lye in process
- Less scuffing
- Significant reduction of waste water load

Potentials

- no foaming
- clear lye
- free of maintancene- and energy-costs pipes and tank free of lye stone
- increased operating time and life span of the cleaning unit

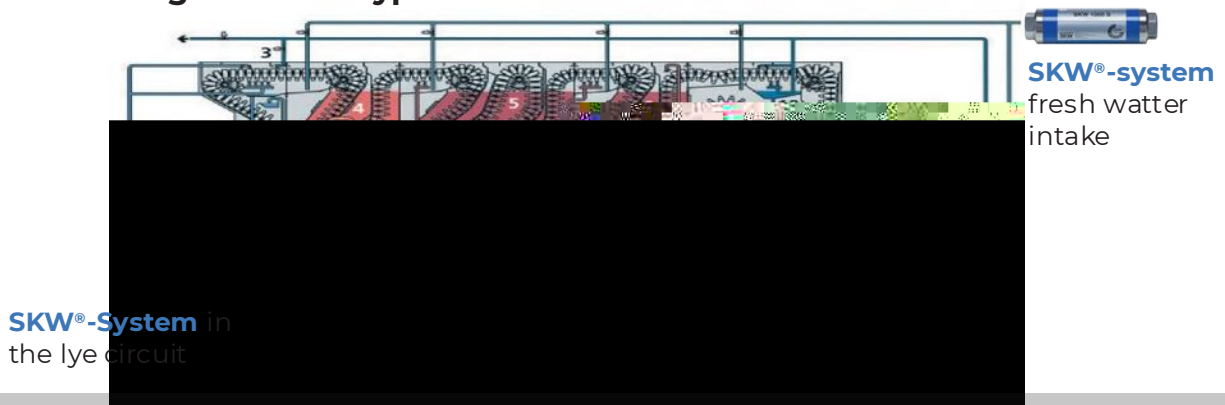


Nozzle picture without **SKW®-system**



Nozzle picture with **SKW®-system**

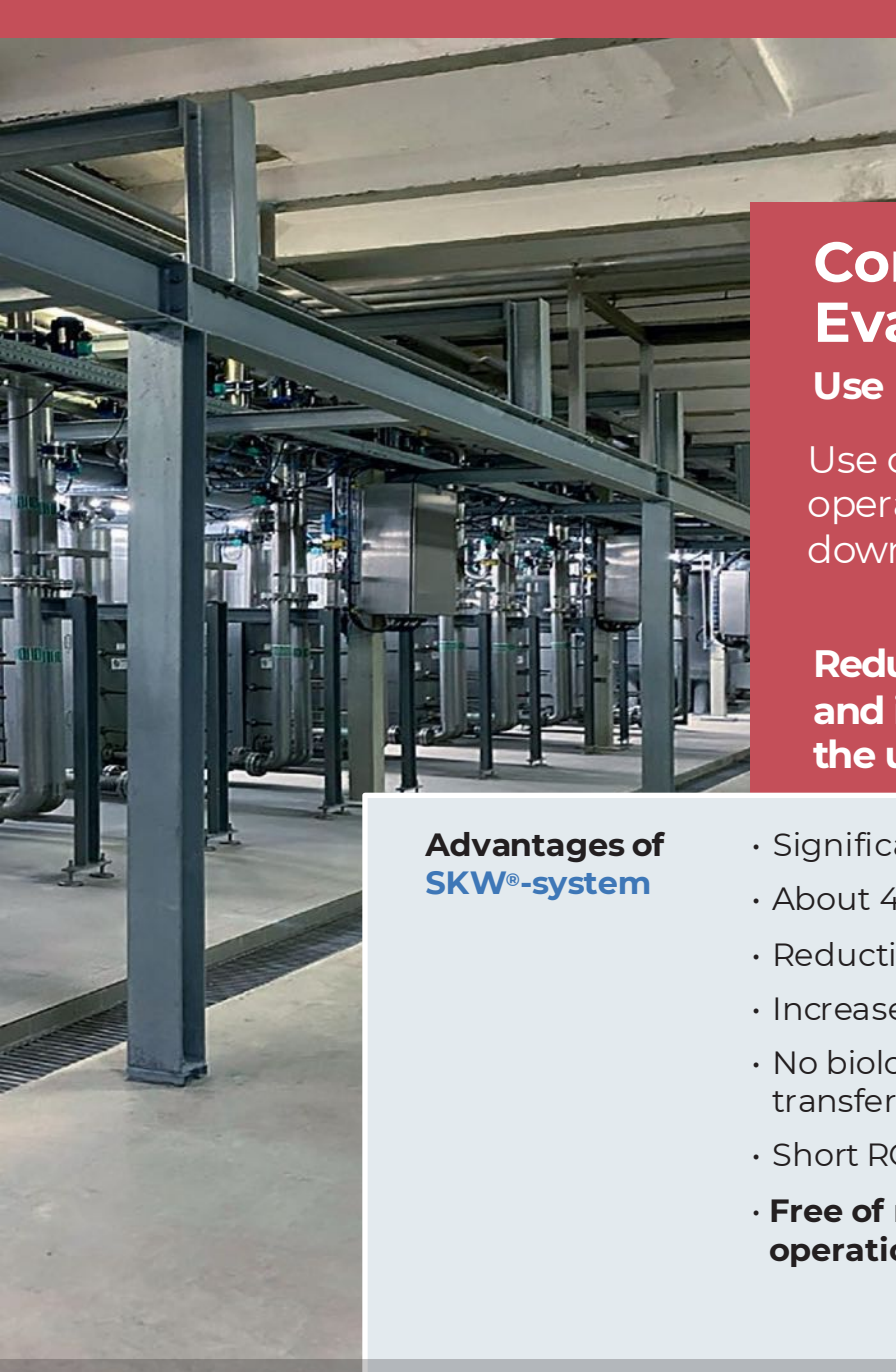
Bottle wasching machine Type Krones



SKW®-System in
the lye circuit



We are here for water!



Compactor/ Evaporation units

Use and Advantage

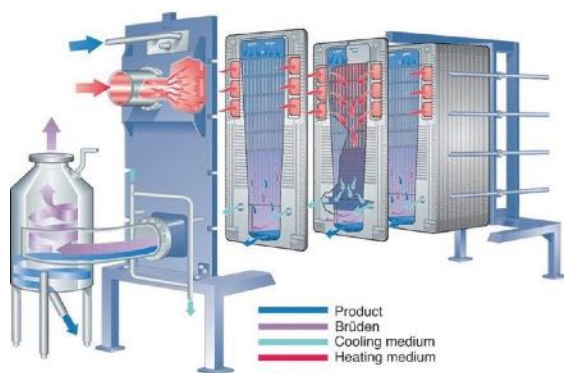
