Environment Friendly, Eco Safe Sterilization

General

EKlor Systems AS
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- EKlor Systems AS was founded in 2016.
- Purpose of establishing of the company is to sell and promote most environmentally and ecologically preferable commercial technologies and equipment which produce on site eco-friendly and non-toxic to humans, sterilization and disinfection solutions.
- Food salt, drinking water and electricity are used to produce on-site, the most eco-friendly disinfection and sterilization solutions.
- All equipment sold and distributed by EKlor Systems AS are manufactured by Holding Company Laboratory Electrochemical Technology in Russia.
- All equipment have European Quality Standard with 1 to 3 years guarantee depending on type of equipment. These equipment are simple in use and can be adopted without big alteration in existing systems.
- EKlor Systems also provides after-sales repair and maintenance services to clients. The company consists of a dedicated and experienced team of professionals who are keen to provide their customers an efficient and reliable service.
Electro-chemical Activation

- ECA stands for Electro-chemical Activation. This technology first invented in Russia in late seventies and has been under development for over 40 years.

- The technology requires water, food water and electricity for synthesis of eco safe, environment friendly, non toxic, non invasive disinfectant solution and detergent

- All living organism including microbes requires a continuous supply of energy to survive. ECA

- Microbes, like other living things need a stable energy supply to survive. ECA destabilizes and elevates the electrical charge of the water and creates an environment in which microbes cannot survive. The energy difference between ECA (+900) water and tap water (+200mV) will kill 1 million E.coli in 30 seconds.

- Beside disinfecting-process and sterilization characteristics, a positive, healthy effect on people takes place through the change of the redox potentials of the water. Thus the ECA technology allows us to receive biologically valuable drinking water with antioxidant, immunostimulating, antimutagenic properties. The technology is proved by reports of leading scientific institutions and in practice by long-term tests
Electro-chemical Activation

• **ECA**, or *Electro-Chemical Activation* technology, generates two end products on-site for the user by using only salt (NaCl), tap water (H2O) and electricity (240v):
  - a state of the art **non-toxic sanitizer/disinfectant** (Anolyte), consist of Free Available Chlorine, Hydroxide, Hydperchlorous acid, hydrogen per oxide
  - a **mild detergent** (Catholyte), consist of Sodium Hydroxide (NaOH), both of which are non-toxic and 99.5% water. Using ECA, a user can now generate their own sanitizers and detergent on-site, both of which can replace many, every-day use, standard, polluting and hazardous cleaning & maintenance products and reduce their chemical expenses.
Some Fields of Application

• MEDICINE

  • Disinfection, pre-sterilizing cleaning and sterilizing of metal products of simple configuration (scalpels, pincers, etc.), metal products of complicated configuration (needles, wound dilators, forceps for teeth extraction, etc.), different tooth steel drills, glass products (test-tubes, capillaries, etc.), rubber products (catheters, probes, etc.), endotracheal drains, capillary and laminar dialyzers and oxygenerators, endoscopes.

  • Disinfection and washing of dishes, toys and surfaces covered with plastic, oil paint, linoleum, sanitary and cleaning stock, rooms, clothes, elimination of unpleasant smells. Washing of surgeon's hands and arms without negative influence for skin.
Fields of Application

- WATER TREATMENT AND DISINFECTION
  - Decontamination of water in swimming pools;
  - Eliminating of Legionella pneumophila in swimming pools;
  - Disinfection of artificial and natural reservoirs in emergency cases
  - Water disinfection at water treatment stations;
  - Disinfection of water in aquarium, terrariums
  - Disinfection of sewage, industrial wastewater, agricultural wastewater;
  - Disinfection of wastewater of hospitals;
  - Disinfection and treatment of spa, saunas, etc.;
  - Disinfection of artificial and natural reservoirs in emergency cases;
  - Disinfection of water in aquarium, terrariums;
  - Water disinfection in systems of recycling water supply of factories of energy economy, chemical and metal manufactures;
  - Decontamination of water pipes, cooling towers;
  - Water disinfection in loop systems in technological water supply of industrial plants including plants of food industry.
Fields of Application

• DISINFECTION OF FACILITIES
  • Disinfection of closed spaces, rooms, containers, transport industry, and sanative treatment of air milieu;
  • disinfection and washing in hotels, airports, railway stations, nursery schools, kindergartens, supermarkets, children's summer recreation centers, health farms, sanatoriums, restaurants, cafes, hairdressing saloons, baths, lavatories and rooms,
  • Disinfection of epidemically dangerous regions,
  • elimination of any kinds of mustiness,
  • elimination of unpleasant smells
  • Decontamination of water supply systems and water pipes, cooling towers. Eliminating of Legionella pneumophila. Disinfection of water in tanks, including yachts and sports boats. Disinfection of ballast water on courts of the big displacement, etc.
Fields of Application

