

Safe Drinking Water for Hospitals with German REDO Technology



Perfect hygiene for your patients and legionella prevention





REDO Technology for Hospitals Summary Advantages

- Central water disinfection for patients and personnel
- Improved recovery of patients, less gastric diseases, no outbreaks of legionella or pontiac fever
- No development of biofilm in your pipe network
- No danger from chemical substances or hot water in your buildings, as with other disinfection methods
- Water will stay germ-free in the pipe network for days: No recontamination after the central disinfection as with other disinfection methods or after one-time thermal disinfection
- Possibility to reduce cost for drinking water dispensers or bottled water
- Minimal maintenance requirements and operating costs!
- REDO completely eliminates also multi-resistant bacteriae very reliably, without operational risks, health hazards and without smell or taste of chlorine



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Customer Example: University Hospital Hradec Králové



University Hospital Hradec Králové, 1500 beds, Czech Republic – uses REDO for hot water disinfection (prior to REDO: thermal disinfection, chlorine dioxide)



REDO installation at University Hospital Hradec Králové



Safe water for hospital buildings

How it works





Importance of water disinfection in hospitals

- The importance of utmost hygiene in hospital operating rooms is, of course, widely acknowledged already.
- However, particularly weakened persons such as patients are more likely to recover quickly if the inevitable overall post-operative germ exposure is limited. Any additional effort for the weak immune system may be too much, even typically harmless infections can retard recovery.
- Next to surfaces, drinking water plays a dominant role as a carrier of bacteria and viruses.
- In a typical water tap, various kinds of pathogenic and relatively harmless bacteria almost inevitably develop. Even if it is cleaned frequently and incoming water is clean, patients and cleaning personnel themselves introduce germs in the water by touching the tap.
- Automatic, non-contact taps have been proven to perform even worse in terms of microbiology, due to their additional valves and surfaces inside, which restrict effective flushing.



Clean Water from the Tap

A Challenge for Hospital Management

- Facility and hygiene managers in hospitals have a responsibility to provide safe water to patients and personnel in all buildings.
- In many countries worldwide, national legislation forces action and places legal responsibility for water quality within the building onto the owner or facility manager.
- Even if incoming town water is clean, water disinfection is an issue in large buildings. In the parts of the pipe systems with little or no water flow, germs find ideal conditions to develop.
- This is a problem particularly in large hospital buildings:
 - Many taps and water outlets, used by many different persons, provide potential entry points for bacteria.
 - Some taps are only used occasionally, water consumption is low.
 - Long, historically developed pipe networks, with many branches (e.g. for fire fighting).
 - Temporarily unused parts of the building.



Facts about legionella:

- In many national laws, there is a special hospital reporting obligation even for minor contaminations.
- More than 50 infections p.a. in hospitals in Germany. Almost 30% lethal.
- Legionella are particularly persistent, and often survive thermal or chlorine disinfection, with recurring outbreaks.
- Legionella are a PR disaster for the hospital.



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Traditional disinfection approach: Thermal disinfection

- Thermal disinfection seems to be particularly common in hospitals. By heating up the water in the entire system to more than 70° Celsius, bacteria and especially legionella are killed effectively. However, it is very difficult to guarantee such a high temperature in each and every part of the pipeline.
- The ecological and economical cost of thermal disinfection is extremely high, since water must be running for a long period of time to guarantee more than 70° Celsius even at the last tap in every building.
- Furthermore, thermal disinfection is an organizational and logistical problem, since it must be avoided that patients burn themselves with hot water. Since all taps must be opened at the same time periodically, it is not easy to achieve that security.
- A REDO installation pays off very quickly, due to the high cost of thermal disinfection, and may save tons of carbon emissions with each thermal disinfection cycle that is substituted.



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Customer Example: Hospital Strakonice



Hospital Strakonice, 345 beds,
Czech Republic – uses REDO
for hot water disinfection



The REDO Multi-Barrier Technology

- REDO Disinfection Systems use water, pure salt and energy to produce six disinfection agents on site within the customer premises.
- Different disinfection agents fight different micro-organisms - REDO disinfection technology **combines and accumulates** the power of the best disinfection agents.
- Based on conventional electrolysis, REDO continuously improved process control, materials and equipment, so that disinfection results become **extremely stable** and operations extremely **robust**.
- Various certificates from independent institutions proof extremely effective, yet biodegradable disinfection, with an outstanding long-term effectiveness, and without the health hazards of chlorine gas.