Use of **SKW®-system** increases operation time and shortens down-time for cleaning.

Reduction of operation costs and increase of efficiency of the units

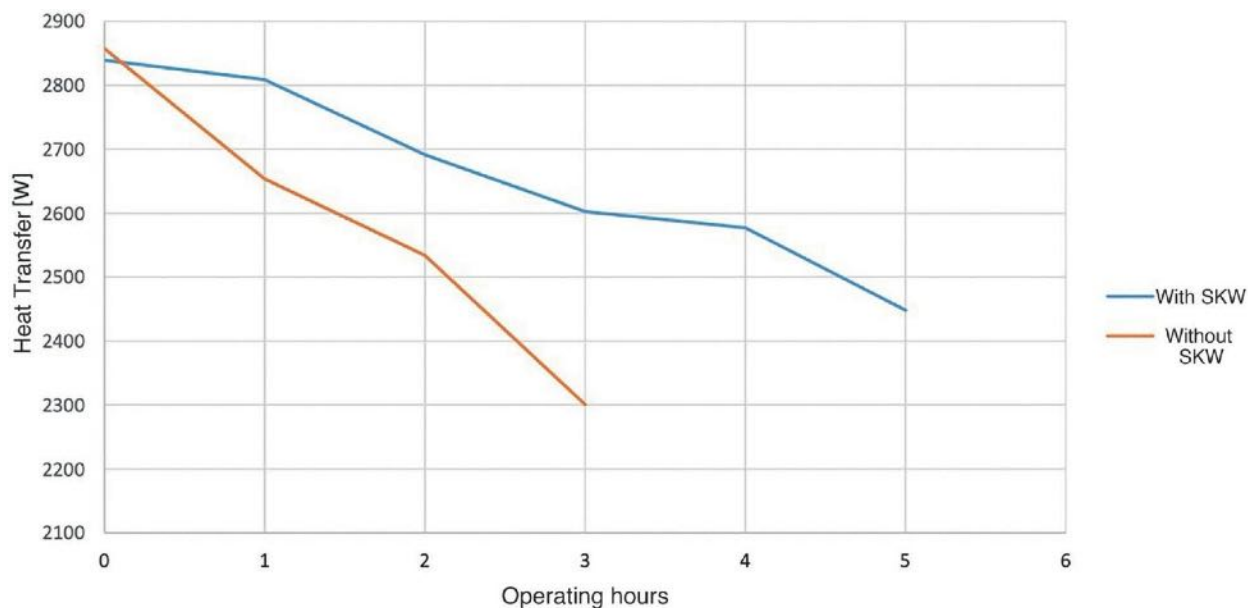
Advantages of **SKW®-system**

- Significant savings of energy in operation
- About 40% longer operating time
- Reduction of cleaning-time
- Increase of operating time
- No biological deposits on the heat transfer panels.
- Short ROI
- **Free of maintenance- and operation-cost**

By exact definition of cleaning agent, pressure, temperature and time, a fully reproducible process will be determined.



