



Intelligent Water Solutions

For Poultry Farms in India

I. REDO Water Disinfection for Poultry Animals



WATERDISINFECTION

Safe and effective disinfection technology based on: water, common salt and electricity, that avoids disadvantages of common technologies. Developed with German University of Bremen.



AWARDED

REDO Water Systems has been awarded by the German Federal Ministry of Economics and Labor with the Federal Award for an outstanding innovative product.



REFERENCES

Market proven technology with more than 500 installations in 30 countries – mainly in waterworks, buildings and livestock breeding

Clean and Disinfected Water for Poultry Animals

A Challenge for the Poultry Management

- Poultry Farmers are aware about the toxic contents of their ground water. **High values of bacteriae, viruses, germs, algues cause a high value of mortality and sickly animals.**
- Bacteria like E-coli, streptococcus, legionellae and other germs **prevents healthiness, growth and performance** of the hens.
- The usage of **antibiotics** is necessary, but prevents export of poultry.
- **High temperature mixed with high humidity** increases the disadvantageous effect especially in open-house-sheds and open-channel-systems. Even good drinking water quality will be infected within hours.
- Using **chlorine tablets is unhealthy for the animals and even prevents them from drinking** because of the bad taste. Other methods like **UV don't have any depot effect.** The water will be infected again after passing the UV-lamp.
- The **biofilm** in the water pipes is growing and increases the problem.



II. REDO Technology gives the answer

Healthy poultry animals require high quality water

The REDO Solution

An Awarded German Technology

- REDO Water Systems technology, **awarded with the German Federal Innovation Award**, is a superior and secure way to produce performance enhancing water and disinfection agents on site.
- Based on traditional electrolysis, the REDO system was developed for improved performance in agriculture. **As operating resources, only salt and a limited amount of electricity is required – no handling of chemicals needed!**
- The REDO installation bypasses a small part of the water from the main water supply. With this water, the REDO unit produces REDOlyt and REDOkat which is fed back into the main water supply.
- Any contamination of the water is eliminated immediately. Furthermore, **a long-term depot effect prevents the formation of biofilm in the pipeline network** and drinker/trough system. REDOlyt has a **positive influence on animal health** and the intestinal flora.



The German Government awarded REDO Water Systems with the Federal Award for an outstanding innovative product.



III. Comparative Studies

Increasing profits through REDO Technology

REDO can increase your profit !

Results of controlled comparative studies

International experience and empirical studies have shown:

Disinfection of water and stables with REDO causes

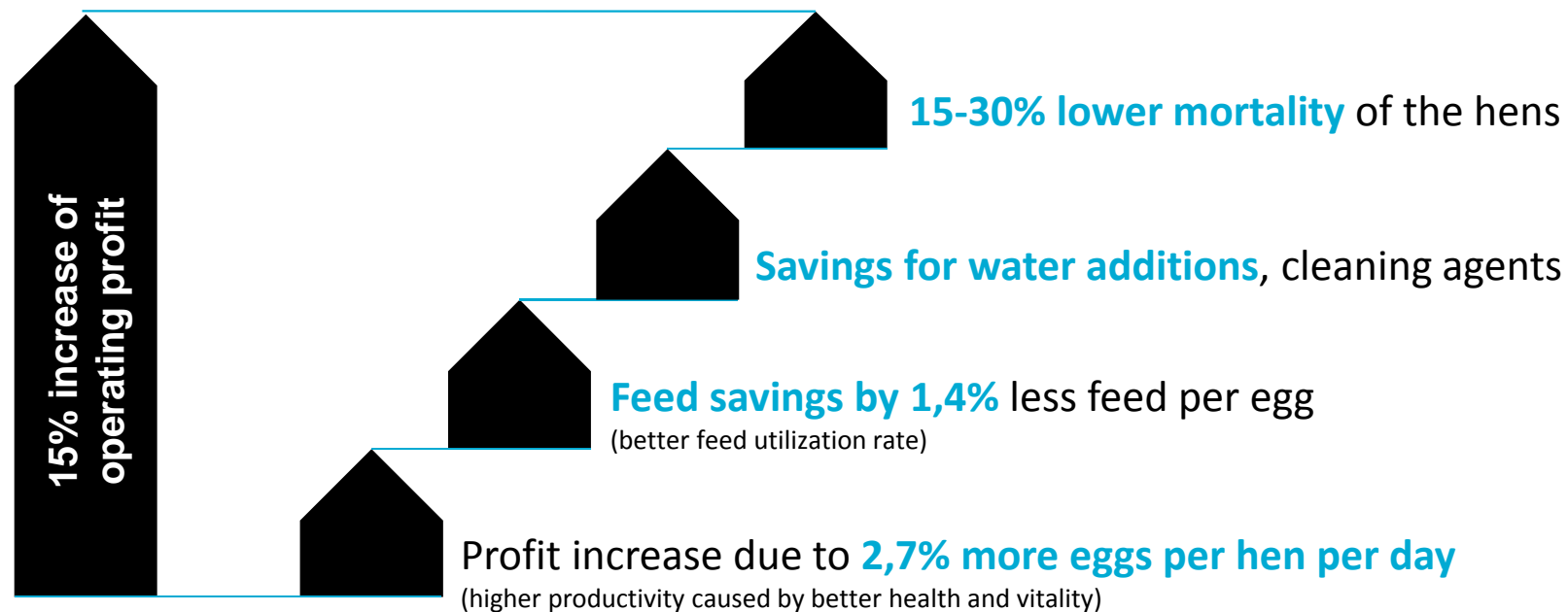
- a substantially **lower mortality**
- for layer: a **higher laying performance** (per hen per day)
- for broiler: a **higher slaughtering weight**
- a **better feed utilization**, therefore lower cost of feed
- a better **general health status**
- and a **higher vitality**



