



IZUMRUD[®]

Modern technologies
of water treatment and disinfection



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Scientific and production enterprise **IZUMRUD** develops and produces disinfection solutions and equipment based on ECAS - electrochemical activation of water solutions and salines



Our products

IZUMRUD devices for purification, disinfection and activation of water in households and industries, for producing water with healthy parameters

AQUAECA devices for producing safe and efficient disinfecting solutions on-place

Disinfecting solution AQUAECA - safe, efficient, environmentally friendly, multisector application

Aerosol generator TUMAN for fine-dispersed disinfection



Our clients

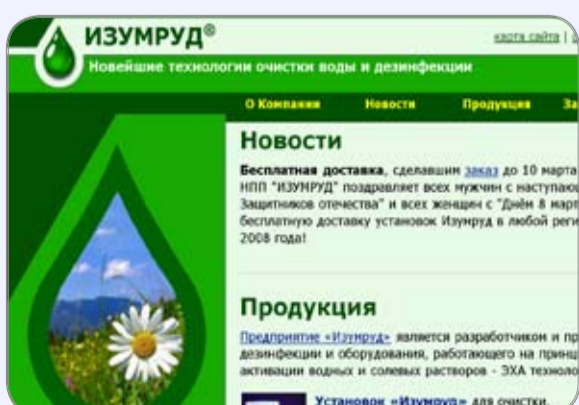
SPE IZUMRUD has its representatives in Russia and abroad. Our clients in Russia are ALROSA, TALOSTO, ARTIA, Meat-processing factory of Kronstadt, medical institutions in Russian Federation, schools and kindergartens.

SPE IZUMRUD exports its products to Germany, Mexico, Slovakia, France, Slovenia, USA, Canada, Africa.



Our achievements

SPE IZUMRUD conducts scientific research, has its own patents, implements newest constructing solutions to its products. During the years of activity **SPE IZUMRUD** has taken part in more than 30 exhibitions, company's products have been awarded certificates and medals.



Our mission

By developing **ECAS** technologies **SPE IZUMRUD** contributes to the protection of the environment and human wellbeing.



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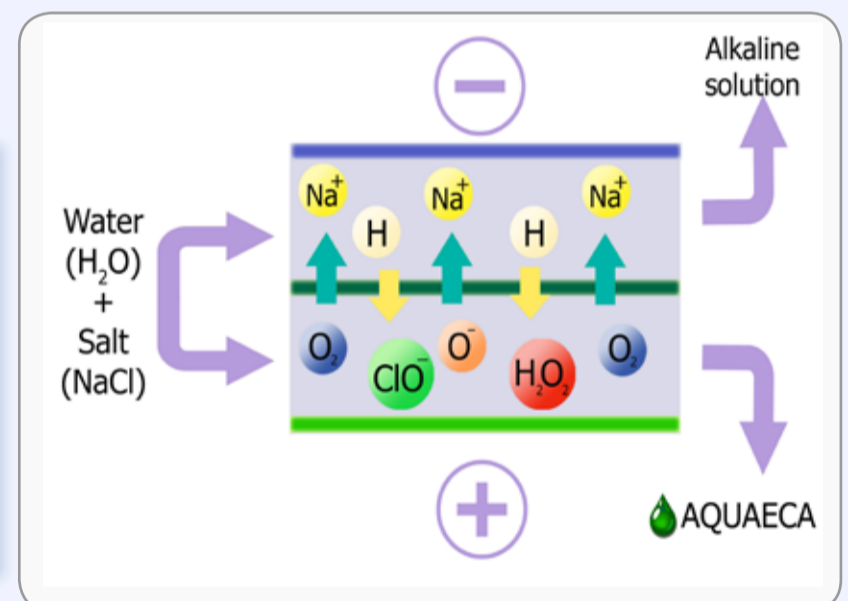
ECAS Technology

What is ECAS?