Comparison of heat-transfer (abt. 40% longer operation time)





Sewage plant

Use and advantage

Installing
SKW®-system = faster
Setting velocity on
sedimentation and flotation
improving oxygen intake
will be increased.

Higher Benefit

Advantages of SKW®-system

- Increasing specific separation efficiency of the flotation process (undissolved COD) by abt. 10 - 20 %
- Improving TS – contenz in flotatate
- Lower COD in the clear-water
- Adaption of water chemistry
- The flotation unit will be less sensible to variation of TS in the intake
- The drainage resulut (clear-water) will not be influenced by fluctuating intake-components
- Short ROI - and operation stability in the process

Faster specific separation efficiency of flotation and sedimentation (undissolved COD).



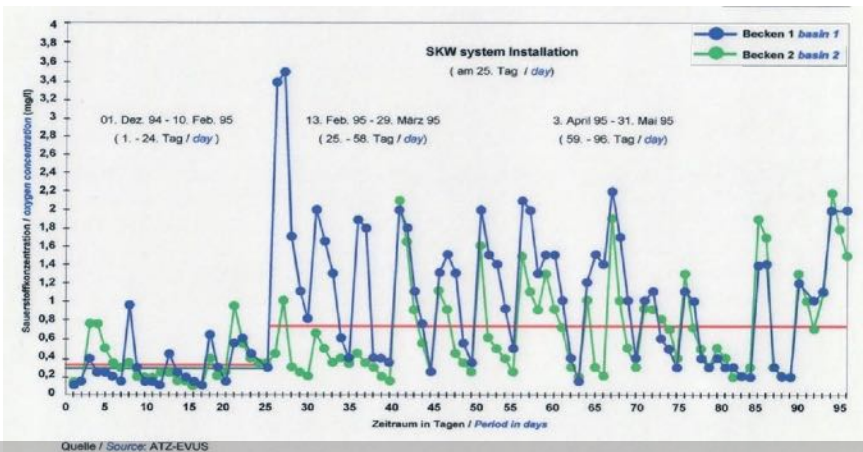
Flotation with **SKW®-system**



Flotation without **SKW®-system**

Sewage plant of the Food Producing Company Walter Rau

Development of the oxygen concentration (mg/l)

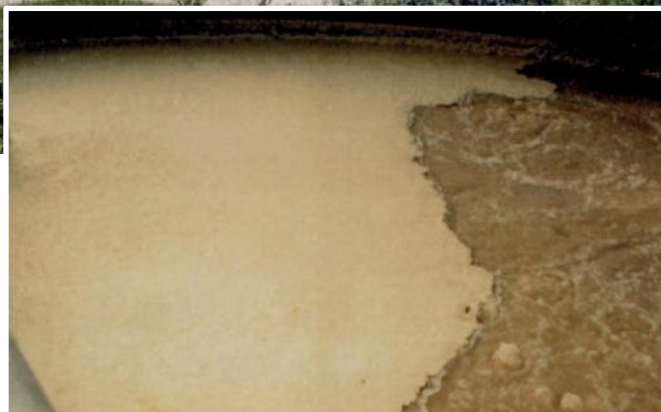
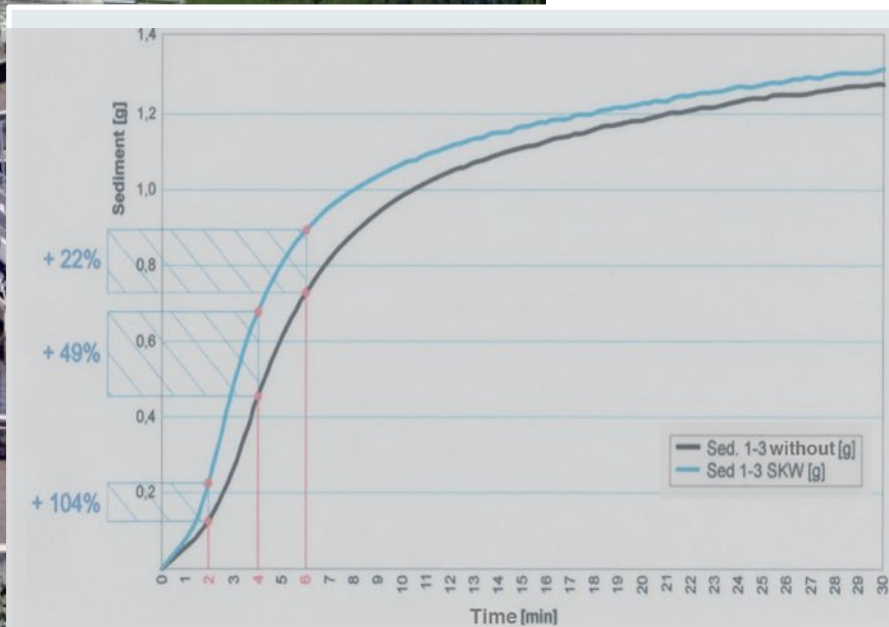