REDO can increase your profit !

Results of a controlled comparative study - Here: Study Layer Farm Asia with 260,000 Hens

Result: 15 % increase of operating profit



REDO can increase your profit !

Results of a controlled comparative study - Here: Study Layer Farm Asia with 260.000 Hens

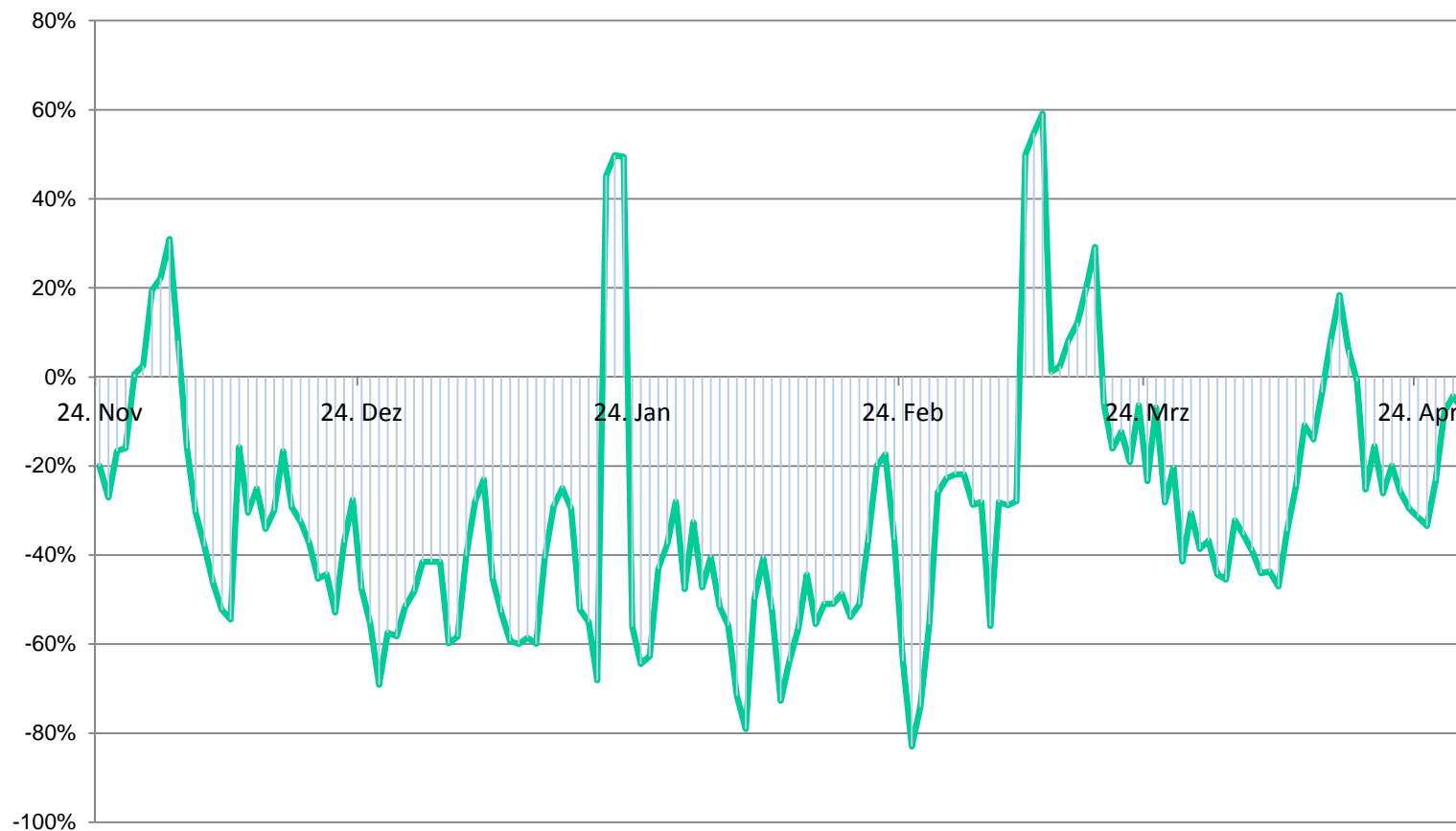
Results REDO Group and Control Group

Jan. – Apr. 2011	REDO group	control group
Egg production (egg count)	2.071.699	1.975.744