• **MUNICIPAL ECONOMY**
  - Washing and disinfection of floors and surfaces in people presence;
  - Disinfection of lavatories, sanitary equipment;
  - Water disinfection of drinking water supply;
  - Disinfection of wastewater including of waste water of infectious (tuberculosis) hospitals;
  - Disinfection of ventilation stacks;
  - Waste disinfection at dumps;
  - Cleaning of entrances and stairs in houses;
  - Disinfection of waste, refuse chutes, dustbins, refuse tippers;
  - Disinfection of playgrounds
Fields of Application

• FOOD INDUSTRY, FISH INDUSTRY
  • Disinfection of rooms and equipment, increase in periods of storage of products, vegetables, fruit, elimination of unpleasant smells.
  • Disinfection of fish and seafoods at efficacy against all pathogenic microorganisms including listeria;
  • Anolyte use at fishing boat for shelf life prolongation of fish and seafoods;
  • Improving of quality of fish, meat, plant raw materials and shelf life prolonging of conserves
  • Treatment of food raw materials at food plants, for example at beet processing factories with the purpose of disinfection and shelf life prolongation;
  • Disinfection of berries and fruits and its shelf life prolongation;
  • Disinfection of carcasses of cattle and birds in slaughtering rooms and meat-processing plants;
  • Disinfection of beet slices at sucrose extraction process;
  • Getting of hydrolyzed starch, different types of starch syrup and glucose;
  • Regeneration of oxidized fat;
Fields of Application

• **FOOD INDUSTRY, FISH INDUSTRY**

  • Reduction of milk acidity, reduction of acidity from 30 and more Terner degree till the norm of freshly dried milk;
  • Degreasing of hotel and restaurant kitchen floors
  • Washing of restaurant’s kitchen equipment and utensils
  • Getting of diffusion juice from sugar-beet and sugar-cane;
  • Pectin getting from pomace;
  • Hop extraction with increase of isohumulon output;
  • Quality improving of fermented malt and speeding-up of extraction and fermentation processes in brewing;
  • Improving of quality and organoleptic evaluation of cognac, reduction of time of post-blending rest and increase of tank turnover in cognac production;
  • Improving of quality of shelf life prolonging of preserves;
  • Improving of quality of fish, meat, plant raw materials and shelf life prolonging of conserves;
  • Cold pasteurization of fruit and berries and vegetable beverage, juices, fruit drinks and compotes;

  CIP-washing at all factories of beverage production under good epidemiological situation, improving of washing and disinfection quality at reduction of toxicity and increase of ecological compatibility.
Fields of Application

• INDUSTRIAL APPLICATION

• Disinfection of water in technological cycles of industrial plants;
• Treatment of rubber medical products (plugs for bottles with pharmaceuticals) off mechanical pollution and removing water-soluble organic compounds, monomers from it.
• Improving of biocompatibility of polymers and rubber medical products by removing of monomer remains from methacrylic polymers.
• Application in technological cycles at pharmaceuticals production;
• Regulation of physical chemical properties of drilling;
• Well cementing, oil displacement from producing formation;
• Increase of high-viscosity oil extraction from producing formations;
• Treatment of natural gas off hydrogen sulphide;
• Gas treatment off sulfur-containing mixtures;
• Extraction of bivinyl-(methyl-) styrene caoutchoucs;
• Production of chlorine, hydrogen, oxygen, sodium hydroxide, peracetic acid, performic acid, sulphuric acid, hydrogen peroxide, ozon at places of use;
Fields of Application

- RURAL ECONOMY, FARMING, GARDENING; AGRICULTURE
  - Disinfection of cattle-breeding rooms and other agricultural places at presence of people and animals,
  - the dairy equipment and milk pipes, improvement of conditions of the maintenance of animals,
  - reduction in diseases of animals,
  - increase in periods of storage of vegetables, fruit, flowers, elimination of unpleasant smells.
  - Disinfection of seed and seedlings before sowing and transplanting;
  - Treatment of final agricultural products for purpose of its shelf life prolongation
  - Defoliant production for treatment of cotton-plant
  - pest control, combating viral and fungal plant diseases; composted dung preparation
  - grain disinfection
  - combating viral and fungal plant diseases
  - watering animals for treating and prevention of gastrointestinal diseases.
Fields of Application

• **VETERINARY SCIENCE**
  • Treatment and preventive measures of diseases: wound sanation of animals, watering of young animals (calfs, piglets, nestling) at infectious intestinal diseases and for its prophylaxis, etc.;
  • Disinfection of incubatory eggs;
  • Sanitary treatment of animals cover-let including cow udder, etc.;
  • Anolyte application by aerosol method for disinfection of cattle-breeding rooms at presence of people and animals;
  • Water treatment and disinfection at growing of young fishes and shrimps.

