ELGRESSY

ENGINEERING SERVICES LTD.

About Us

Established in 1977, Elgressy Engineering is an industry leader in electrochemical water treatment, with thousands of systems implemented globally.

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About Us

With patented and innovative electrochemistry technology at its core, Elgressy developed groundbreaking, chemical-free water treatment solutions for industrial, commercial and municipal applications.

- Elgressy' industrial-grade electrochemical systems revolutionize water and waste water treatment by providing simple, reliable and cost-effective systems and knowhow.
- Elgressy systems are designed for long life and simple serviceability and built with the operator and maintenance technician in mind.
- Elgressy maintains lasting relationships with its customers by enabling problem-free operations, while providing engineering, technical and training support.

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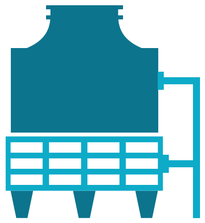
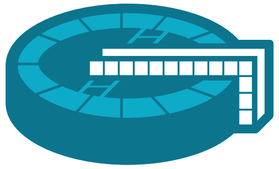
Applications



Cooling Towers

Corrosion Prevention
for Cold and Hot
Water System



Contaminant Removal

Disinfection of Legionella
and Bio-Fouling

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Cooling Towers Treatment - EST

EST is revolutionizing cooling tower treatment, providing a comprehensive and effective solution to the problems associated with operating cooling towers.

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Cooling Towers Treatment - EST

Cooling Towers - problems

Operating cooling towers is a continuous struggle against:
Corrosion, Scale and Bio-fouling.

Corrosion

Scale

Bio-fouling

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Cooling Towers Treatment - EST

How does it work?

The EST system connects to the cooling tower basin and circulates water therein. A controlled constant DC current is applied to the patented, titanium nickel oxide anodes, generating the following effects:

Disinfection:

- An alkaline environment of pH 13 is created next to the reaction tank inner walls creating a strong disinfectant.
- Near the anodes, 3-7% of the naturally present chlorides are converted to free chlorine or hypochlorite (OCl-). The OCl- level is programmable to automatically remain at ~0.1-0.2ppm, providing additional disinfection without the risk of corrosion,
- Disinfecting radical oxygen, ozone and hydrogen peroxide are produced near the anode

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Cooling Towers Treatment - EST

Scale removal:

- The electrical current causes a dissociation of the salts in the water into ions, precipitating the calcium (and other cations) on the reaction tank wall. The EST is capable of precipitating ~ 30% calcium from the water before it crystallizes into scale, while the remaining calcium is kept dissolved in the water. The calcium precipitation percentage is programmable, automated and varies from project to project.
- The EST patented scraper system automatically scrapes and flushes the reaction tank to remove the precipitated scale.

Corrosion control:

- The remaining mineral levels in the water are adjusted to enable corrosion-free operation.

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Cooling Towers Treatment - EST

Advantages:

- Solves operational problems stemming from algae, corrosion and scaling
- Generates huge water savings
- Cost effective - rapid return of investment
- Chemical free solution –eliminates the need for expensive and harmful chemicals
- Very low life cycle cost and electricity consumption
- Reduces maintenance, shut down time and labor cost
- Controllable and measurable ensuring consistent quality water
- Small footprint
- Robust and high-quality equipment with few moving parts
- Modular and simple to install or retrofit
- Proven effective in thousands of installations worldwide.
- Enormously environmentally friendly