Electrochemical activation of solutions is a new branch of electrochemistry, which is able to solve important problems of the use of water resources in technological cycles. The patented technology of ECAS is based on the special kind of electrolysis in the diaphragm electrolyzer. This technology has been scientifically researched and tested. ECAS allows to produce biologically valuable drinking water, green, environmentally friendly washing and disinfecting solutions, as well as solutions for pre-sterilizing washing and sterilization itself.

How does it work?

Electrochemical treatment of low-mineralized salines (NaCl) transform them into activated, environmentally safe and efficient washing, disinfecting and sterilizing solutions AQUAECA, which eliminate all kinds of pathogen microorganisms (bacteria, viruses, fungi and protozoa), while not harming human and animal cells, as well as cells and tissues of any higher organisms.



Where to use it?

AQUAECA solution is used in medicine, food industry, agriculture, sport facilities, swimming pools, at the water intake stations, for the production of potable water, in households, in communal services, at transport and in other areas. ECAS technology allows to increase the disinfection efficiency and to reduce costs compared to other disinfection solutions. It is possible to produce AQUAECA solution directly on place.

ECAS and people

Besides disinfection, ECAS has a favorable impact on the human body. ECAS technology allows producing biologically valuable drinking water with antioxidant, immunostimulating and antimutagen characteristics.



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AQUAECA application

УЗУМР

Medicine

AQUAECA allows to replace all the existing disinfecting solutions in medicine by the only one. Disinfection, washing and elimination of odours in premises: corridors, operating rooms, toilets, canteens in the hospitals, clinics and recreation centers; air disinfection; sanitary transport, equipment.

Disinfection and washing of equipment and materials: medical equipment, endoscopes, operational tools, clothes, shoes, rubber items.

Use as skin antiseptic: hand disinfection of doctors and medical staff; treatment of injection and operation areas; treatment of doctors' elbow folds.

Waste disinfection: single-use items - bandages, clothes etc., biological extractions, food waste.



Treatment

Cure of burns, trophic ulcers, dermatosis, festering and festering wounds, posttraumatic, postoperational, and other purulent complications, mastitis, bursitis, felons, nonspecific ulcerative colitis, ulcerous illness, hypertension, podagra, allergic diseases (including asthma), salmonellosis of gastrointestinal kind, colpitis, immunodeficiency illnesses, gingivitis, acute bacterial dysentery, stomatitis, anaemia, periodontitis, viral hepatitis A and B, illnesses of kidneys, liver, biliary, stenocardia, diabetes, metabolic imbalances (obesity, stagnation of cartilages, keratosis), diathesis, reduction or elimination of antibiotics by the cure of osteomyelitis, treatment of fungus diseases, piles.



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AQUAECA application

УЗУМР

Communal services

Swimming pool water disinfection, disinfection and washing in hotels, airports, railway stations, institutions for children, food stores, children recreation centers, sport centers, health resorts, baths, restaurants, cafes, at the trade objects, municipal objects, sanitary and veterinary related objects, hairdressers' shops, toilets. Elimination of all kinds of mould, elimination of odours. Disinfection of water-supply systems and water pipes, disinfection of drinking water at water supply stations, at water treatment plants and in extreme conditions. Elimination of Legionelle pneumophilla. Disinfection of water in reservoirs, including yachts and sport boats (motor ships). Disinfection of outside waters at the vessels of high displacement, etc. Application of aerosol complex AQUAECA-TUMAN for the disinfection of closed places and places and objects difficult to access, containers, transport, sanitary treatment of the air.



Households

Disinfection and treatment of drinking water.
Treatment of food in order to improve their product life (fruits, vegetables, berries, meat, fish). Sterilization of home-use items, medical items, washing and bleaching of clothes.
Cosmetic care of skin and hair, preparation of cosmetic cream, lotions, masks, decoctions of medical herbs.
Curing and prevention of illnesses of pets, aquarium fish, struggle against vermins.
Elimination of unpleasant odours, disinfection of air conditioners in homes, offices, cars.