Mortality (dead hen count)	1.365	1.949
Laying performance (eggs/hen per day)	>0,86	0,84
Feed (gram per egg)	120	122
Cost for water additives/agents (€)	14	115

REDO-Effect: Lower mortality

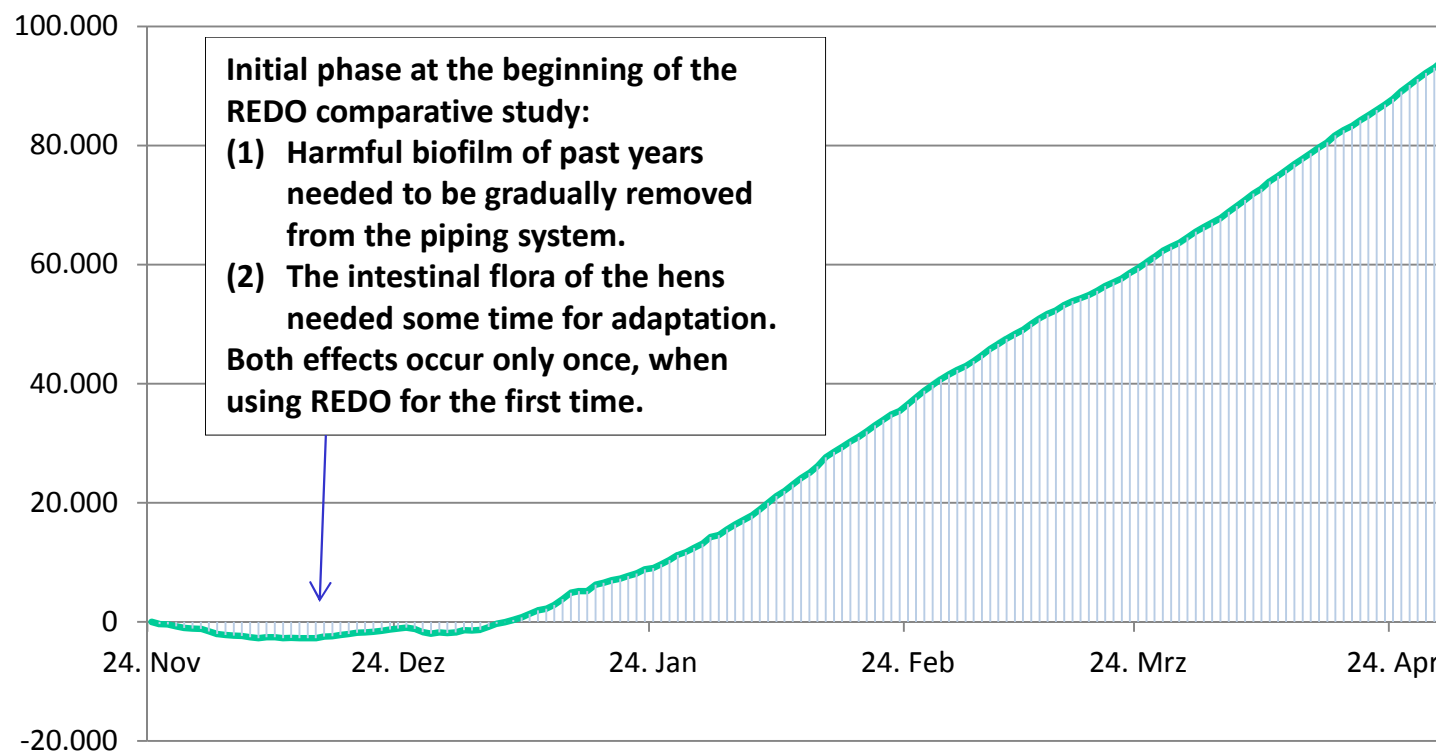
Mortality advantage in the REDO group of hens, compared to the control group:

Average 30% mortality advantage: In the REDO group, 702 hens more survived than in the control group!