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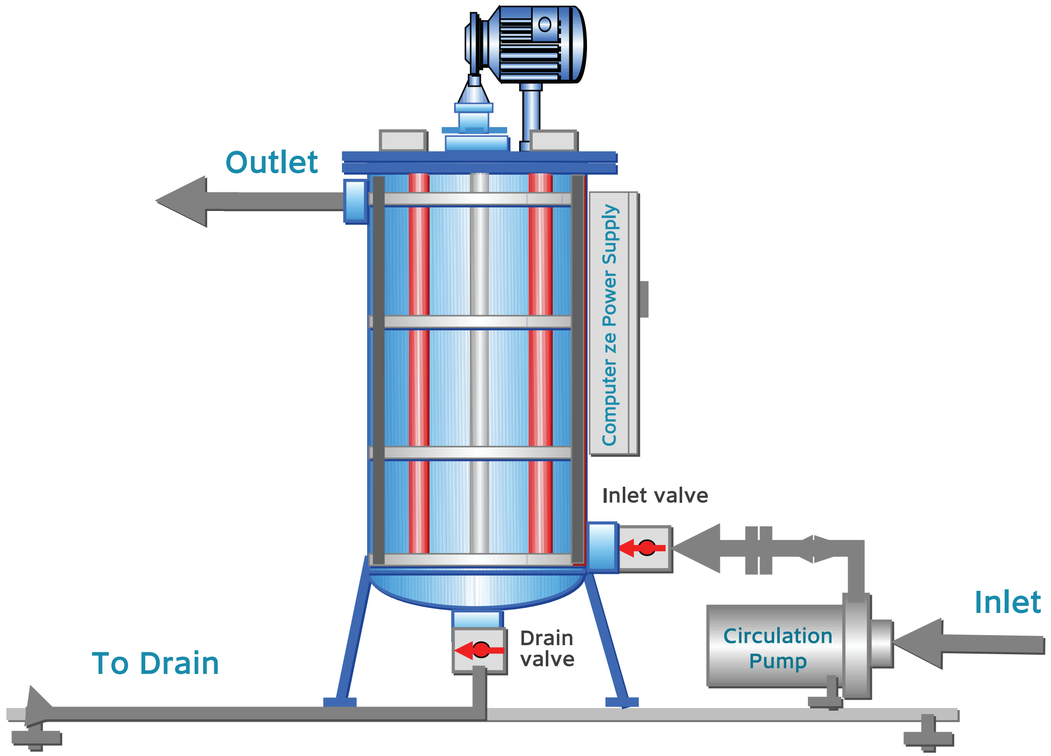
Cooling Towers Treatment - EST



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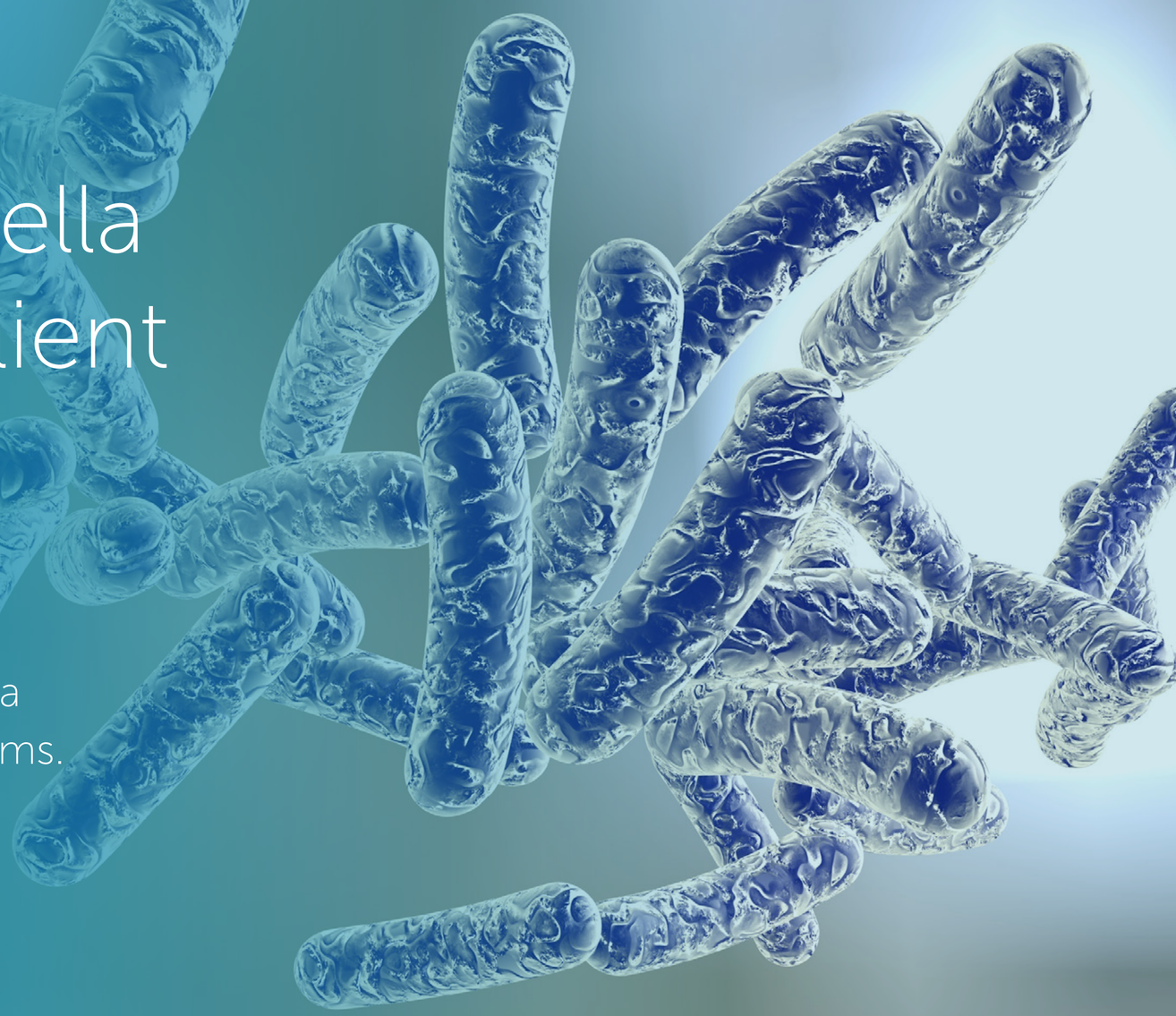
Disinfection of Legionella Pneumophila and resilient bacteria - LPB

