ELECTROCOAGULATION

Electrocoagulation is based on a science discovered by Michael Faraday over 300 years ago. During the last quarter of the 20th century many designs for commercial systems were presented to the market but none were able to achieve the necessary operational and commercial criteria to make a successful project.

The OPS Ltd design is the first application of EC technology which can be used in almost all industries and operational environments; it is safe to operate; easy to maintain and operationally robust. This design has been patented in Europe.

OPS Ltd and their partners have built and sold systems for use in treated hydrocarbon based waste products (see examples in photos below); and also have a trailer based system which is currently available to run full-scale demonstrations on clients' site in the UK and Europe

Key Advantages of Electrocoagulation

- **Unmatched ability to remove particulate and FOG's**
- **No requirement for use of polymer or de-emulsifier**
- **Sludge volume reduced by 80 % compared to polymer systems**

Figure 1: Containerised EC system for use in the UK Oil & Gas Sector

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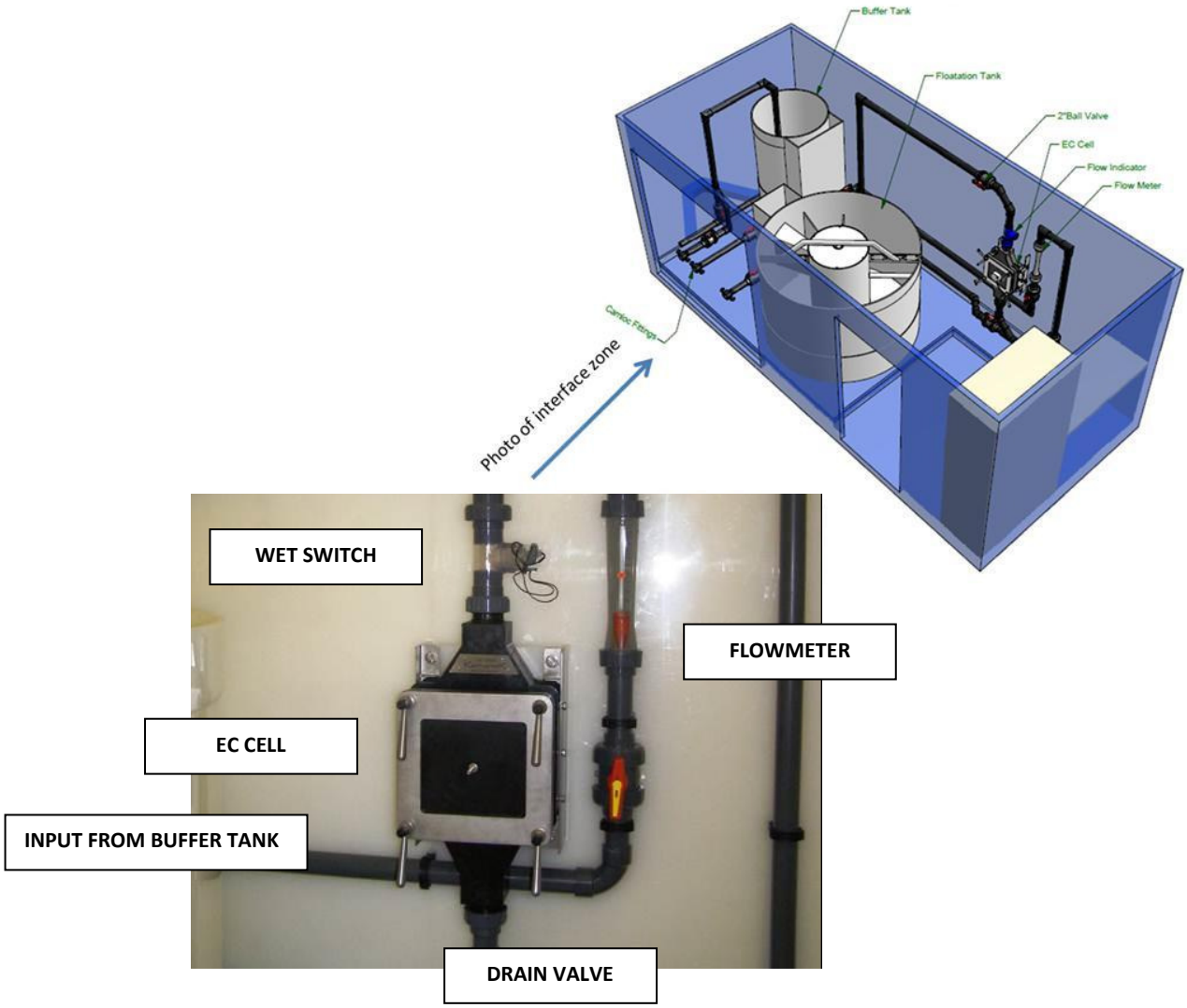
Maintenance and Operability

A key design aspect of the OPS Ltd EC cell is its robust construction and ease of maintenance.

