Electro-Aeration Data sheet: Poly-Aromatic Hydrocarbon disinfection water application

With potential for PFAS remediation in drinking water

Electro-Aeration has introduced a technology based on the electro-catalytic principles of disinfection through anodic reactions. Electro-Aeration advances take this nascent science to the next innovative level. This overall breakthrough is called Electro-Aeration and as the name implies utilizes electricity in water to generate oxygen or aeration in a body of water.

The chemical reactions generated by Electro-Aeration's specific and patent pending anodic coatings, spatial geometry and current density allows us to accomplish the following:

1. Efficient disinfection avoids the generation of Disinfectant By Products (DBP) by concurrent generation of Reactive Oxygen Species, thus completing redox reactions.
2. Very rapid flow decontamination or oxidation through without the addition of NaCL or other chemical compounds.
3. As a complete reaction and depending on initial water quality, we attain lower turbidity levels without the need for media or filtration.
4. By monitoring flow and current density, we can accomplish BOD reduction on waters of any conductivity.
5. Scalability to any quantity of water by use of our modular 20-foot containers in parallel.
6. Low energy consumption attained through spatial geometry of the anodes/cathodes.
7. Increased DO levels which concurrently lower BOD, such as bacteria, Nitrogen species and organic COD.

The original testing notes are as follows:

Notes on Stena water test results.

A tote ($1m^3$) was delivered to our laboratory in Sweden for processing with our reactor system.

Measurement Notes:

Analyses: DO: Dissolved Oxygen increased 2.61 mg/l. Increased DO in water indicates a proportional decrease in BOD-bacteria and N compounds. Increased DO saturation is also vital for remediation and increasing sea life potential. The ship ultimately becomes a wastewater treatment plant discharging oxygen rich water.

ORP dropped 374 mV to minus (-) 145. A negative ORP reading indicates that a substance is a reducing agent. The lower the reading, the more anti-oxidizing it is. This drop indicates that we created an anti-oxidant rich water. Turbidity-self-explanatory, clearer water means less particulates.

Results: flow through roughly 100 l/m 1-minute residence time.

Device Model = Aqua TROLL 600

Date Time	DO Mgl	DO (%Sat)	Oxygen (Torr)	pH	pH mV	ORP (mV)	Turbidity (NTU)	Conductivity (ÂµS/cm)
7/3/20 Before	**12.43**	**111.36**	**171.05**	**8.59**	**(89.42)**	**229.05**	**31.94**	**103.33**
7/3/20 After	**15.04**	**134.71**	**206.92**	**8.15**	**(64.47)**	**(145.44)**	**20.75**	**94.92**

Resultat & Dataöverföring filer för ALS Arbetsorder: ST2008687 | Er referens: Stena-Vinga 6 July 2020			
(copy available on request)			
ELEMENT	SAMPLE	Open Loop-Before	Open Loop-After
Sampling Date		2020-07-01	2020-07-01
SO_4, sulphate	mg/L	**1750**	**43.1**
Sulphite as SO_3^{2-}	mg/L	**5.9**	**<5.0**
Naphtalene	µg/L	**0.485**	**<0.030**
Fluorene	µg/L	**0.022**	**0.024**
Phenantrene	µg/L	**0.026**	**<0.020**
Sum PAH 16	µg/L	**0.533**	**0.024**
Sum carcinogen PAH	µg/L	**<0.035**	**<0.035**
Sum other PAH	µg/L	**0.533**	**0.024**
Sum PAH L	µg/L	**0.485**	**<0.025**
Sum PAH M	µg/L	**0.048**	**0.024**
Sum PAH H	µg/L	**<0.040**	**<0.040**
S, sulphur	mg/L	**686**	**14.1**
nitrite as N	mg/L	**0.0770**	**<0.0020**
NO_3-N, nitrate as N	mg/L	**<0.060**	**0.820**
Nitrite	mg/L	**0.253**	**<0.0050**

Electro-Aeration is in the process of conducting further testing as well as designing a 20-foot standard container that could process 8-10,000 m^3 of scrubber water per 24-hour day. Or (7 m^3/minute) with an energy consumption: (+/)20 Kw/H total daily cost: 500 Kw/H