Elgressy' patented LPB system, approved by the Spanish and Israel Ministries of Health, facilitates the automatic control and eradication of Legionella Pneumophila bacteria, in hot and cold-water systems.



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Disinfection of Legionella Pneumophila and resilient bacteria - LPB

Legionella bacteria are found in every possible water source, with the best conditions for growth prevailing in hot water systems.

Traditional treatment against Legionella is based on chlorine dioxide dosing, which is dangerous, expensive and corrosive.

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Disinfection of Legionella Pneumophila and resilient bacteria - LPB

How does it work?

A circulation pump circulates the water between the reaction tank and the water system.

Chlorine Dioxide:

- The LPB system operates using a reaction tank containing patented titanium and nickel oxide anodes. A constant current is passed through the anodes, generating a controlled amount of chlorine dioxide.
- Digital ClO2 meters continuously monitor the chlorine dioxide levels of the water exiting (0.8ppm) and entering (>0.2ppm) the reaction tank. The current automatically adjusts itself to meet predetermined programmed ClO2 levels, ensuring uninterrupted and effective treatment.

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Disinfection of Legionella Pneumophila and resilient bacteria - LPB

Elimination of the bacteria breeding ground:

In addition to the electrochemical disinfection process, the LPB systems precipitate some of the scale in the water, thereby diminishing the bacteria natural breeding ground. Furthermore, turbulence is triggered at the water entry point, thus preventing sediment and scale buildup at the bottom of the water tank and additionally depriving the bacteria of its growth medium.

Added safety measure

As an added safeguard, the LPB treated water are pumped through heat exchangers where temperatures exceeding 70°C eradicate any remaining bacteria.

