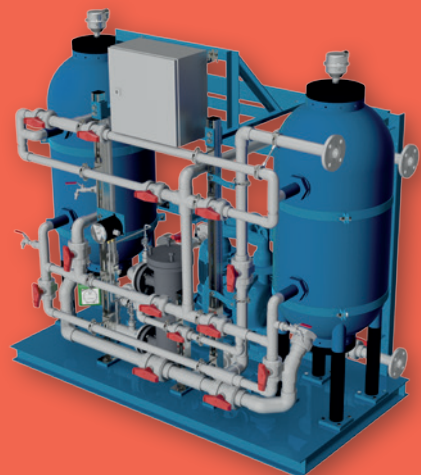




ACCuRem Copper Removal & Condensate reuse

RWO  VEOLIA

Economical reuse
of AC condensate on
cruise ships



WATER TECHNOLOGIES

Efficient water reuse of condensate

Cruise ships that sail the warmer regions of the earth continuously produce a lot of condensate water. The air is cooled down inside the heat exchangers of the air-conditioning units to a temperature below the dew point of the outside atmosphere. This causes a large fraction of the air humidity to fall out as condensate, which accumulates at the bottom of the air conditioning (AC) units. Commonly, the AC condensate of heat exchangers is collected inside a central condensate tank from where it is used for secondary purposes or pumped overboard.

Economical focus

What makes the AC condensate interesting is the fact that it is water almost free from salts and minerals. Desalination of water on board a passenger vessel is a costly process and the by-product AC condensate is available practically for free. The flow of condensate may vary between none at all to up to 20 m³/hr on board very large cruise ships. The condensate can be used for ship's laundry and other applications.

The challenge

When the condensate is formed on the surfaces of the air coolers it takes up impurities from the air such as dust and bacteria, but also carbon dioxide, NO₂ and SO₂, and copper ions from the AC heat exchangers. The suspended solids and the copper, may cause problems when reusing the AC-condensate, as the copper tends to precipitate, e.g. in the washing machines where it may cause greenish colour on the laundry.

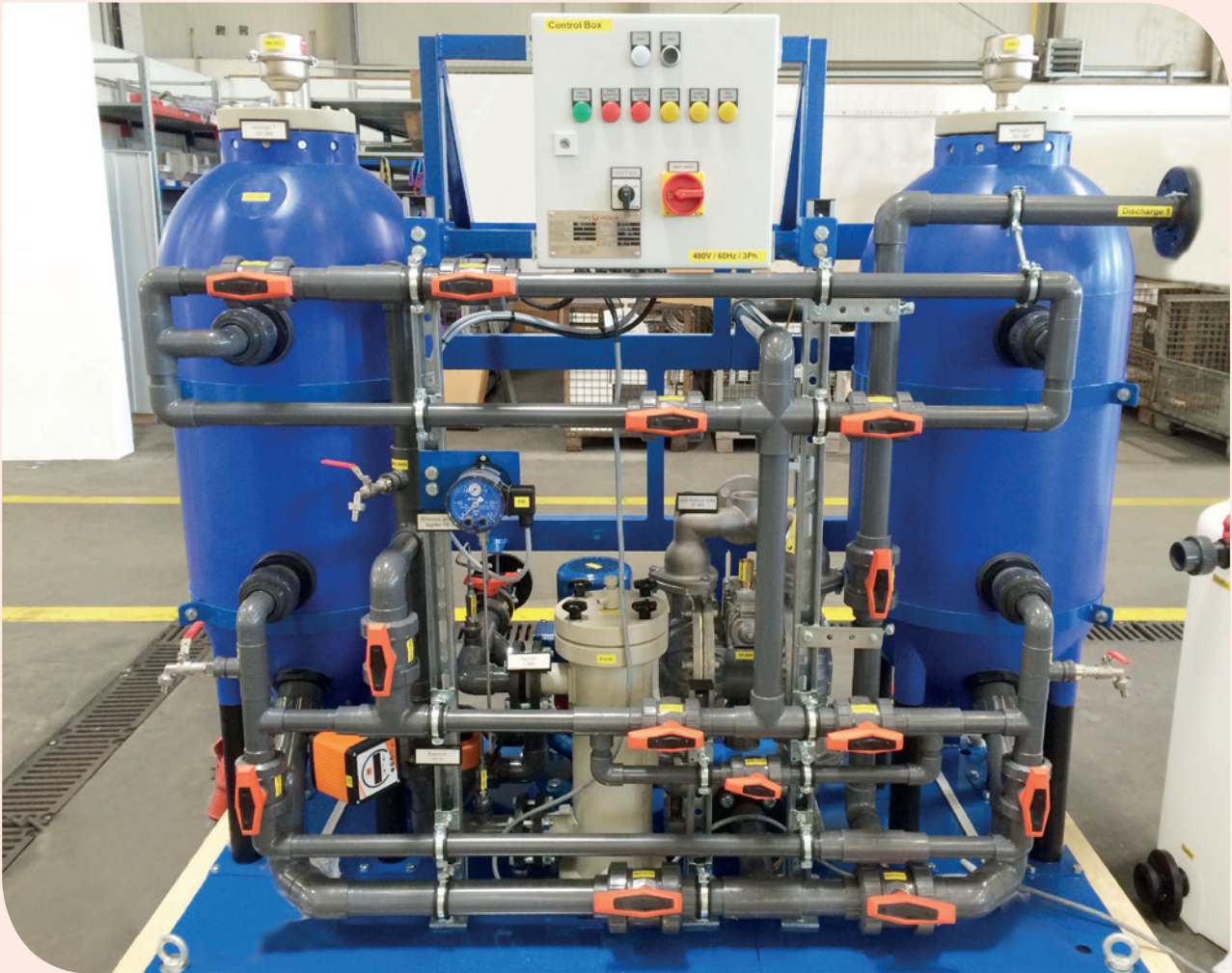
Therefore, even on ships, where reclaim systems are installed, there is no reuse of AC-condensate in most cases and the ships are using expensive potable water instead.

Your solution: ACCuRem

The ACCuRem copper removal system is based on a combination of filtration and ion exchange. Numerous ACCuRem systems are in successful operation on cruise ships since its development and exceeding the expectations of both shipowners and operators. The system is part of RWO's Total Water Management offer.

Your key benefits

- > Treats several thousands of cubic metres of condensate via a special process
- > Very small footprint for easy integration also into existing piping onboard ships
- > No requirement to operate or maintain regeneration equipment
- > Easy removal and refill of filter material
- > No other chemicals involved
- > Quick return of investment costs



How it works

The handling of the ACCuRem system is simple and requires only a little monitoring for on-time detection of the exhaustion of the filter material. Checking the water quality after the treatment can be done by simple copper test kits or using the spectrophotometer.

Reuse of AC drain condensate on board cruise ships for technical purposes, e.g. as laundry supply water, is an environmentally-friendly and economic way of saving potable water, which otherwise needs to be produced conventionally from seawater by evaporation or reverse osmosis.

Further RWO technologies for cruise and yacht applications:

- > Oil-water separators
- > Advanced wastewater treatment plants
- > Ballast water treatment
- > Reverse osmosis desalination
- > UV disinfection
- > Pre and fine filtration
- > Softeners and demineralisers
- > Mineralisation and deacidification
- > Chemical dosing systems

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