• **BEE KEEPING**
  • Bee diseases control, raising immunity and productivity of bees
  • Anolyte application in beekeeping (treatment and prophylaxis of bee diseases, immunity and productivity rise of bees)
Fields of Application

• Household Application

  • Decontamination and purification of drinking water.
  • Treating foods with the purpose of improving their preservation (fruits, vegetables, berries, meat, fish).
  • Sterilizing items of household use, items of medical care, washing and bleaching of linen.
  • Cosmetic care of skin and hair; preparation of cosmetic creams, lotions, masks, infusions and decoctions of medicinal herbs.
  • Treatment and prevention of diseases of pets, tank fishes; indoor plant pest control.
  • Elimination of unpleasant smells.
Type of Devices

• STEL Devices

• STEL devices are used for the synthesis of highly effective electrochemically activated ecologically clean and pure functional solutions:
  • Anolytes - which is used for disinfecting, sterilizing and sanitizing
  • Catholytes which is used for cleaning
• STEL devices are used at site production of electrochemically activated detergent, antimicrobial, remedy and technological solutions – anolyte and catholyte with high functional activity and ecological purity. Each STEL device contains flow-through electrochemical diaphragm reactor, hydraulic system for initial solution supply into the reactor and electrochemical synthesis products outlet from the reactor and a power supply.
Type of Devices

• STEL Devices

• Output Solutions
  • Solutions: Anolyte and Catholyte
    The electrochemically activated solutions - anolyte and catholyte - metastable solutions prepared by electrochemical treatment of the supplied brine solution in diaphragm electrochemical reactor, physicochemical parameters and the cathalytic ability of the brine solution in redox reactions, varies with time.
    Electrochemically activated solutions are divided into two main types: the anolyte and catholyte.

I. The electrochemically activated anolyte has an oxidizing activity of physical and chemical interactions, spontaneously decreasing over time. Anolyte electrochemically activated depending on the pH and the catalytic activity determined preparation technology is divided into

"Anolyte A" having a pH of less than 5 (acidic anolyte);
"AN anolyte neutral" pH of 5.5 to 6.5;
"Neutral anolyte ANC" with a pH of 6.5 to 7.5.

II. The electrochemically activated catholyte has a reducing activity of physical and chemical interactions, spontaneously decreasing over time.

Electrochemically activated Catholyte depending on the pH and the cathalytic activity is divided into

"Catholyte K" having a pH above 9.0 (alkaline catholyte);
"Neutral catholyte CN" having a pH of from 5.5 to 9.0.
Eklor Systems AS offers STEL devices with different output capacities ranging from STEL 20 to STEL 250 (20 l/hr to 250 l/hr) for production of neutral Anolyte (ANK), Anolyte A, Catholye K and Catholyte KN with different mode of functions (manual, semi automatic and automatic).

- **STEL device for electrochemical production of concentrated disinfectant “Anolyte ANK ” with oxidant contents of 1200 mg/l and overall salinity less than 1g/l, active chlorine content of 0.12 ± 10%, with pH value of 7-8 and production of Catholyte. The shelf life of the finished solution is 30 days.**

- **STEL-NG**
  - Fully automated installation is in anticorrosive plastic housing, wall mount (provided desktop publishing), with integrated electronic current stabilizer to control output parameters, built-in pump of high accuracy for dosing brine supply. Provides automatic washing without connecting additional devices, water pressure control in the electrochemical block, maintaining the necessary level of the anolyte in the tank drive.
  - Device generates any anolyte solutions both concentrations and in total mineralization.
  - Capacity: 80-180 l / h
  - Power consumption: 600 W
Type of Devices

• STEL Devices for electrochemical production of concentrated disinfectant “Anolyte AN” solution with oxidant contents of 500 mg/l and overall salinity less than 5g/l, active chlorine content of 0.01-0.05 g/l with pH value of 7-8 and production of Catholyte. The shelf life of the finished solution is 30 days.