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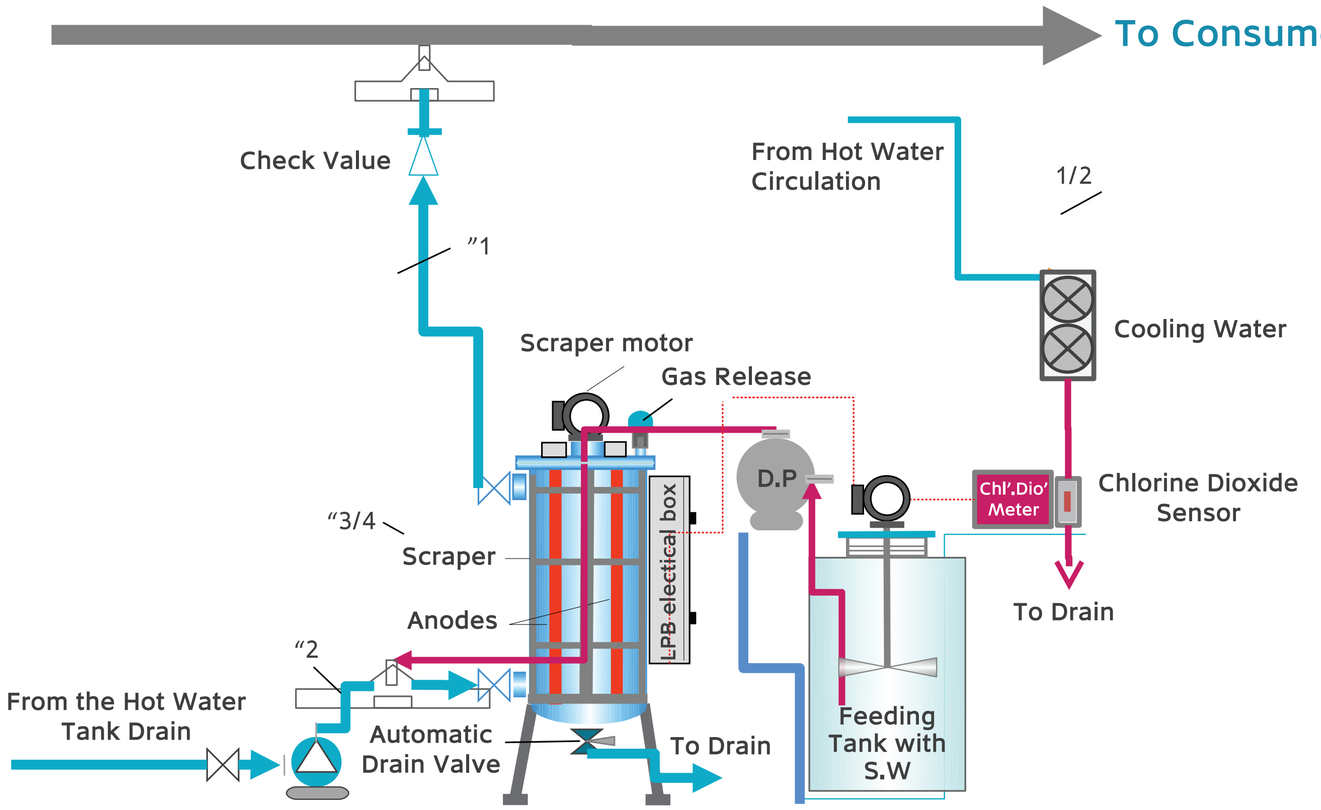
Disinfection of Legionella Pneumophila and resilient bacteria - LPB



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Disinfection of Legionella Pneumophila and resilient bacteria - LPB

Advantages:

- Patented and innovative treatment which tackles both the bacteria itself and its breeding ground.
- Chemical free, safe and ecological.
- Reliable for uninterrupted disinfection.
- Cost effective
- Does not cause corrosion.
- Low operational and maintenance requirements.
- Long equipment lifetime.

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Corrosion Prevention - ECP

ECP is an effective and innovative electrolysis technology developed to protect the inner surfaces of hot and cold-water pipes and tanks against corrosion and scale.

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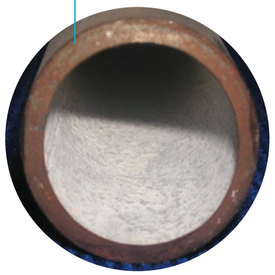
Corrosion prevention - ECP

Corrosion and associated scale lead to increased operational problems, reduced system life expectancy and increased energy consumption.

