



MERUS
WEGE
Flüssigkeitsbehandlung

Water treatment with the Merus Ring.

What can Merus do where and how?

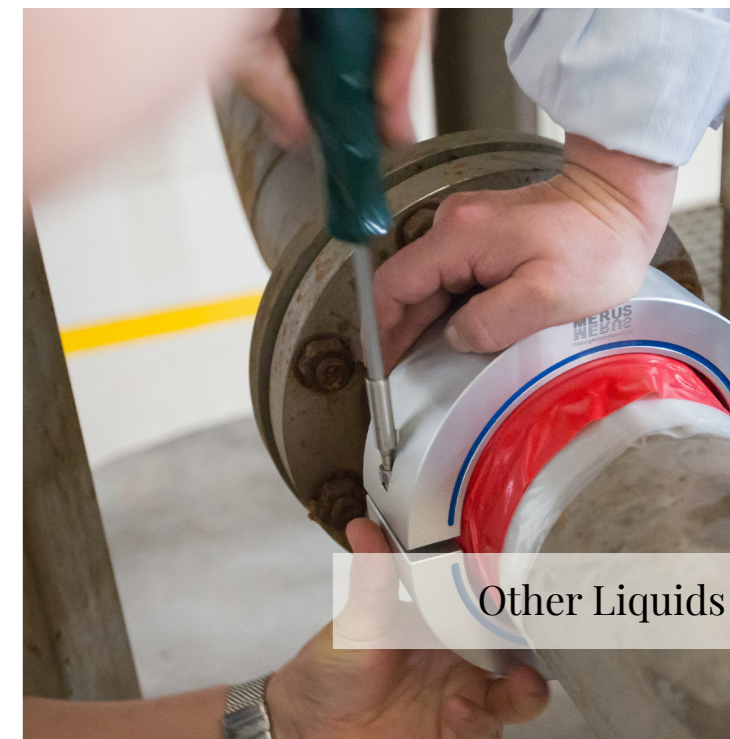
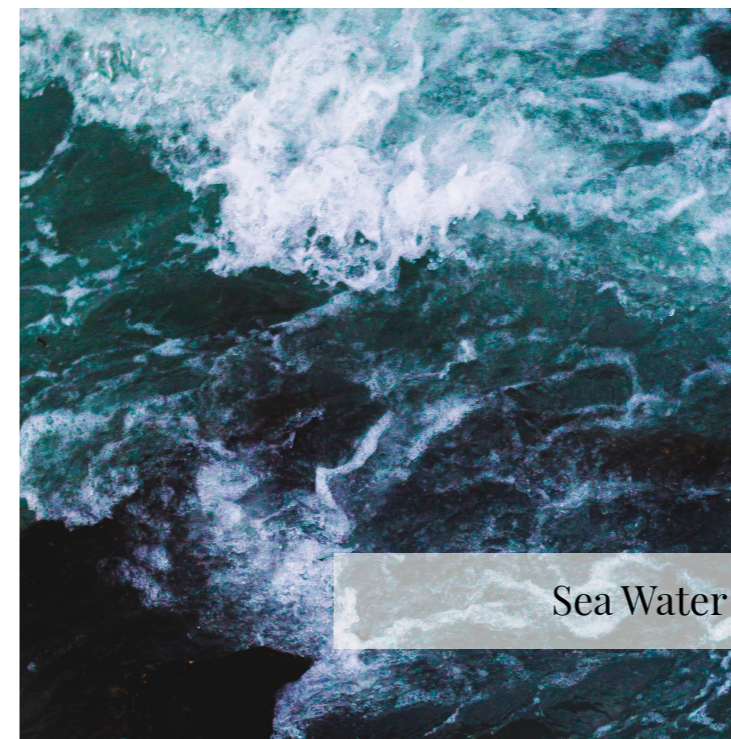
Where Water causes Problems.

Usually, in Europe and other western countries tap or drinking water is of an excellent quality.

Nevertheless water all over the world contains not only H₂O but also ions, micronutrients, minerals and salts. These are important for the human health and should not be removed.

If these dissolved solids are deposited in the pipes, they will cause problems in industrial machines and pipes. Thus it is not the water causing problems; the whole issue is about soluble parts in the water. Moreover they are also responsible for corrosion.

On the following pages we will explain some basic information about Merus and show the most common applications.



How most problems arise.

As soon as the dissolved parts in the water settle in the pipe and form deposits, it is getting expensive and a problem.

Although this is a natural process deposits should be avoided as they can damage the pipe system.



Lime Scale

Water can carry a certain amount of lime. If this amount is exceeded the lime settles and forms a hard crust.

In private homes this leaves stains in the bathroom or kitchen. In the washing machine or heat exchangers in general the deposits lower the efficiency of the heat transfer.

Costs arise due to reduced pipe diameter and higher energy demand in technical systems.