REDO technology was awarded with the Federal Innovation Award of Germany



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Customer Example: Kladno Hospital



Hospital Kladno, 567 beds,
Czech Republic – uses 3
REDO units for hot water
disinfection and surface
disinfection



Additional option: Surface disinfection with REDO

- REDO installations, on the one hand, produce a very potent disinfectant, which is fed automatically and directly into the main water supply, thus guaranteeing clean drinking water.
- The same installation can, in addition and at almost no extra cost, produce a very effective cleaning agent for the cleaning and disinfection of surfaces.
- Chemically, this is a cleaning solution mainly based on sodium hydroxide with additions of hydrogen peroxide, both of which are recognized as powerful and effective cleansers.
- Using the cleaning agents on site can greatly decrease the operative cost for previously used cleaning and disinfection agents for surface cleaning!



Hospital Kladno, 567 beds,
Czech Republic – uses REDO
units for surface disinfection
(prior to REDO: Sanosil)



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Customer Example Indonesia: Hospital Zainoel Abidin of Banda Aceh / Rsudza New Hospital



The German Government and KfW have pledged support to the countries which were most affected by the earthquake and tsunami disaster, by supporting the health sector, in particular the Provincial Hospital Zainoel Abidin of Banda Aceh (Indonesia), in rehabilitation and reconstruction through a comprehensive program to re-establish and further develop clinical services and teaching functions of the hospital. The hospital suffered severe damage to its buildings and equipment as well as considerable human losses.



General advantages of REDO technology

- Most effective disinfection with very long depot effect. The disinfected water actively fights recontaminations in the pipe network for days after initial disinfection
- The development of biofilm within the pipes, a typical phenomenon in large buildings, is effectively avoided. Biofilm is a persistent shelter for bacteria and other germs
- No use of harmful or hazardous chemicals. Minimization of disinfection byproducts
- No smell and taste
- REDO installations only require minimum maintenance
- Through superior engineering, REDO installations combine protection of the environment, sustainability, high efficiency and cost effectiveness
- REDO offers full service packages: Complete water disinfection for your building becomes very easy





Special advantages for hospitals, care facilities and homes for the aged

- On the one hand, drinking water disinfection is particularly important in hospitals, care facilities and homes for the aged: Germ exposure is an even greater risk for weak people than it is for everyone else.
- Thermal disinfection with very hot water may also be particularly dangerous in a hospital environment.
- From the wide-spread use of antibiotics, particularly dangerous multi-resistant bacteria are quite common in a hospital environment.
- Only REDO provides a disinfection solution, which is
 - extremely effective, even for multi-resistant bacteria,
 - 100% safe,
 - without smell or taste of the water.