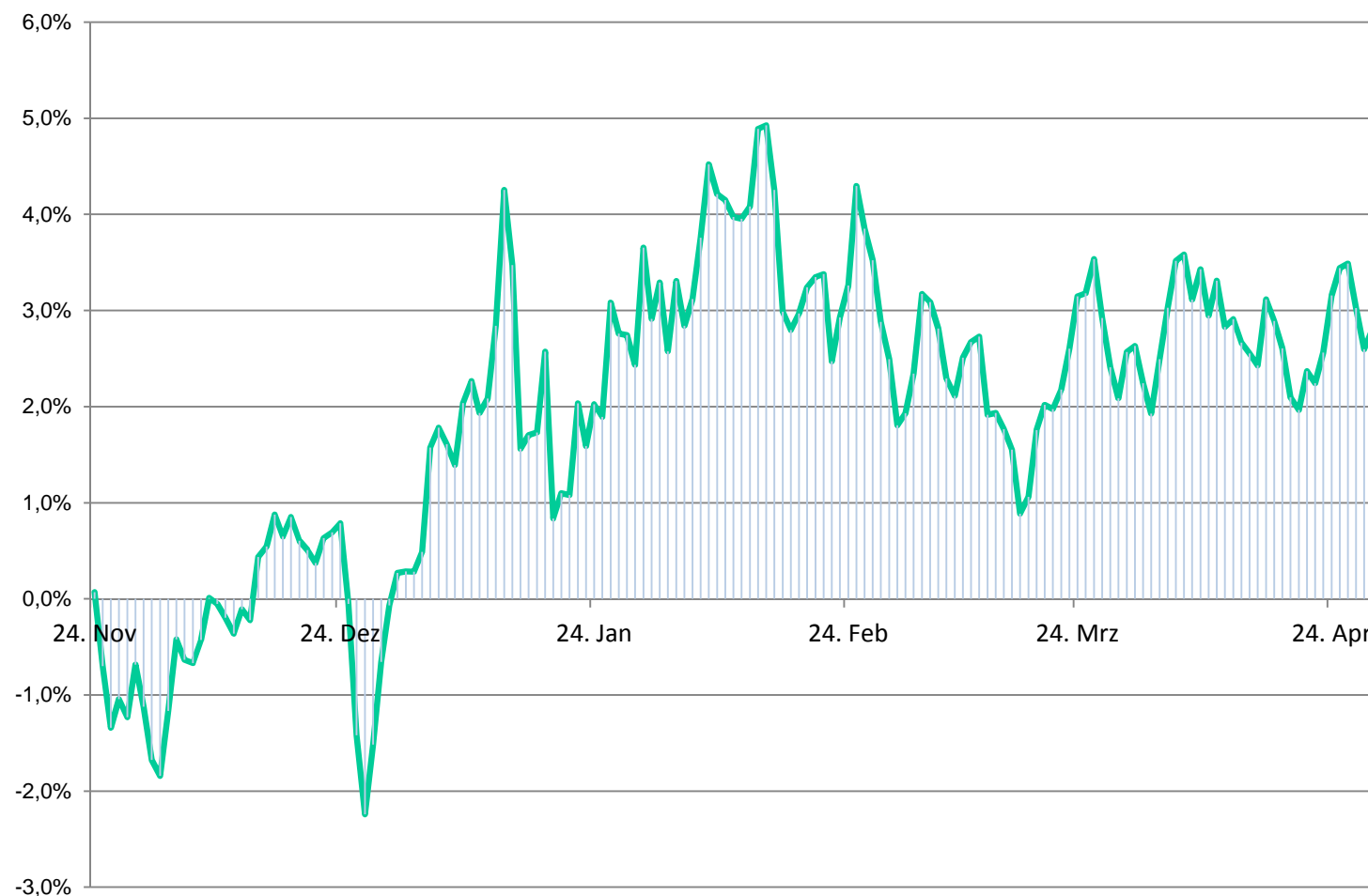
REDO-Effect: Higher egg production

Cumulative surplus egg production of REDO group of birds compared to the control group:



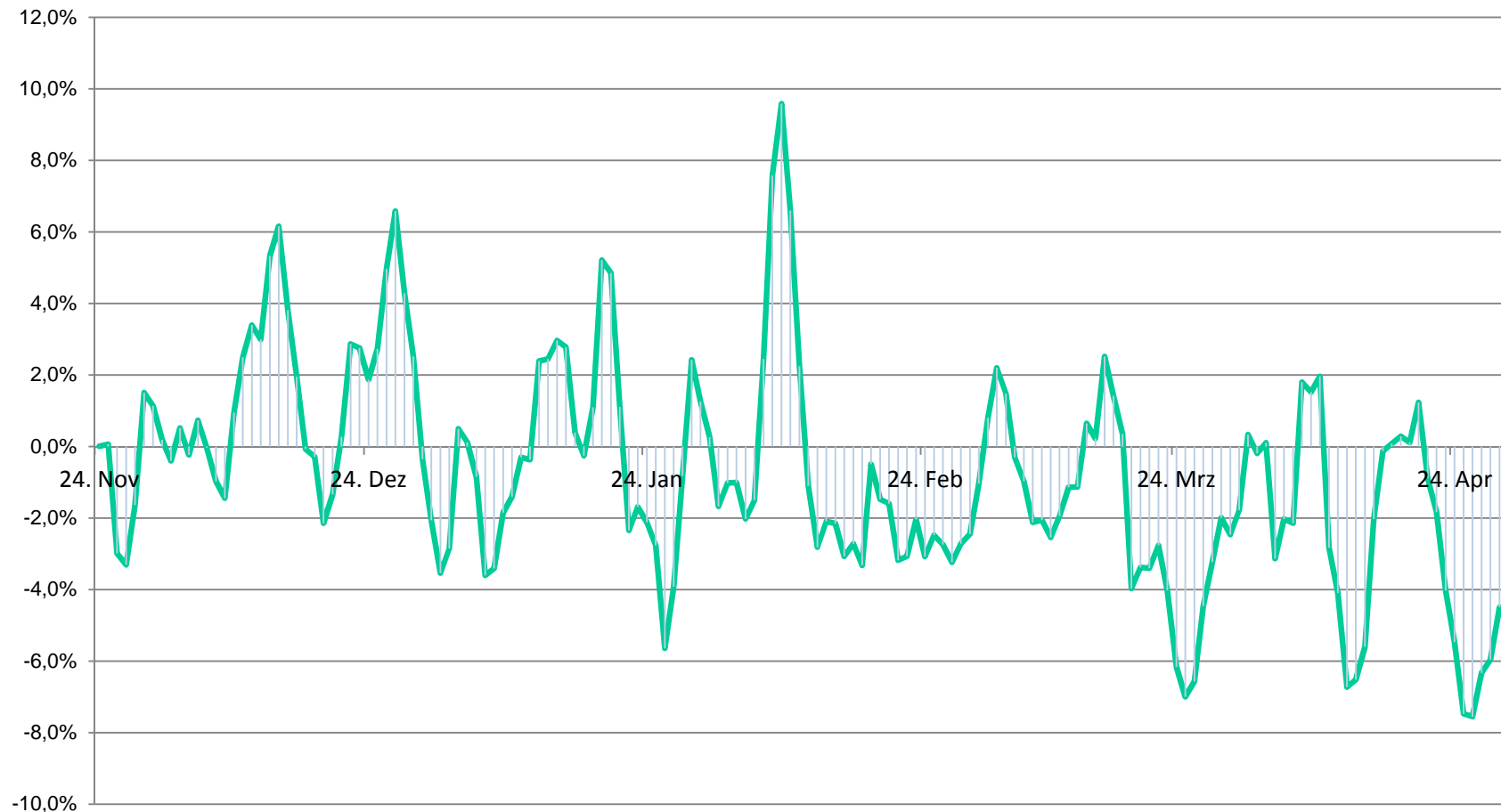
REDO-Effect: More Eggs per Hen

**Productivity advantage of the REDO group compared to the control group
(surplus eggs per hen per day in %)**



REDO-Effect: Less Feed Consumption per Egg

**Feed requiremen in the REDO group compared to the control group
(gram feed per hen per day in %)**





IV. Disinfection of Stables, Equipment and Staff

Additional Features

Additional Features

Surface disinfection of stables and equipment with REDO

- REDO recommends to use quite high amounts of REDOlyt and REDOkat in animal stables. That way, even potential germs in the cracks of a building or floor are effectively eliminated by the surplus liquid. Also, unaccessible parts of e.g. equipment can be reached, and there is sufficient disinfecting power even in the drain, to avoid eventual recontamination.
- Small amounts of REDOlyt and REDOkat, sprayed on surfaces or applied with cleaning mops, are completely sufficient.
- REDOlyt and REDOkat can be produced at minimal cost AND are completely bio-compatible and harmless to health.
- For normal cleaning purposes, simply use the animal drinking water, which already has some disinfecting effect. For actual cleaning and disinfection, a higher concentration of REDOlyt and REDOkat is recommended.