• STEL 20
  • Installation is made in anticorrosive plastic housing, wall mount with integrated electronic current stabilizer to control output parameters, built-in water pump for dispensing brine supply.
  • Capacity: 20 l/h Power consumption: 300 W
  • Dimensions: 290x230x85 mm Weight: 1.9 kg

• STEL 40
  • Installation is made in anticorrosive plastic housing, wall mount with integrated electronic current stabilizer to control output parameters, built-in water pump for dispensing brine supply. Additionally it can be equipped with an electronic scoreboard displays information about the operating modes as well as a water pressure regulator on the electrochemical unit.
  • Capacity: 40 l/h Power consumption: 400 W
  • Dimensions: 290x230x85 mm Weight: 2.2 kg
Type of Devices

• **STEL-60**
  - Fully automated installation is in anticorrosive plastic housing, wall mount (provided desktop publishing), with integrated electronic current stabilizer to control output parameters, built-in pump of high accuracy for dosing brine supply. Provides automatic washing without connecting additional devices, water pressure control in the electrochemical block, maintaining the necessary level of the anolyte in the tank drive.
  - Capacity: 60 l/h  
  - Power consumption: 600 W  
  - Dimensions: 320x280x370mm  
  - Weight: 6.7 kg

• **STEL 80**
  - Installation is made in anticorrosive plastic housing, wall mount with integrated electronic current stabilizer to control output parameters, built-in water pump for dispensing brine supply. Additionally can be equipped with an electronic scoreboard displays information about the operating modes as well as a water pressure regulator on the electrochemical unit.
  - Capacity: 80 l/h  
  - Power consumption: 800 W  
  - Dimensions: 290x230x85 mm  
  - Weight: 5.3 kg
Type of Devices

• **STEEL 120**
  - Installation is made in anticorrosive plastic housing, wall mount with integrated electronic current stabilizer to control output parameters, built-in water pump for dispensing brine supply. Additionally it can be equipped with an electronic scoreboard displays information about the operating modes as well as a water pressure regulator on the electrochemical unit.
  - Capacity: 120 l/h  Power consumption: 1200 W
  - Dimensions: 290x230x85 mm  Weight: 6.2 kg

• **STEEL-250**
  - Fully automated installation is in the frame body, desktop layout, with integrated electronic current stabilizer with controlled output parameters, built-in pump of high accuracy for dosing brine supply. Provides automatic washing without connecting additional devices, water pressure control on the electrochemical unit, maintaining the necessary level of the Anolyte in the tank drive.
  - Capacity: 250 l/h  Power consumption: 2500 W
  - Dimensions: 600x430x580 mm  Weight: 26.7 kg
STEL Devices - Benefits

1. An environmentally friendly solution which does not leave any traces after treatment facilities, and the active substance Anolyte is completely spontaneously degraded to drinking brackish water.

2. A multi-purpose solution, and is used for disinfection, cleaning and sterilization of medical products, and for general cleaning of premises, disinfection equipment in hospitals, clothing, hand surgery, etc.

3. Washing ability, which allows to combine the stage presterilizing cleaning and sterilization.

4. The low concentration of active substances in the anolyte ANK, together with its speedy action provides no aggressive effect on various materials.

5. High antimicrobial activity against all pathogenic microorganisms, including spores.

6. Low cost in comparison with other disinfectants - rapid return and profitability. replace more than 99% of all disinfectants used in health care facilities, while ensuring a high level of disinfection.

7. Eliminates the possibility of generating resistance to the pathogens it for any long and uninterrupted period, which is caused by metastability anolyte actives substances.

8. Minimal toxicity class (IV) and enteral inhalation exposure, skin-resortive and irritating absent. Approved for use in maternity wards and children’s institutions.

ECA oxidants mixture, produced by STEL devices are unique and have no comparison with traditional disinfection solutions. Benefits of ECA disinfectant solution (Anolyte A, Anolyte AN and Anolyte ANK) produced by STEL devices are unparalleled with comparing of any other installations which are used in different field of disinfection.
Aquachlor Devices

• Aquachlor

  • Aquachlor devices are designed for at site electrochemical synthesis of disinfecting aqueous solution of oxidant mixture (hypochloric acid, hypochlorite ions, chlorine dioxide, ozone, hydroperoxide compounds) through electrochemical decomposition of a sodium chloride solution.