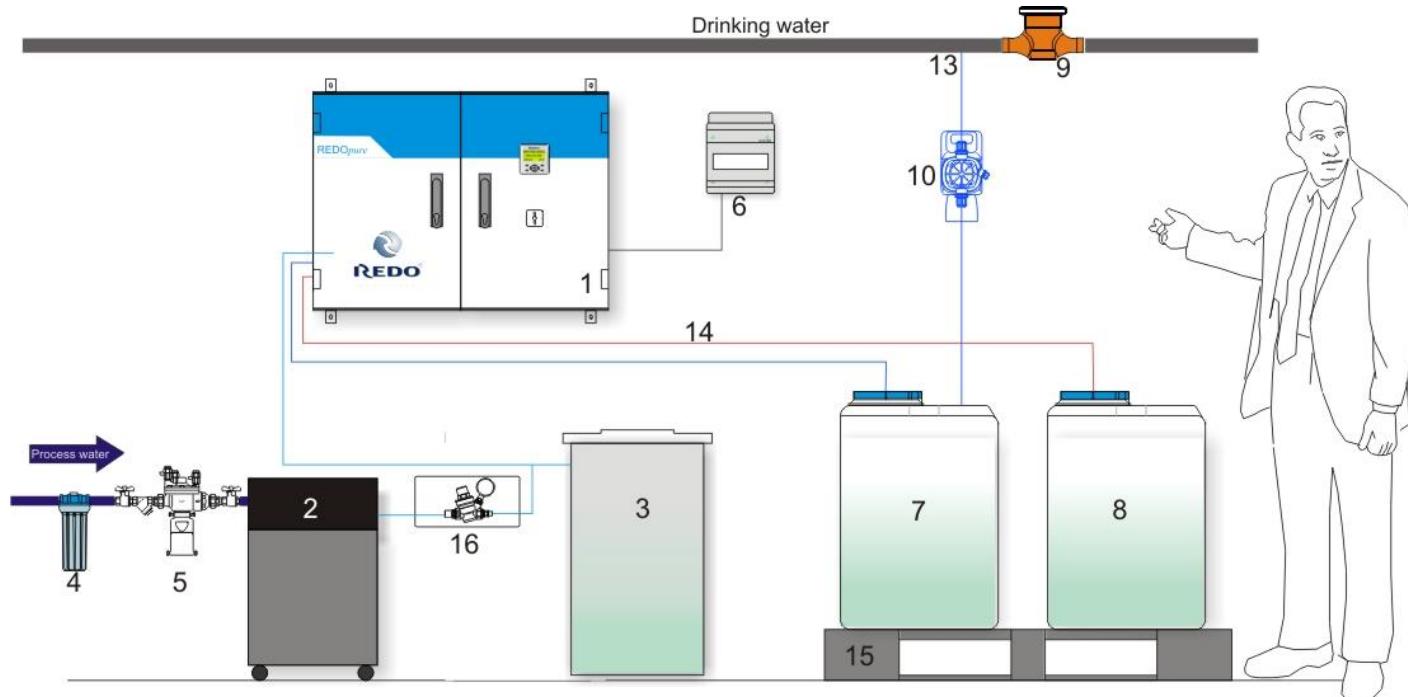


University Hospital Hradec Králové, 1500 beds, recommends REDO



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Technical installation Simplicity and perfect scalability



1	REDOpure unit	5	Back flow inhibitor	9	Threaded water meter
2	Softener	6	Elec. Connection box	10	Dosing pump
3	Brine container	7	Container for REDOlyt	13	Dosing point
4	Fine filter	8	Container for REDOkat	16	Pressure reducer

The REDO installation will be simply plugged into your existing drinking water system - easy integration into any building infrastructure



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Technical Installation Examples





Recommendations: Apo Bank, Germany ("German Bank for Doctors and Pharmaceutics")



Currently 8 installations in several subsidiaries of apoBank



"In 2004, we moved with nearly 2.000 employees into our new headquarters in Düsseldorf. We were very much surprised, when we realized, that the drinking water, even in a brand new building, was highly bacterial infected. The quality of drinking water in Germany is generally very good, but long standpipes and infrequently used office areas in the building created an immediate contamination.

The application of the REDO technology helped fast and with a lasting effect. In the meantime, we have a total of 8 REDO units installed in our subsidiaries in Germany and additional units are in planning.

We're very satisfied and strongly recommend REDO Water Systems!"



Heinz Deterding, Head of Facility Management
Deutsche Apotheker- u. Ärztebank
(German Bank for Doctors and Pharmaceutics)



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Recommendations: Path Finder Hospital, Philippines



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ATTILA GALAMBODI
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Dear Mr. Galambodi:

Greetings from Pathfinder Estate Hospital!!

First, I would like to apologize for the delay of this letter. Since we met in 2011 my concentration was focused in the expansion of my pharmaceuticals distribution which is now a nationwide operation but neglected (just a bit) the hospital operation for a while.

I am writing this letter to inform you the benefits our hospital and the community have enjoyed since the Redo Water System was installed in our hospital two years ago.

From the day it started its operation, the hospital has recorded Zero nosocomial infection, drastically reduced the cost disinfecting the hospital, the hospital itself do not smell like hospital anymore and the smell of surrounding sewage canal was eliminated. Our linens, utensils and other non-metallic apparatus are soaked in 300ppi Redolyt thereby reducing time for sterilization.

When Typhoon Hayann hit the country, we produced more than half million 25ml sachets of Redolyt (for 20 liter water container) and was distributed by Red Cross and local churches throughout the affected areas of the typhoon.

Your Redo Water System has already gained recognition in many Local Government Unit and Hospitals and one very interested company is the Zamboanga City (population 900,000+) Water District. They are requesting for Video/Power Point Presentation. So, if you have this, you may send it through my email address written above. I can duplicate it and send the presentation to all inquiring hospitals and Local Government's Water System.

Until then, thank you so much for introducing Redo Water System to our hospital. Looking forward to hear from you soon.

Truly yours,

ROBERTO F. OCUREZA, DBA
Administrator
Pathfinder Estate Hospital





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Recommendations: University Hospital Pecs Hungary



"Dr. Tamás Décsi, General Director of the Pécs University Hospital said the new system provides full protection of the drinking water network. He added that the hospital previously tried a number of methods, but none reported total protection against Legionella."



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2016 Press Conference on REDO installation University Hospital Pecs





Other (non-hospital) REDO applications - overview

- Water Treatment Plants
- Sewage Water Plants
- Compact Treatment Stations
- Emergency Disinfection
- Public swimming pools

REDO advantages:

- Low total cost of ownership
- Fully operated disinfection
- Safety

Public Supply

Industry

Immediate Operation

Agri-culture

- Food and Beverage, brewery
- Airports and Shipyards, Transportation
- Buildings and Infrastructure
- Hotels and Resorts
- Hospitals and Clinics

REDO advantages:

- Reduced process time
- Superior effectiveness
- Biodegradability

REDO advantages:

- High capacity
- Minimum weight
- Simple operation

- Natural Disasters
- Refugee Camps
- Mobile Medical Facilities
- NGO / NPO
- Military

REDO advantages:

- Increased revenues
- Superior effectiveness
- Simple operation

- Poultry Industry
- Cattle Farming
- Egg production
- Fish Industry
- Fruits and Vegetables



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