Economize one complete process step in your cleaning and disinfection:

Since REDO is bio- and health-compatible, it is NOT necessary to rinse disinfected surfaces with clear water afterwards!

Additional Features

Disinfection of trucks and staff on gates with REDO

- To **disinfect and clean trucks and employees** it's **common to use corrosive chemical additives (e.g. Glutaraldehyde)**, sprayed in gates to eliminate potential germs.
- This chemical additives are **unhealthy and dangerous** for your employees and cause additional costs.
- A mixture of REDOlyt, REDOkat and water used by the shower in the staff gate and/or the high-pressure cleaner for trucks is completely sufficient.
- **REDOlyt and REDOkat can be produced at minimal cost AND are completely bio-compatible and harmless to health.**



Glutaraldehyde is toxic and causes fatal irritations of eyes, nose, throat and lung adherent with headache, numbness and vertigo.





V. REDO Technology and Installation

Advantages, Installation and Maintenance

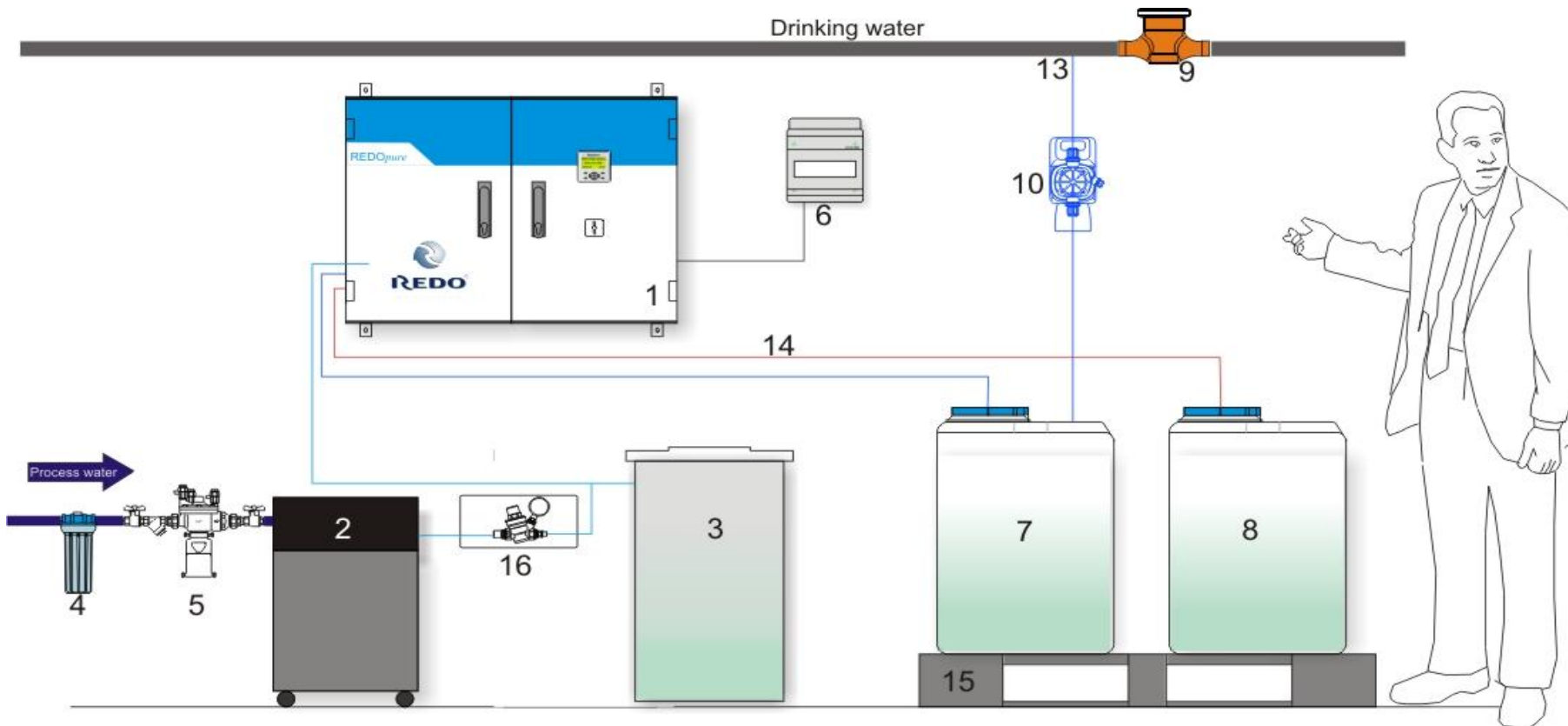
The REDO Technology

General Advantages

- 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, is effectively avoided. Biofilm is a persistent shelter for bacteriae and other germs.
- **No use of harmful or hazardous chemicals**. Minimization of disinfection byproducts. **No smell and taste**.
- REDO installation operates automatically and only requires a minimum of **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 business becomes **very easy**.



Installation Scheme



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

REDO Installation and Maintenance

Operating a REDO unit is extremely simple and completely safe. **Regular tasks are basically limited to replenishing (common) salt every week. No particularly skilled or trained personnel is needed.**