- The cell is manufactured from HDPE (high density poly-ethylene) and is resistant to chemical degradation by any waste stream
- The Cell has a drawer at the front which permits access to the consumable metal plates – these can be replaced in less than 2 minutes – and the cell returned to operation.
- Cells are designed such that plates need to be replaced approximately every 3 to 9 months
- Electrical consumption is low and if further reduced with increasing conductivity of the water

Figure 2: Schematic of trailer interior



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Results

The following results have all been measured by independent laboratories on behalf of clients. These results all relate to the type of contamination anticipated to be present in the lake.

Legend:

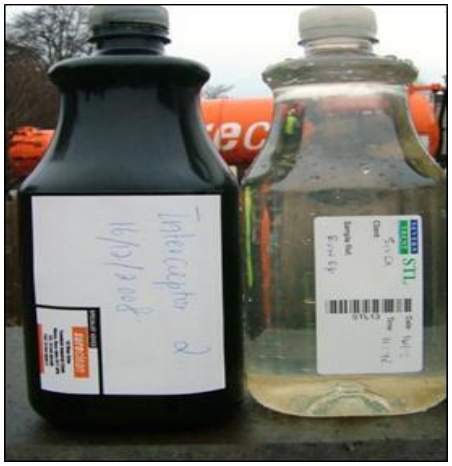
TSS = Total Suspended Solids

TPH = Total Petroleum Hydrocarbons

COD = Chemical Oxygen Demand

Bilge Water	TSS	Fe	Zn	TPH
Raw Influent	990	180	6.1	1,600
Processed	**90**	**1.1**	**0.032**	**9.5**
Reduction	**91%**	**99%**	**99%**	**99%**

Offshore 'Black Water'	Total Toxic Metals	TSS	TPH	COD
Raw Influent	69.5125	1,470	>100,000	8,540
Processed	**0.698**	**221**	**4.04**	**3,430**
Reduction	**99%**	**85%**	**>99%**	**60%**



Mine Water	TSS	Fe	Zn	Cu	TPH
Raw Influent	1,300	88	0.38	0.1	58
Processed	**29**	**35**	**0.16**	**0.019**	**2.2**
Reduction	**98%**	**60%**	**58%**	**81%**	**96%**

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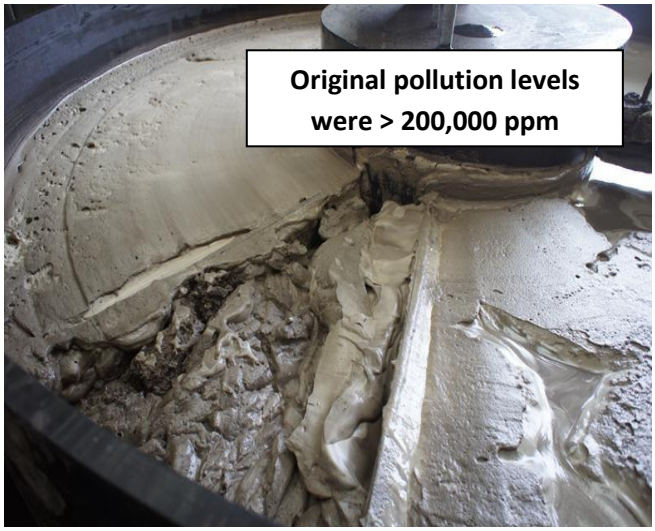
Trial

Trial Date	Wastewater Source	Samples	Parameters Analysed		
			TSS (ppm)	COD (ppm)	Oils (ppm)
Tuesday, 6 July 2010	Oil/Water Interceptor	Before	2,359	No Reagents Available	589
		After	17		4
		% Reduction	99.28		99.32
Friday, 9 July 2010	Oily Water from Skip No. SVS 12	Before	30,600	22,030	3,400
		After	50	1,154	5
		% Reduction	99.84	94.76	99.85



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