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AQUAECA application

УЗУМР

Food industry

Disinfection of premises and equipment, package, increase of product life of products, vegetables, fruits, elimination of unpleasant odours.

Application of aerosol complex AQUAECA-TUMAN for disinfection of closed premises and places, as well as places difficult to get, reservoirs, transport, sanitary treatment of the air.

MILK INDUSTRY

Disinfection of equipment, package, stock without after-washing etc.

MEAT INDUSTRY

Disinfection of meat-processing equipment, package, stock without after-washing etc.
Increase of product life term of meat.



FISH INDUSTRY

Disinfection of the equipment, package, stock without after-washing etc.
Increase of product life term of fish.
Conservation of caviar.
Production of chitine from shell-containing raw material.
Refinement of cod liver oil.



Agriculture and gardening

Disinfection of livestock premises, milk industry equipment and milk pipes, improvement of sanitary conditions of animals' life, prevention of illnesses of animals, birds, fish, elimination of unpleasant odours.

Application of aerosol complex AQUAECA-TUMAN for disinfection of closed places and premises and for those difficult to get into, containers, reservoirs, sanitary treatment of the air.



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AQUAECA application

УЗУМР

Animal husbandry, poultry farming and veterinary medicine

Disinfection of livestock premises, milk industry equipment and milk pipes, improvement of sanitary conditions of animals' life, prevention of illnesses of animals, birds, fish, elimination of unpleasant odours.

Application of aerosol complex AQUAECA-TUMAN for disinfection of closed places and premises and for those difficult to get into, containers, reservoirs, sanitary treatment of the air.

Plant raising

Plant growth stimulation, improvement of germination, disinfection of grain, increase of product life of vegetables, fruits, truncated flowers, control of vermins, struggle against viral and fungous plant illnesses, compost preparation.

Bee keeping

Control of bee illnesses, improvement of the immunity and productivity of bees.



Silage preparation

Application of AQUAECA as a preservative for the preparation of silage allows to reduce **protein and sugar losses**. Digestion of feed increases substantially. Output of the ready feed with the application of silage technology, increases up to **80-90%**. There is **no butyric acid** in silage, and in the balance of acids, there prevails the **lactic acid**. AQUAECA is introduced to the silage using improvised means, which are available at every farm.



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AQUAECA devices



AQUAECA devices are registered in the Federal service of healthcare and social development supervision registration number N ФСР 2009/04816 from 06 May of the year 2009.

AQUAECA-40



Maximal productivity, l/hour.....	40
Power, Wt.....	360
Voltage, V.....	220±22
Frequency, Hz.....	50±0.5
Dimensions, mm.....	300x250x80
Weight, kg.....	3.5
Warranty operating time, h.....	17000

AQUAECA - 80



Maximal productivity, l/hour.....	80
Power, Wt.....	360
Voltage, V.....	220±22
Frequency, Hz.....	50±0.5
Dimensions, mm.....	300x250x100
Weight, kg.....	4.5
Warranty operating time, h.....	17000

AQUAECA - 120



Maximal productivity, l/hour.....	120
Power, Wt.....	950
Voltage, V.....	220±22
Frequency, Hz.....	50±0.5
Dimensions, mm.....	580x535x325
Weight, kg.....	25
Warranty operating time, h.....	17000

AQUAECA - 250



Maximal productivity, l/hour.....	250
Power, Wt.....	1400
Voltage, V.....	220±22
Frequency, Hz.....	50±0.5
Dimensions, mm.....	830x600x300
Weight, kg.....	38
Warranty operating time, h.....	17000

AQUAECA - automat 40, 80, 120, 240



Maximal productivity, l/hour.....	240
Power, Wt.....	1400
Voltage, V.....	220±22
Frequency, Hz.....	50±0.5
Dimensions, mm.....	2000x2200x500
Weight, kg.....	120
Warranty operating time, h.....	30000



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AQUAECA solution

Средство Акваэха зарегистрировано в Роспотребнадзоре для целей дезинфекции, стерилизации, обеззараживания питьевой воды и воды плавательных бассейнов, а также в качестве кожного антисептика.