- REDO installations are extremely reliable, need **low-maintenance** and come with a two year guarantee.
- There is **very little floor space required**. Installation and initial briefing are performed by qualified REDO personnel.
- **Cost savings** from replacing the disinfectants and detergents previously used **already cover the operating costs (salt and electricity) for the REDO installation.**

More than 500 installations worldwide

INWASOL
Intelligent Water Solutions



**designed,
engineered &
made in Germany**



VI. Customer Examples Poultry Farms

Asia, South America and Europe

Customer Examples Indonesia: Layer

Layer farm Indonesia
with open house and open channel system



Layer farm Indonesia
with closed house and nipple system



Customer Examples Indonesia: Broiler

Broiler farm Indonesia
D.O.C. day old chicks



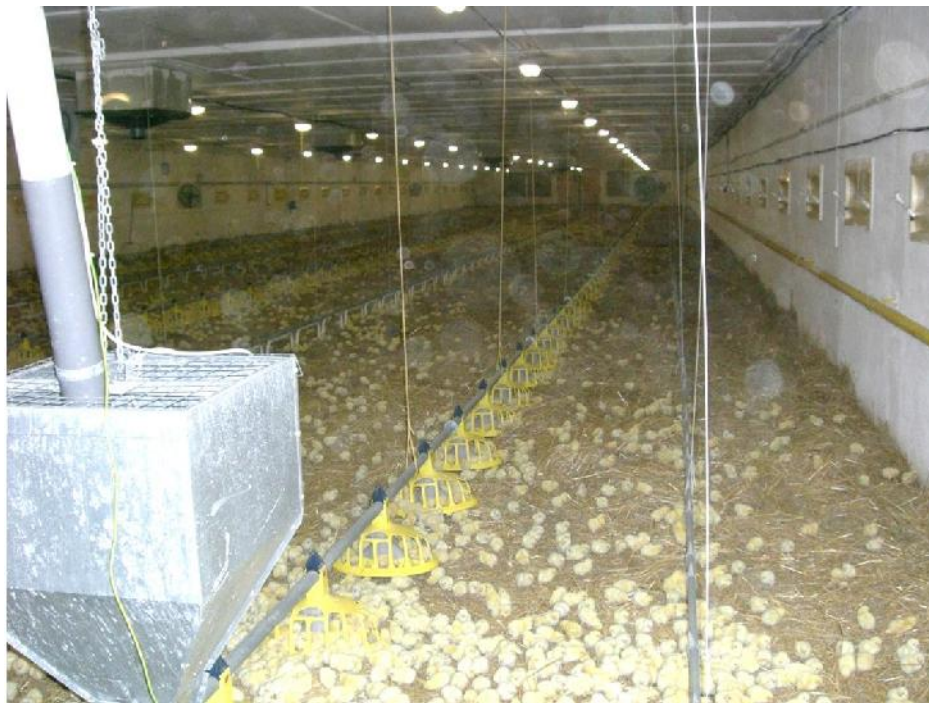
Well, water tank and REDO Container Solution **with in**
Germany preinstalled „all in“ container installation



Customer Example Czech Republic

First cycle was successfully finished after the installation of REDO: Length of the cycle: 35 days, **No dosing of antibiotics in two halls from the beginning of the cycle**

Results: Water without any microbiological contamination, Excellent health of chicken, Disinfection of halls and equipment, REDO is cleaning pipes, **Death rate only 3,2 %**



Customer Example Philippines

Broiler Farm Philippines: Higher income through **healthier animals** and **significantly lower use of antibiotics**

REDO water causes a substantially lower mortality, a higher performance, a better feed utilization, therefore lower cost of feed, a better general health status and a higher vitality.



