

# Used/Recovered Completion Brine Treatment



## TREATMENT OVERVIEW

Global Advantech's process for the treatment of used/recovered completion brines removes sulphate cations, suspended solids, heavy metals, hydrocarbons and most other organic compounds,

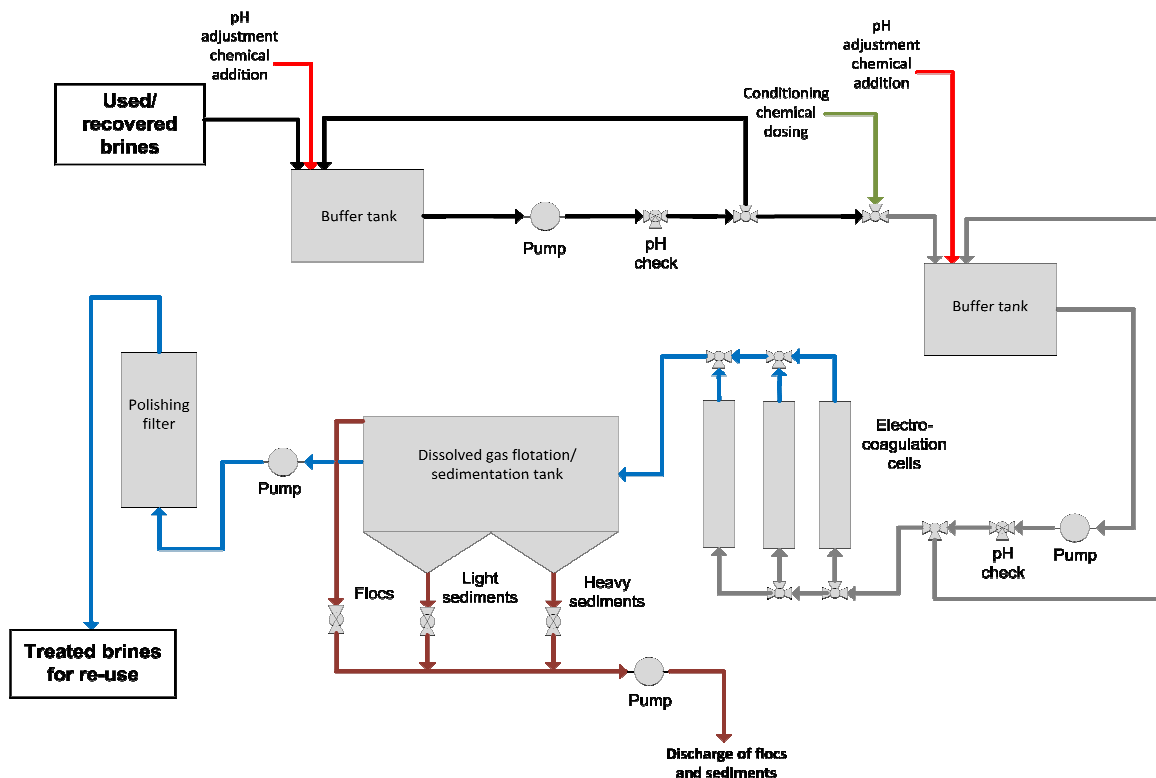
thus allowing their re-use and lowering completion costs. The process combines chemical treatment with electrocoagulation.

## GLOBAL ADVANTECH'S TREATMENT SYSTEMS

Global Advantech's used/recovered brine treatment systems have a number of innovative advantages:

- Simultaneous removal of sulphate cations, suspended solids, heavy metals, hydrocarbons and most other organic compounds.
- Continuous flow operation.
- Lower capital, operation and maintenance costs compared with membrane filtration systems.
- No high pressure pumps, therefore much lower energy requirement than comparable throughput membrane system.

- No water pre-treatment required for the removal of suspended solids, heavy metals, hydrocarbons and most other organic compounds, biological material or scale-forming calcium salts.
- Depending upon conditioning chemistry selected for a particular brine/application, the main by-products from the process may be used to strengthen cement after being washed free of chloride ions.



Typical configuration for Global Advantech's system for the treatment of used/recovered brines

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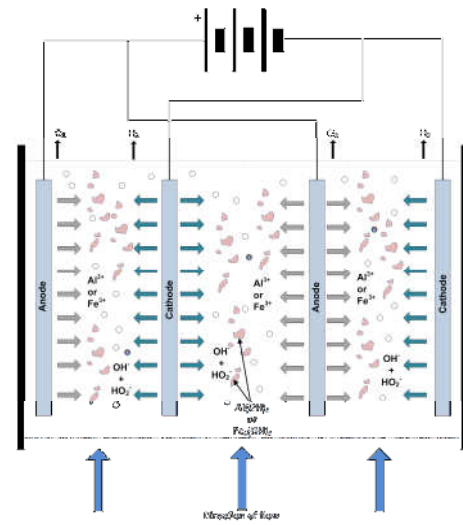
Energy House, 14 Maurice Close, Kimbolton, Cambridgeshire, PE28 0HD, United Kingdom  
 † +44 (0)845 519 0159 / e enquiries@globaladvantech.com / www.globaladvantech.com

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## ELECTROCOAGULATION PROCESS

Electrocoagulation is a proven and cost effective electrochemical process to remove most contaminants/pollutants from water: suspended solids, emulsified hydrocarbons and many dissolved organic compounds, heavy metals, arsenic, bacteria, algae, larvae, etc., from water for re-use/discharge. The electrocoagulation process is continuous flow and is low in energy consumption.

Electrocoagulation cells consist of pairs of parallel metal plate electrodes separated by a few millimetres with a low voltage applied at high current densities. The current flowing between the electrodes destabilises electrical charges, which maintain suspensions of particulates, e.g. clays, and emulsions/micro-emulsions of hydrocarbons and insoluble organic compounds. The particulates coagulate together into flocs. The hydrocarbons and insoluble organic compounds coalesce into larger droplets and rise in the flotation/sedimentation tanks.



For more information, please refer to Technology Data Sheet: *TDS801 Electrocoagulation and Advanced Electrochemical Oxidation*.

## GLOBAL ADVANTECH'S ELECTROCOAGULATION SYSTEMS

Global Advantech's systems contain a number of innovative design features and benefits to ensure effective and continuous operation:

- Compact single and full-size multi-cell systems, capable of handling from 1m<sup>3</sup> per hour to more than 1,000m<sup>3</sup> per hour water flow available.
- Cells use optimised electrochemistry, with a large number of parallel plate electrodes for efficient operation.
- Hydrodynamic design of cells ensures water flow is through the whole cell volume and electrodes are evenly consumed.
- Upward flow cells to prevent sediment build-up in the cells, with air injection to dilute hydrogen gas below lower explosion and flammability limits prior to flotation/sedimentation tanks.
- All systems are PLC controlled, programmed to prevent metal plate passivation (development of oxide layers of the surfaces of electrodes, which acts as insulation preventing cells from continuing to operate).
- Instrumentation options include plate consumption monitoring, telemetry for remote monitoring.
- The cell electrodes are mounted in carrier cartridges to facilitate rapid replacement.
- Multi-cell configurations enable a single cell to be taken off-line for maintenance.
- All cells are mounted inside safety cages with interlocks to prevent access during operation.

Electrocoagulation systems are available configured for safe area operation and for operation in ATEX Zone 2.



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