AQUAECA solution is a transparent colourless liquid with a slight medical smell. The solution contains highly active oxygen compounds of chlorine.

When measuring toxicity of AQUAECA, according to GOST 12.1007-76 it corresponds to low-toxic compounds of the 4th (the least dangerous) class of toxicity.

AQUAECA is dissociated spontaneously after use and do not require neutralization.

AQUAECA has a bactericidal, viricidal, sporicidal, fungicidal and deodorizing action.

AQUAECA solution is not toxic at all. «Injection of AQUAECA with active chlorine concentration of more than 600 mg/liter into chicken embryo does not cause pathologic changes and does not have an effect on brooding and growth of poults». (resolution of GNU VNIVIP of Russian Academy of agriculture, Lomonosov, 14.03.2006). «Treatment with AQUAECA of surfaces and objects infected with bird flu has a coagulating effect on virus-containing extraembryo liquid, (destroys the activity of the virus)» (resolution of GNU VNIVIP of Russian Academy of agriculture, Lomonosov, 14.03.2006).

Disinfection with AQUAECA can be made by wiping (surfaces in premises, equipment), immersion (dishes, clothes, spare parts etc.) and aerosol treatment (premises, containers, even in presence of people, animals, birds). After the treatment with AQUAECA containers, package, products etc. do not require water washing. 100% biological compliance of AQUAECA allows to use it for hands disinfection **without any irritation or dryness of hands**. After-washing with water is not required.

Main advantages of AQUAECA solution:

- safety;
- effectiveness;
- multisector application;
- no bacterial resistance;
- production on-place.

Our clients today are: meat-processing factories - «Kronstadtsky», «Artia», «Nevo», «Makara», cold-processing factory «TALOSTO», food factory «Kolpinsky», «Belkozin». AQUAECA-ZOO products are sold in more than 400 shops, veterinary clinics, animal barbershops as the solution for odour elimination and disinfection.



AQUAECA TUMAN

Mobile device for disinfection with remote control consists of aerosol generator TUMAN and AQUAECA-40 device.

Aerosol generator TUMAN



Productivity, l/min, max.....	3,0
Power supply, tri phase.....	380 V, 50 Hz
Nominal power, kW.....	2,5
Spraying disc turning frequency, turns in minute....	24000
Dimensions, mm:	
Sprayer.....	140 x 300
Transformer.....	390 x 300 x 120
Trolley.....	800 x 600 x 700
Technical resort, hours.....	3000

AQUAECA - 40



Productivity, l/hour.....	40
Power supply.....	220 V, 50 Hz
Power, Wt.....	400
Consumption of NaCl for 1 liter of ECAS solution, g/l.....	max. 5
Concentration of initial NaCl solution, % ...	10
pH value.....	7,7±0,5
Concentration of active chlorine compounds, Ca.x., %	001±0,05
Dimensions, mm	350 x 160 x 400
Weight, kg.....	4,8
Technical resort, hours.....	17000



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AQUAECA TUMAN

УЗУМР

Advantages of the new disinfection method

Advantages of the new disinfection method compared with traditional disinfection methods (wiping, immersion):

substantial reduction of labor cost for disinfection (7-10 times);

high efficiency of aerosol for disinfection of sanitary and veterinary related objects, which allows to reduce the amount of disinfectant in 3-5 times;

improvement of efficiency of disinfectant usage, which allows (in case if not AQUAECA is used) to substantially reduce the contamination of the environment;

no contact between the staff and disinfection solution. The treatment is remote controlled;

all the surfaces of the object are treated, including the places difficult to get;

no «wet walls» effect;

sanitation of the air is made;

content of chlorine and ozone in the air of the treated premises in 1 hour after the treatment (without ventilation) is lower than the maximally allowed concentration in 10 times (research protocols of the Main laboratory center of State Sanitary Supervision service number 243-290 from 04.02.1998)