Customer Example Venezuela

Poultry Farm Venezuela: Better results and more profit because of **more weight and decreased mortality**

In a typical poultry farm in Venezuela, the average weight after the breeding cycle increased from **1.8kg up to over 2.2kg** after the installation of a REDO unit. Mortality was reduced from more than **15% to around 4%**.

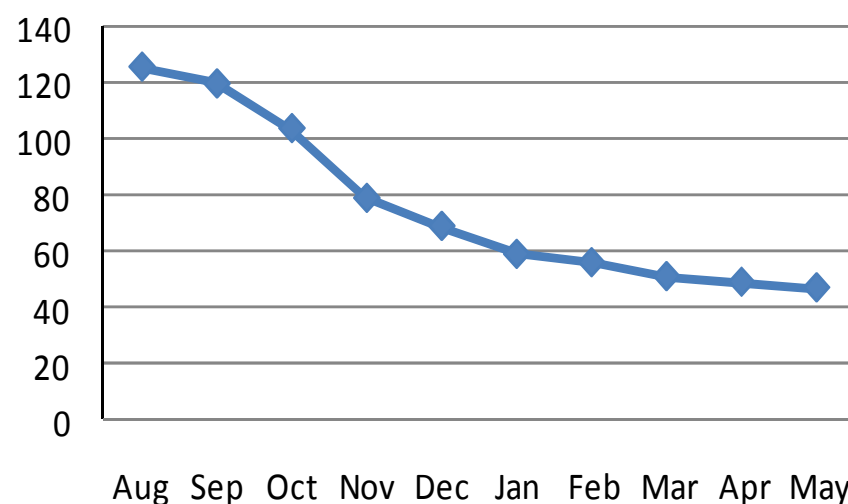


Customer Example Portugal

MELRUI, Sociedade Produtora de Ovos, S.A.,
Portugal is a layer farm with about 280.000 hens in 7 batteries, with its own feed production, which uses REDO water.

Decreased mortality after REDO installation:

Hen Mortality Per Day



Fernando Antunes, owner and technical manager:

“We are using REDO for a year now. We would never have known that such a great reduction in the mortality rate is possible. Now, we are very pleased that we chose REDO.”

Dr. David Pereira, Veterinarian:

“The influence of drinking water quality on the health of the hens has been clearly proven here.”



VII. Calculations: Additional Profit and Cost Savings

Getting an offer

Investment in a REDO Installation: Guaranteed success

- Price of the installation is highly dependent on local conditions
- **Amortisation (Pay-back) often already after a few months**
- Installation, set-up and training in price included
- **Minimal operating cost, minimal yearly maintenance cost**, minimal expenditure of time in operations
- **Guaranteed success: If no improvement is found in an objective comparison, INWASOL / REDO take back the REDO unit and refund the price.**
- We are glad to provide you with a detailed offer!



Profit Calculator Broiler

REDO broiler farm online calculation tool

(Calculator for layer farms will be available soon)



How much can REDO technology do for your broiler farm?

Please use our calculation tool under

<http://www.redowater.com/special-broiler-farming/calculation-tool/>

to find out.

Simply enter the amount of chicken on your farm and some other data to estimate your additional monthly profit with REDO.

You want an offer?

Price of the installation is highly dependent on local conditions. To calculate a substantial indicative „all in“ offer for a whole installation we need a minimum of information about the farm:

Technical Questions:

- Number of chicken?
- Number of sheds?
- Round drinkers or nipple drinkers or drinking troughs?
- Continuous flow of water or manual refill? How is the procedure, how often is water refilled, any cleaning procedures?
- Currently used disinfection agents (if any)?
- Map/drawing of the farm and pipe scheme: Where are the sheds located? Which shed is connected to which water supply? Where are the pipes to the sheds located, what are the distances?

Economic Questions:

- Mortality rate per cycle?
- Currently used surface cleaning and disinfection agents: How often? Quantity? Cost?
- Average weight gain per cycle and duration of cycle in days / Egg production per day (per hen perday)?
- Average grams of feed per cycle, feed conversion rate, cost for feed?

Contact and Questions

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