Quelle / Source: ATZ-EVUS



Sedimentation property wth / without SKW®-system

Comparison of the average value curves



Flotation with SKW®-system

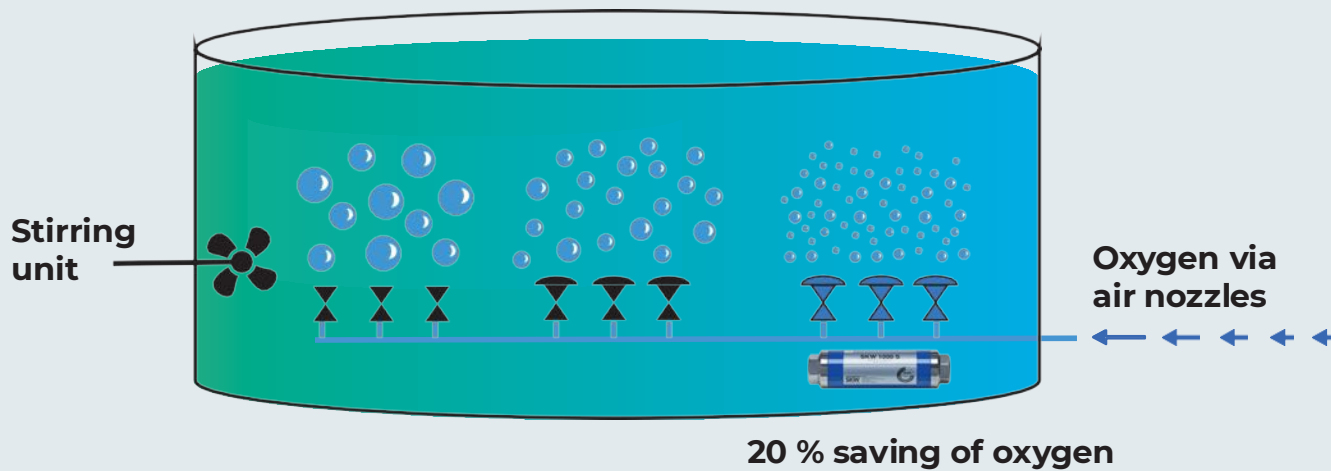


Flotation without SKW®-system

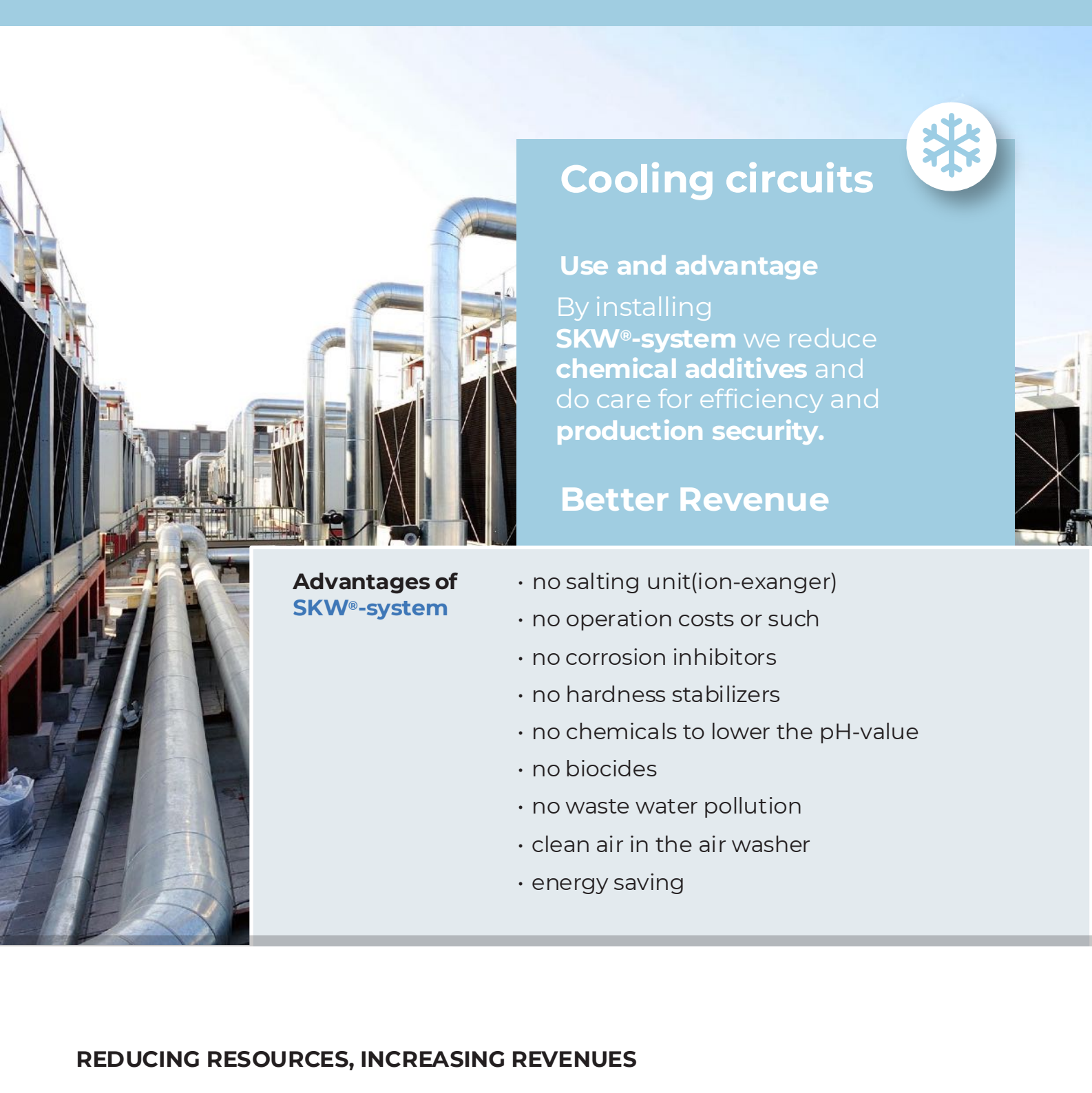
REDUCING RESOURCES, INCREASING REVENUES

SKW®-system Aeration tank

Biological cleaning



Oxygen		Number of air bubbles	Climbing speed	COD value
without auxiliary means	⌵	10^{100}	climbing rate 1 m/s	
