ElectraMet™

White Paper

Heavy Metal Removal with No Chemicals

Executive Summary

PowerTech Water's ElectraMet™ product line for heavy metals removal outperforms the leading solutions in the field. ElectraMet is an electrochemical water purification system for targeted metals removal that is based on PowerTech Water's patent-pending capacitive coagulation process. Unlike costly and labor-intensive chemical solutions on the market, ElectraMet produces no sludge, has 100% water recovery, and reduces overall water treatment costs. Let ElectraMet do the work for you and help you to meet compliance and cost targets.

The Problem

Regulations and environmental pressures dictate how industry handles its water usage. Water reuse is becoming increasingly popular and discharge limits more stringent. Companies are quickly learning they must take on the added role of managing their water treatment, which is costly and time consuming.

Our Solution: The ElectraMet Advantage

The ElectraMet system eliminates the burden of water treatment and allows companies to focus on their core business. Once installed, maintenance is minimal - set it and forget it.

What is ElectraMet?

The ElectraMet system uses an active filtration process called capacitive coagulation to remove heavy metals from water streams. ElectraMet combines electrochemistry and carbon materials to produce a filter with unmatched specificity, efficacy, and longevity. By applying a small voltage to the filter module, all forms of metal contaminants (complexed, particulate, and free ions) are removed through adsorption onto carbon electrodes and precipitation to immobilized metals, or solid metals/oxides, that are then filtered out. Figure 1 demonstrates how this process works. Once the filter is spent, it can easily be removed from the housing and replaced.

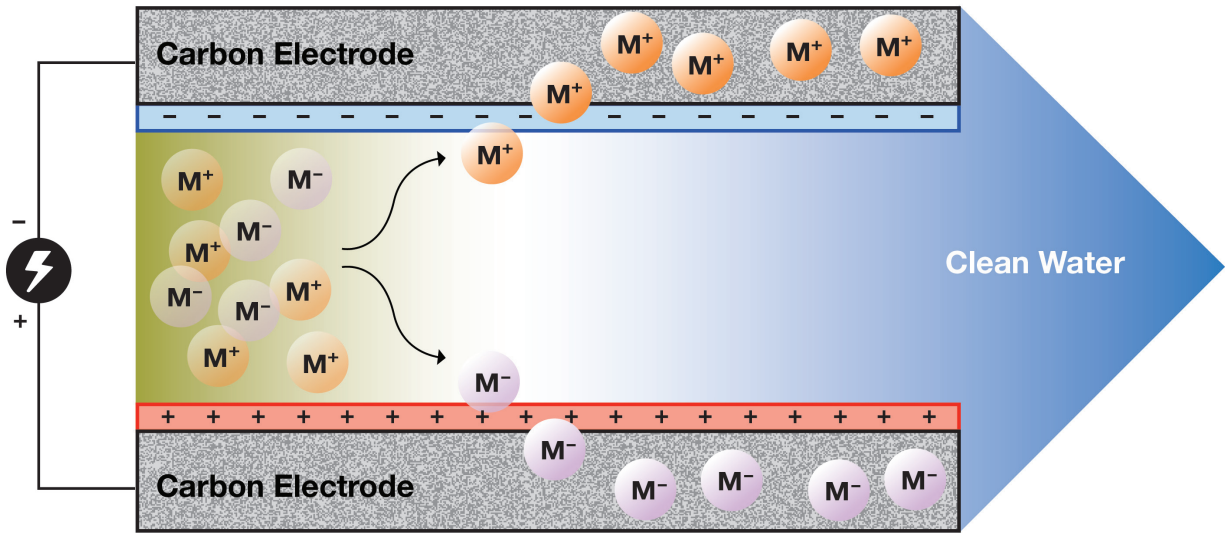

Figure 1: Influent water contaminated with heavy metals (M) flows through the ElectraMet system, where the metals precipitate and are filtered out by the carbon electrodes to provide clean effluent water.

ElectraMet vs. Traditional Methods

Technology	CapEx	OpEx	Energy Consumption	Sludge By-Product	Metal Specificity
ElectraMet	**Low**	**Low**	**Low**	**No**	**High**
Chemical Coagulation	Med	High	Low	Yes	Med
ElectroCoagulation	High	High	High	Yes	Low
Ion Exchange	Low	High	Low	No	Med/High

ElectraMet Benefits

- No sludge
- No CapEx
- Small footprint
- Modular design
- Real-time monitoring of system & filter health
- Fully automated process
- Active filtration process
- High specificity for metals
- High filter capacity
- Low cost materials
- Low power

Applications

ElectraMet has been proven to remove…

- Lead (Pb)
- Copper (Cu)
- Iron (Fe)
- Manganese (Mn)
- Nickel (Ni)
- Zinc (Zn)
- Chromium (Cr)
- Cobalt (Co)
- And other metals

making it ideally suited for battery, electronics and metal finishing wastewater treatment.

Case Study: Lead-Acid Battery Manufacturer

	Sludge	Influent (Pb; ppm)	Effluent (Pb; ppm)
Chemical Coagulation	Yes	5	0.15
ElectraMet	**No**	**5**	**0.04**

	Footprint (square feet)	Weekly Labor (hours)	Cost ($/m³)
Chemical Coagulation	2,000	10	21
ElectraMet	**20**	**0.5**	**5**

To find out how ElectraMet can work for you, contact us at:

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ElectraMet™

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