  • AQUACHLOR devices are an alternative compact and high-performance source of oxidant mixture, and can be used as a substitute for liquid chlorine cylinders and containers and, in fact, chlorinators for drinking water treatment plants, for treatment of waste water supply, for treatment of domestic and industrial waste water, for swimming pool water treatment systems in the form of single modules or groups of modules, combined into a single hydraulic system to a predetermined output oxidants - from 30 grams per hour to hundreds of kilograms per hour.

  • AQUACHLOR devices offer a conceptually new process of electrochemical decomposition of brine – ion-selective electrolysis with diaphragm
Type of Aquachlor Devices

• **Aquachlor - Beckhoff**
  - A fully automatic device for production of electrochemically activated oxidants mixture.
  - In the Aquachlor device, high quality automation control system of the German company Beckoff has been used to minimize the dependence of water treatment system on the human factor (operator).
  - Comfortable ergonomic touch screen panel allows to monitor and modify all process parameters. After clicking the "Start" button on the control panel, the system produces a self-test and automatically goes to the regular operating mode, maintaining predetermined time intervals. In the event of an emergency system displays an error message on the screen, duplicating the presence of abnormal operation by using the flashing lights on the cabinet door that allows you to keep track of system failure, at a distance from the plant.
  - Thanks to the integrated 3G-module control installation, adjustment of operating modes, monitoring and elimination of emergency situations may operate remotely from anywhere in the world where there is Internet.
  - We offer proven experience and highly effective water disinfection technology, combined with the most advanced automation techniques that will undoubtedly find a positive response from the modern consumer, striving to achieve high economic performance without loss of quality and production reliability.
## Type of Aquachlor Devices

- **Aquachlor – Beckhoff Technical Specifications**

<table>
<thead>
<tr>
<th>Name of indicators</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>mod.1</strong></td>
<td><strong>mod.2</strong></td>
</tr>
<tr>
<td>Oxidant mixture output equivalent to active chlorine in nominal mode, g/h</td>
<td>500.00</td>
</tr>
<tr>
<td>Oxidant concentration equivalent to active chlorine solution at the device output of 100-150 l/h, g/h</td>
<td>3.33 – 5.00</td>
</tr>
<tr>
<td>Sodium chloride mother solution concentration (according to GOST R 51574 “Evaporated salt (extra) or pelletized salt for cation exchange material regeneration”, TU 9192-001-55898695-01 standard), g/l</td>
<td>250.00</td>
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<tr>
<td>Sodium chloride mother solution consumption, l/h</td>
<td>5.0 – 6.0</td>
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<tr>
<td>Oxidant solution hydrogen value, pH</td>
<td>6.0 – 7.0</td>
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<tr>
<td>Max. device power in nominal operating mode, W</td>
<td>2150.00</td>
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<tr>
<td>Nominal values of the electrochemical system reactor:</td>
<td></td>
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<tr>
<td>– current, A</td>
<td>95.00</td>
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<tr>
<td>– voltage, V</td>
<td>16.00</td>
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<tr>
<td>Cathode solution output, l/h</td>
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<tr>
<td>Gas nominal pressure in anode chamber of the electrochemical system reactor, atm.</td>
<td>0.70 – 0.90</td>
</tr>
<tr>
<td>Max. device weight, kg</td>
<td>100.00</td>
</tr>
<tr>
<td>Device dimensions, mm</td>
<td>L 600 × W 600 × H 2400</td>
</tr>
</tbody>
</table>
Aquachlor Devices - Benefits

Benefits of oxidants mixture produced by Aquachlor devices are unparalleled with comparing of any other installations which are used for disinfection of water at water treatment plants, swimming pools, sewage treatment plants.

- Environment friendly, ecological safe
- Non toxic, non invasive, absolute harmlessness to the human body, animals, etc
- No formation of chlorination by-products such as trihalomethanes, proven scientific research.
- Oxidants solution has a high antimicrobial activity against all pathogenic microorganisms, including spores
- Destroys phenols - source of unpleasant taste and odour, remove the turbidity of the water
- Helps to remove water from the iron and magnesium by their rapid oxidation and precipitation of oxides
- No formation of brominated bromates and byproducts in the presence of bromides
- Reduces the corrosion rate of water pipelines
- Facilitates extraneous tastes and odours from the water to be treated
- Effectively removes biofilm from the surface of water pipes, which eliminates the need for ammoniation
- In comparison with other disinfecting agents Oxidants cost solution - an indicator of profitability and rapid return.

Benefits of Oxidant solutions produced by Aquachlor
Thank You