with air disc nozzles	⌴	$10^{1.000.000}$	climbing rate 0,5 m/s	p.e. to reduce COD from 8000 down to 500
with air disc nozzles and SKW®-System	⌴	$10^{100.000.000.000.000}$	climbing rate 0,001 m/s	p.e. to reduce COD from 12000 down to 500



Cooling circuits

Use and advantage

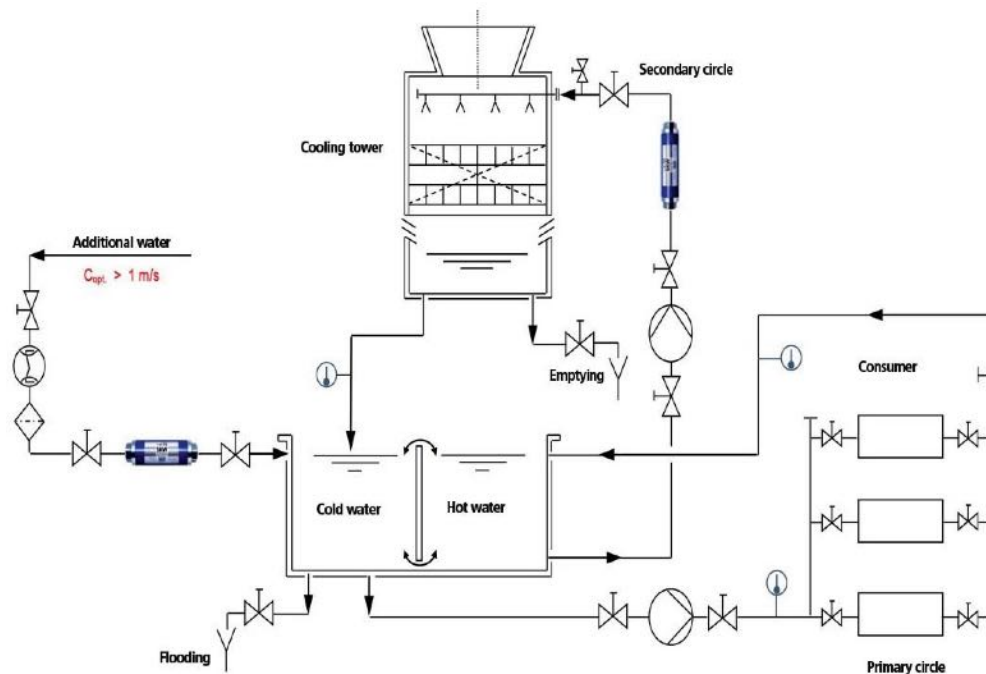
By installing **SKW®-system** we reduce **chemical additives** and do care for efficiency and **production security**.