Rust and Corrosion

The metal of the pipe reacts with oxygen in the water – this is where corrosion occurs.

What we see and know as rust can be seen as brown water coming out of the pipes. Under unfavorable conditions rust can cause holes in the metal – this is called pitting corrosion.

In consequence, the lifetime of the equipment is reduced. Extensive sanitation measures can be necessary.



Biofilm and Biofouling

Biofilm and biofouling, bacteria and algae is an issue mainly in industrial water.

With the water biomass enters cooling systems, heat exchangers and other water systems and forms a biofilm. This is the habitat for other living organisms.

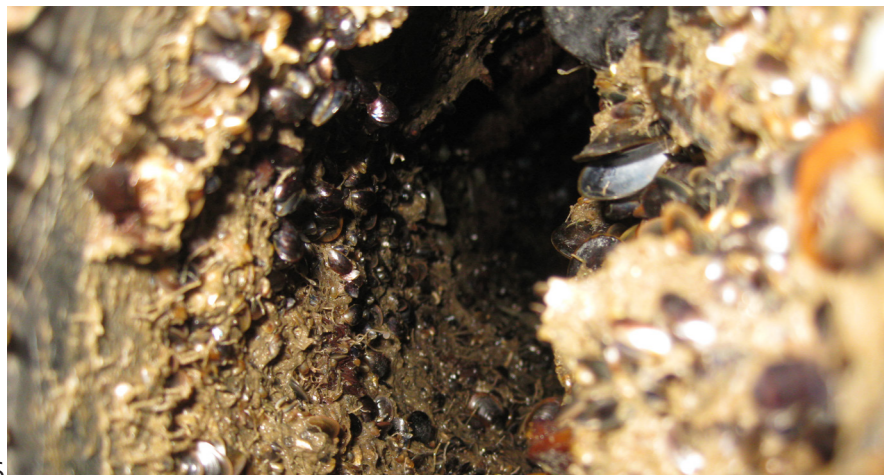
In the pipe it can block valves and sensors. Just as lime scale, also biofilm can have a negative effect on the heat transfer.



How Merus works.

What is special about Merus is that no chemicals or additional energy is needed. Instead physics plays a big role.

On the following pages we will explain how we use physics to solve issues around water.



Atoms and their properties

To understand the effect of the Merus Rings it is necessary to take a quick glance at the atomic level).

Every chemical substance has characteristic properties. They specify how it behaves under changing circumstances.

Is it solid, fluid or gas at room temperature?

Does it dissolve in water, alcohol or oil?

Is the substance highly flammable or incombustible?

Some of these properties are determined by the movement of the atoms in the substance (natural oscillation).

This behavior is characteristic for each substance.

„Merus changes the physical behavior of the water“

This sentence might sound a bit cumbersome but can be explained easily.

Merus influences the substance's natural oscillation and thus its physical properties.

This way the solubility of the soluble parts in the water can be increased.

The result is, that a bigger amount of soluble parts can be transported by the water without being deposited in the pipe.

Short trip into physics.

Every oscillation an atom performs can be described as a wave. The atom is constantly “vibrating”.

This means that amplitude and frequency are stable.

Influencing waves

Every wave, every oscillation can be influenced by external influence.

This is visible, when waves in the water hit an obstacle. When this obstacle is solid the wave is forced to change its direction.

When two waves meet they overlay and change their behavior.

The same effect is used to increase or decrease the

waves' movement well-directed.

When changing the wave movement, the natural oscillation of a substance, the physical properties change.

Changing oscillations

In short, the Merus ring transmits its oscillations to the water. Amplitude and frequency have to match exactly to the „target atom's“ natural oscillation to achieve the desired effect.

If these oscillations (Merus and target atom) meet, the atoms change their behavior temporarily.