Corroded pipe without treatment

Corroded pipe with treatment

Treated pipe (from the 1 st day of operation)



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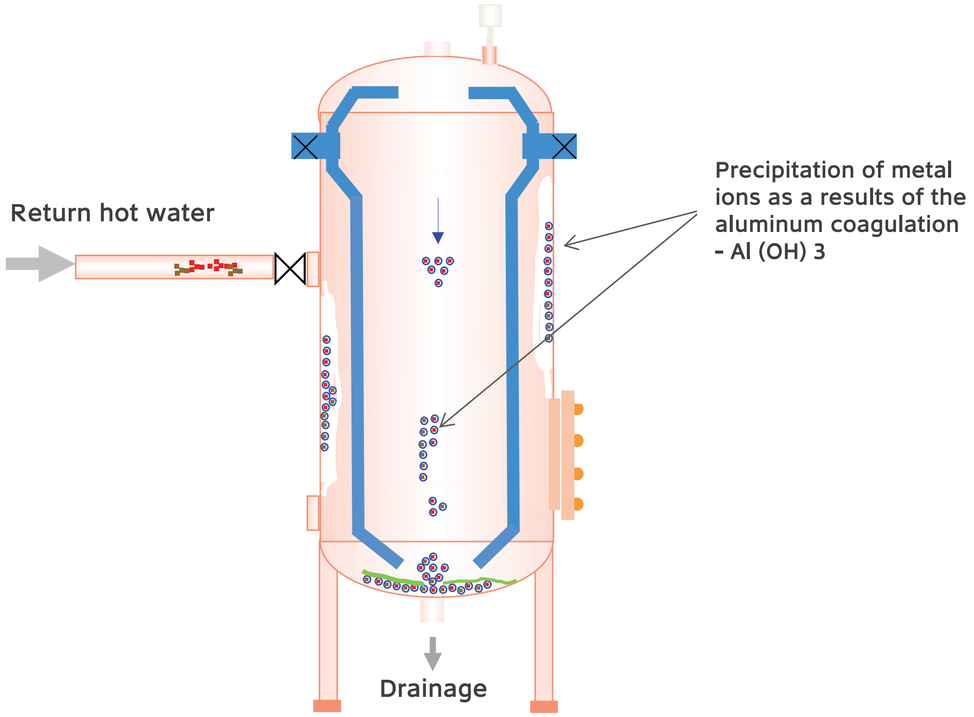
Corrosion prevention - ECP

How does it work?

- A combination of a constant direct current and a sacrificial aluminum electrode, release trace quantities of aluminum compounds into the water.
- The aluminum compounds are not easily soluble and form a homogeneous, 0.3mm thick protective layer on all internal surfaces.
- The Al protective layer shields the system from the effects of new corrosion, prevents the spread of existing corrosion and prevents scale build-up.



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Corrosion prevention - ECP

Advantages:

- Rapid results - Immediate prevention of new corrosion accumulation and stoppage of “red water”.
- Versatile Operation - The system can be installed in hot and cold-water systems and is effective in water tanks and all the pipes leading in and out of the system, whether galvanized, plastic or copper.
- Prevention and Correction - The ECP both prevents future corrosion and works to cure the effects of corrosion already present in the system
- Simple retrofit installation – external connection to the water system requiring no complicated installation procedures or alterations to the existing system.
- Environmentally friendly - free of harmful chemicals and harmless to the environment and humans.
- Safe drinking water - no adverse effect on drinking water quality or taste.
- Low operational cost - low energy use and low water consumption rates.
- Cost effective - prevents pipe and water tank damage as well as pipe blockages.
- Automated - The system is fully automatic enabling continuous control over water quality.

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Contaminants Removal – EEC/EEO

Elgressy electrocoagulation and oxidation systems efficiently separate and remove contaminants from water, without using chemical additives, or generating hazardous byproducts.

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Contaminants Removal – EEC/EEO

Experience and knowhow:

Elgressy EEC and EEO systems are integrated, custom-designed, electrocoagulation and electro-oxidation systems backed by vast industry knowledge, application expertise and a commitment to customer service since the 1977.