Better Revenue

Advantages of **SKW®-system**

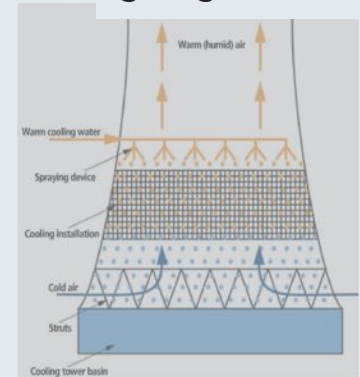
- no salting unit(ion-exanger)
- no operation costs or such
- no corrosion inhibitors
- no hardness stabilizers
- no chemicals to lower the pH-value
- no biocides
- no waste water pollution
- clean air in the air washer
- energy saving

SKW®-system in the cooling circuit with separated warm- and cold water tank

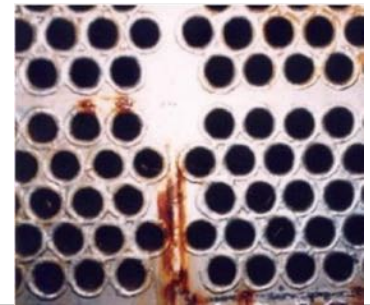
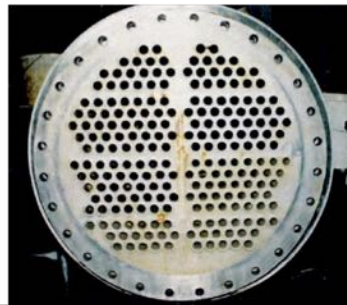
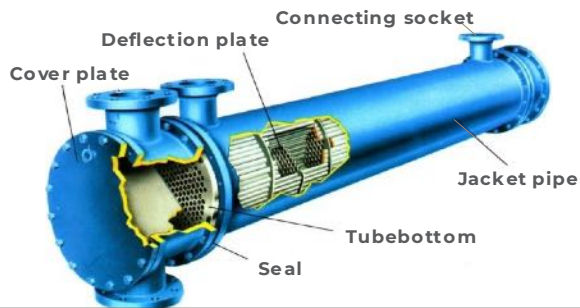


Challenges in the cooling tower

- sedimentation
- crystallization
- chemical reactions
- corrosion
- biological growths



Physical gas- and liquid treatment Pipe-bundle – Heat exchanger





Dairy foods

Use and Advantage

Installation of **SKW®-system** achieves faster **setting of sedimentation** and flotation

Better Revenue

Advantages of **SKW®-system**

- **SKW®-system** reduces operation costs, as well as processing times

Fields of application of **SKW®-system**:

- Cold- and warm water circuits
- Heat Exchangers
- Cooling circuits open and closed cooling towers)
- Vacuum pumps, bottle cleaning devices
- UHT-units, milk- and whey-evaporators
- Cooling units
- CIP-units, pasteurizers, form-cleaning-units
- Sewage technics – biological pre-cleaning, sewage units / aeration, static sludge thickeners, flotation units, fat separators

Salt-bath-conditioning:

- Stable conditioning, no turbidity and no foaming
- Uniform and fast salt in-put into the cheese loaf
- Inhibition of salt and calcium deposits,
- Inhibition of circuit pollution





Paper industry

Usage and advantage

SKW®-system

accelerates de-watering
improves initial wet - strength
and „runability“.

Better Revenues

Advantages of SKW®-system

- Faster De-watering
- approx. 1 - 2 % dry content increase after the press section
- Improved initial wet strenth (INF)
- Better “Runability“
- No anaerobic smell, no H2S
- Less water-chemistry
- Supporting circuit closure / or circuit tightening
- Fast ROI

MAIN ADVANTAGES:

Fresh water treatment for preparation of homogenous auxiliary dispersions as starch, slurries and retention agents etc.

Process water treatment in partial flow process avoiding deposits and conglomerates within production.

Cooling water treatment for oil coolers, to avoid inner deposits of calcium carbonate in the piping system.



Already 20 paper mills in Europe are using SKW®-system



We are here for water!



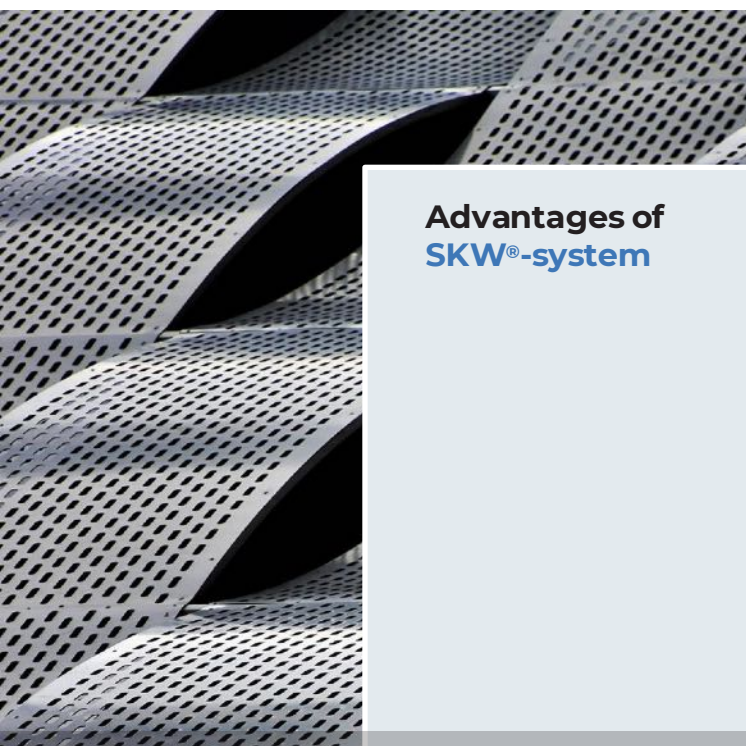
Aluminium Plants



Use and Advantage

SKW®-system achieves by better + uniform distribution of water a **higher cleaning effect** at reduced lye usage.