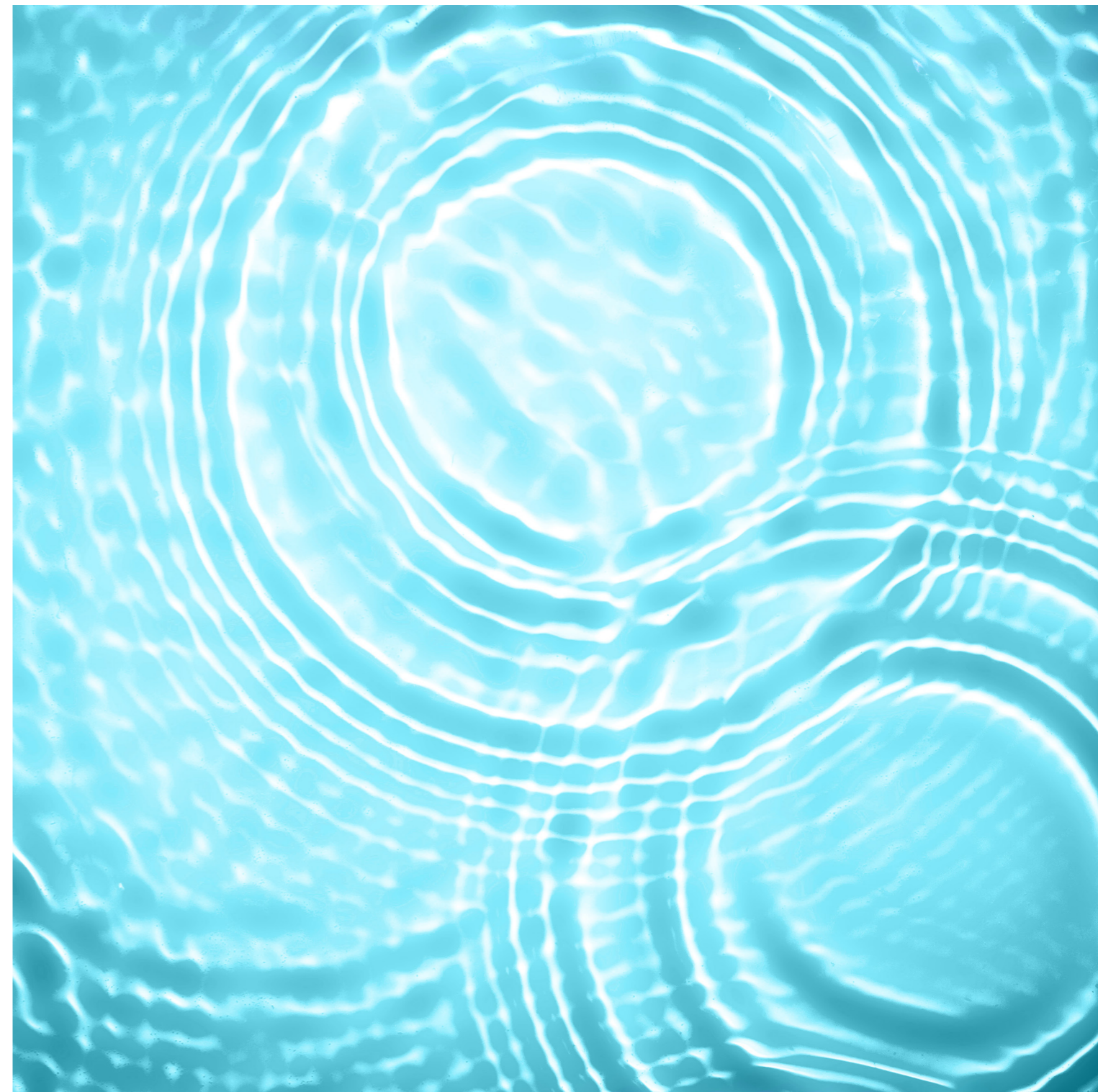
If Merus maintains the oscillation, the atoms behave differently permanently.

In fact some of the physical properties of the water can be changed this way.

In this case the solubility of the soluble substances in the water is increased. This means, the substance doesn't deposit in the pipe but is flushed out with the water.

Even old crusts are removed gradually.

Of course this works only if the substance in general is soluble in water.



What the Merus Ring does.

The Merus Ring consists of two aluminium half shells, which are installed around the water pipe. A direct contact between ring and water is not necessary.

In effect, soluble but deposited substances in the pipes are solved and flushed out. Also the corrosion rate and biofouling is reduced significantly.



Carrier and Material

For the effect of the Merus Ring it is crucial to maintain the oscillation permanently and constantly.

These two characteristics are necessary properties of a potential carrier material.

To find the perfect material we have carried out some test series, when we started our business. The process for these is always the same.

The (potential) carrier material is charged with a special method. After this it is able to transfer oscillations. Then it is tested, how stable and how long the material can carry the oscillations.

To imagine that, we have to stay on the atomic level.

After being charged the atoms of the carrier material “vibrate”. The Merus Ring itself doesn’t move at all.

Our tests showed that an aluminum alloy with a high amount of silicon fits our needs best.

The past 20 years and many successful installations have confirmed that choice.

Sustainable effect

Listening to music from loudspeakers is a very illustrative image of the effect of the Merus Ring.

You are able to hear the music from an adjoining room – of course only with sufficient volume. Your ear or ear-drum doesn’t have to touch the loudspe-

aker to sense their effect.

With the Merus Ring it is exactly the same. It can transfer its oscillations to the water through the pipe.

Under ideal conditions the Merus Ring doesn’t discharge. In this regard it is not comparable to a rechargeable battery. You can compare it rather to a CD or data carrier.

No matter how often you listen to the music or download the data, it is not used up.

This means, once installed the Merus Ring shows its effect over many years.



Further Information.

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We have hidden a small orange. Can you find it?

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