Aerosol disinfection application areas

medicine (operating room, outpatients' and other premises);

prevention and struggle against intrahospital infections and pandemics;

manufacturing (food and light industry, pharmaceutical, perfumery and cosmetic industries etc.);

agriculture (animal husbandry, poultry farming, breeding of animals for furs, bee keeping, feed production, vegetables production etc.);

veterinary medicine (prevention and struggle against epizootics);

communal hygiene, sports;

municipal services (saving buildings and facilities from biological damage);

water lead objects (reservoirs, manifolds);

transport objects (coaches, cars, holds),

as well as many other spheres.





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IZUMRUD devices



УЗУМР

IZUMRUD devices working principle

Water purification in Izurud devices is based on **oxidizing and reducing processes**, after which all of the toxic elements are destroyed. In Izumrud devices, **natural processes** of oxidation and reduction are accelerated manyfold due to direct electrochemical reactions. In addition to that, the process of purification progresses with the help of substances that are contained in unpurified water.

Common ways of water purification (sorption filtration, reverse osmosis) have a number of disadvantages. The **general drawback** is that they not only purify the water from toxic impurities, but also deprive it of healthy calcium, magnesium and fluorine.

The **electric processor** of Izumrud is able to destroy all kinds of pollutants from pipe water as well as keep the **healthy elements**. Izumrud does not filter pollutants and does not hold or accumulate them. It destroys or neutralizes any toxic compounds and makes water not only safe, but also **completely potable**.

IZUMRUD advantages:

- does not require spare parts replacement;
- does not accumulate bacteria
- water is potable without boiling;
- disinfects water;
- resort is more than 5 years;
- reduces the reduction-oxidation potential of the water;
- makes water softer.

SPE IZUMRUD produces devices with capacity of 30, 60, 120, 250, 500 and 1500 liters/hour

IZUMRUD Sapphire, Diamond, Diamond-11, STO, KFTO



Max productivity, l/h.....	70
Power, W.....	30
Voltage, V.....	220±22
Frequency, Hz.....	50±0,5
Dimensions, mm.....	300x250x80
Weight, kg.....	2-4



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IZUMRUD devices



ИЗУМРУД

Why IZUMRUD?

Clean water

Izumrud frees the water from any types of toxic organic compounds, heavy metal ions, iron and colloidal particles. Izumrud water purifiers neither filter harmful substances, nor do they keep and accumulate them. Izumrud devices destroy or neutralize toxic compounds and makes water not only safe, but also healthy for the human beings. .

Health

Izumrud frees the water from any types of toxic organic compounds, heavy metal ions, iron and colloidal particles. Izumrud water purifiers neither filter harmful substances, nor do they keep and accumulate them. Izumrud devices destroy or neutralize toxic compounds and makes water not only safe, but also healthy for the human beings.

Taste

Emerald water is notable not only for its properties, but also for its fresh taste. If you drink a glass of this water on a hot day, you feel a burst of energy and pleasure. Tea, which is brewed using Emerald water smells and tastes much better.

No cartridges or replacement filters

Izumrud devices don't accumulate harmful substances and bacteria, but take them out through drainpipes into sewerage system. With Izumrud you can forget about cartridges, replacement filters and jars for 10 years.

Resort

Izumrud's resort is about 10 years, which is incomparable to the resorts of any other filters or even sewage disposal plants.



Scientific and production enterprise IZUMRUD
Saint-Petersburg, Pushkin, Podbelskogo 9-452, 196608, Russia
Tel: +7(812)4518092, Fax: +7(812)4666629, E-mail: izumrud@aquaeca.ru;
URL: www.izumrud.com.ru
Online store: www.izumrud-waters.com