Higher profit



Advantages of **SKW®-system**

- Energy saving with **SKW®-system**
- Higher Process Security
- Lower costs
- Robust process water
- Exact casting-oil-separation
- Good mould cleaning
- Better demoulding

REDUCING RESOURCES, INCREASING REVENUES

SKW®-system reduces the dynamic viscosity of water

For water hydraulics following advantages are monitored:

Using **SKW®-system** avoids clogging of water-bearing systems by salts (organics) as well as of CaCO_3 – deposits (calciumcarbonate).

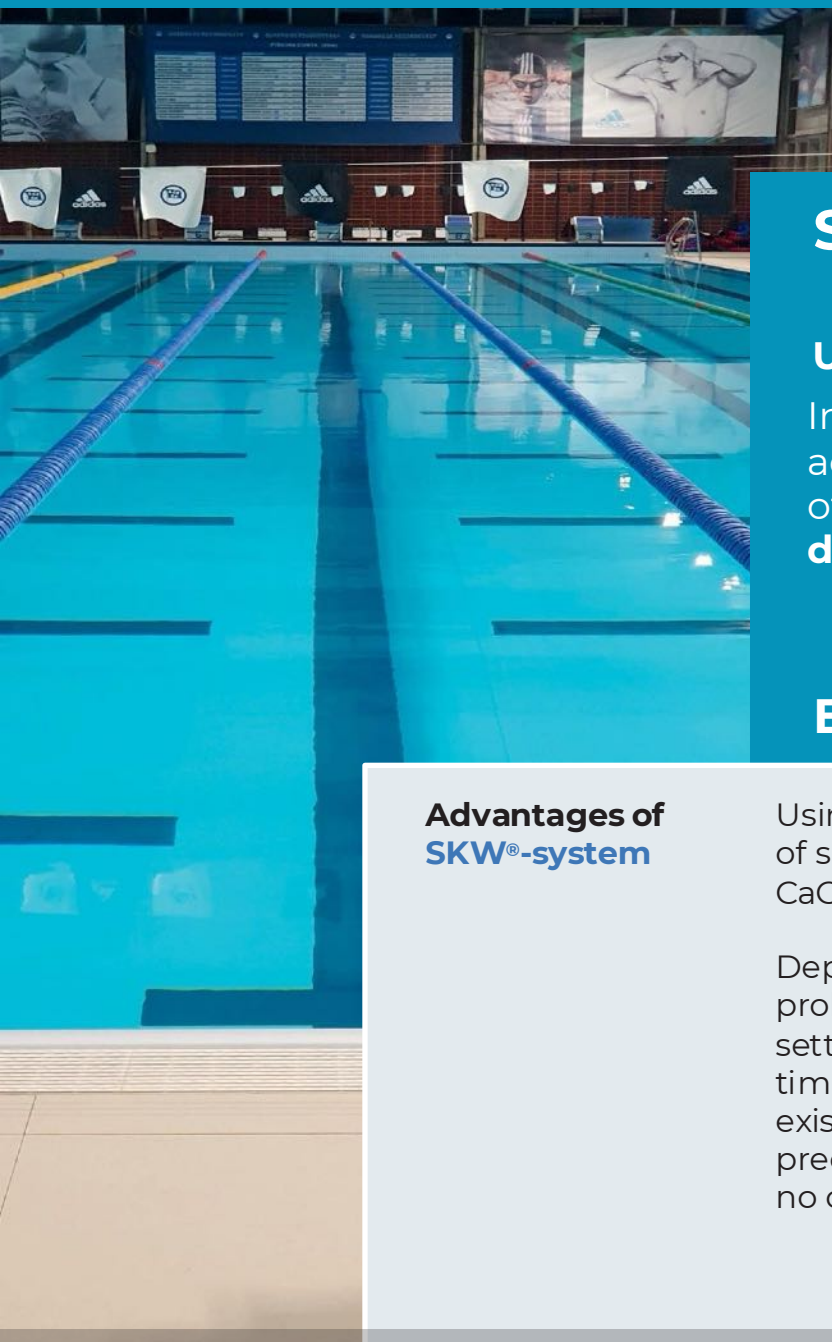
Deposits of calcium in water-pipings are causing disturbances since ever, and could only be settled at high costs and cleaning is always time consuming. In new pipings as well as existing pipings **SKW®-system** avoids these precipitations without using electric energy or chemicals.



alu-casting process



exact casting oil separation



Swimming pools



Use and advantage

Installing **SKW®-system** we achieve a uniform exactitude of water distribution **avoiding deposits** in the piping system.