Revolutionizing water treatment:

EEC/EEO utilize proprietary electrodes and components to substantially remove multiple impurities from wastewater and rivers. These include various heavy metals, metalloids, silica, organics, ammonia, nitrates, nitrites, phosphates, emulsified oils, suspended solids, solid particles, dye, arsenic, radioactive isotopes and even pathogens.

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Contaminants Removal – EEC/EEO

Innovative technology designed to meet your needs

Elgressy custom manufacture the EEC/EEO systems according to the varying concentrations of contaminants and the clients desired result. Factors such as current density, pH, electrode type, reaction time, etc. are key factors in determining the system size, shape, metals, electrodes surface area and configuration.

Elgressy proprietary electrodes are manufactured to target a specific or broad range of contaminants in water and offer a high surface area to volume ratio. As a result, ionization efficiency of the electrode is superior, making the electrocoagulation process effective, energy efficient and quick.

The EEC/O systems allow for immediate treatment without chemicals, significantly improve operations, reduce overall treatment costs, and help meet increasing environmental regulations.

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Contaminants Removal – EEC/EEO

Advantages:

- Effective for a broad range of impurities with the ability to target specific contaminants
- Industrial grade - minimal attention and service required.
- Chemical free - no hazardous byproducts are generated during the process and no chemical additives are required.
- Low Operating Cost - Operating costs can be dramatically reduced by smoother operations and elimination of reagent chemicals and polymer consumption.
- Simple to retrofit
- Large electrode surface area enables improved reactions
- Scalable - 1m3/h – 100m3/h
- Minimal electrode material and energy consumption
- Simple electrode replacement
- Lower Sludge Quantities – significantly less sludge is produced resulting in lower disposal costs.
- Peace of Mind - Comply with current and future regulations.

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Contaminants Removal – EEC/EEO

	Constituent	Average reduction
Organics	Oil and Grease BTEX	81.2 - 99.3%
	BTEX	35.2 - 99.9%
	Biochemical Oxygen Demand (BOD)	37.2 - 83.6%
Metals	Barium	42.1 - 81.1%
	Cadmium	50.6 - 99.1%
	Calcium	31.3 – 84.1%
	Chromium, Hexavalent	72.5 - 99.9%
	Chromium, Total	70.8 - 99.9% 70. - 99.9%
	Copper	81.5 - 99.9% 81.5 - 99.9%
	Iron	78.1 - 99.9%
	Lead	80.4 - 99.9%
	Nickel	72.5 - 99.9% 72.5 - 99.9%
	Silver	59.6 - 99.8% 59.6 - 99.8%
	Molybdenum	31.1 - 98.5%
	Aluminum	75.3 - 99.9%

	Constituent	Average reduction
	Cobalt	70.8 - 99.9%
	Gold	54.8 - 87.2%
	Phosphorus	72.1 - 99.9%
	Zinc	81.6 - 99.9%
	Silica	45 - 98.6%
	Tin	68.2 - 98.5%
	Manganese	24.4 - 99.8%
Inorganic Anions	Ammonia	37.8 - 97.3%
	Cyanide	71.3 - 81.1%
	Sulfide	72.0 - 95.4%
Microbiological & Misc.	Acid Producing Bacteria	72.3 - 99.4%
	Heterotrophic Plate Count	81.1 - 99.8%
	Sulfate Reducing Bacteria	91.1 - 99.9%
	Total Suspended Solids	42.3 - 99.8%

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Why Elgressy?

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Ecological

Elgressy meets the challenge of advancing human and economic growth while minimizing their adverse effects by eliminating the need for chemicals and facilitating significant fresh-water savings.

Cost-Effective

By generating significant savings from chemical elimination, increased water efficiency and decreased operational expenses, Elgressy' systems offer a rapid return of investment.

Proven Beneficial

Since 1977, Elgressy installed thousands of systems globally and helped countless facilities resolve their water-related operational problems.

Simple to Adopt

The systems are modular, easy to install or retrofit, and designed for long life and simple serviceability.

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Among Our Clients:

ELGRESSY
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Thank You :)

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