Better Revenues

Advantages of SKW®-system

Using **SKW®-system** will inhibit clogging of salts (organics) as well as solid CaCO_3 – deposits (calciumcarbonate).

Deposits in water piping are always causing problems since ever, and could only be settled at high cost, and cleaning was always time-consuming. In new and already existing pipings **SKW®-system** avoids such precipitations without electrical energy and no chemicals.

THE MOST IMPORTANT AT ONE GLANCE:

The properties of water are of fundamental importance for an equilibrated water balance, oxygen is elemental.

The water for the pool has to be prepared that way, that it is returned to the circuit in good hygienic condition. Such means a creative remodelling with an added value.

- Increase of Process Security
- Significant energy saving
- No clogging of the filter particles
- Reduction of additives to optimize water quality





Domestic supply



Use and Advantage

Installing **SKW®-system** achieves a uniform and exact water distribution **avoiding deposits** in the piping system.

Safe and longer use

Advantages of **SKW®-system**

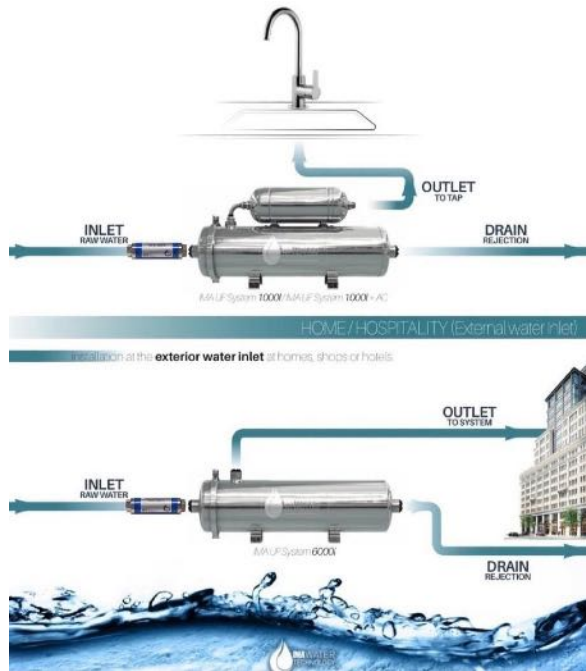
- Inhibition of Scaling
- Reduction of already existing scaling
- Natural finish of drinking water
- TÜV NORD CERT GmbH, Essen
- Material 1.4571 nach DIN 17440; DIN EN 10099-1/-2
- Aviation Certification by Airbus / BOEING
- Low-maintenance, without follow-up costs

SKW®-system reduces the dynamic viscosity of water.

Offering following advantages for your water hydraulics:

SKW®-system avoids clogging (organics) of water-bearing systems, as well as deposits of solid CaCO_3 – (calcium carbonate).

Deposits in water pipes were always + since ever causing problems and could only be settled at high costs, and cleaning was always time-consuming. In new and always existing pipings, **SKW®-system** avoids deposits without adding electrical energy or chemicals.



SKW®-system shall be installed in front of the house water filter.



We are here for water!

Companies relying on SKW®-System



REDUCING RESOURCES, INCREASING REVENUES

Coca-Cola

Fripa



amag



LÖWENBRÄU



We are here for water!

SKW®-system program

Type PN 16	Pipe Thread DIN 2999	Flange DIN 2501	Fitting Length L (mm)	Outer Ø (mm)	Weight netto G (Kg)	Flow rate V _{max} m³/h
SKW 100 S	½"	DN 10	135*	38	0,6	1,2
SKW 380 S	½"	DN 15	200*	48	1,7	2,5
SKW 1000 S	1"	DN 25	290*	80	6,2	5,5
SKW 1600 S	1 ¼"	DN 32	450	120	24	13
SKW 1800 S	1 ½"	DN 40	540	120	28	18
SKW 4000 S	2"	DN 50	780	170	55	40
SKW 5000 S (Navy)	3"	DN 80	1100	200	160	72
SKW 6000 S	3"	DN 80	1500	200	182	110

* fitting length without screw connection

REDUCING RESOURCES, INCREASING REVENUES

Fields of application where **SKW®-Solutions** are used

Horticulture and Agriculture



Sprayer



**Turf and
Irrigation**



Greenhouse



**Vertical Farming
and DWC-System**



**Fruit- and
vegetable washing**



**Livestock
Animal
trough**



Greenkeeper



Golf Course

Industry and Commerce



Aviation



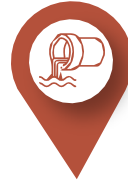
Vessels - Marine



**Beverage
industry**



Evaporators



Sewage plants



Cooling circuits



Dairy



**Paper
Industry**



**Aluminium
plants**



Swimming pools



**Domestic
supplies**

How to install SKW®-system



REDUCING RESOURCES, INCREASING REVENUES



We are here for water!



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