PRODUCED WATER TREATMENT

Water Reuse in Hydrocarbon Processing Facilities

Vista has a long history of engineering some of the most successful processing facilities in the western Canadian energy sector. Our experience includes designing specialized processes to maximize a facility's ability to reuse produced water.

Reusing produced water is essential to limiting environmental impacts, lowering operation costs and gaining regulatory approval, especially for commercial facilities.

Vista helps clients analyze their water to select proven technologies and implement a cost-effective, fit-for-purpose solution.

Highlighted Water Treatment Capabilities

TECHNIQUE	DESCRIPTION	USE
Ion Exchange (SAC/WAC)	Vessels containing resin can be used for removal of hardness ions (calcium and magnesium) as well as other multivalent ions.	» Hardness removal » Multivalent ion removal
Lime Softening (Warm & Hot)	Using a combination of chemicals, a lime sludge bed can be created which is capable of reducing and removing a variety of contaminants from the inlet water.	» Silica Removal » Bulk Hardness Removal » Alkalinity Reduction
Filtration	Used for removal of particulate matter in water streams as well as final stages of hydrocarbon removal.	» Hydrocarbon removal » Iron removal » Suspended solids removal
Gravity Separation	Used for bulk hydrocarbon removal, the careful design of gravity separation system is critical to ensure maximum efficacy of installed residence capacities.	» Hydrocarbon removal
Induced Gas / Static Flotation	Gas bubbles are introduced into water stream to facilitate the flotation of hydrocarbon within the unit. Commonly used as a secondary oil removal process.	» Hydrocarbon removal
Evaporation	A technology using thermal or mechanical energy to create a distilled water stream available for reuse.	» Total dissolved solids removal
Centrifuges	Employed to remove bulk suspended solids from a water stream resulting in a sludge and clean centrate stream.	» Suspended solids removal

Quantifiable Experience

Using figures published by the Alberta Energy Regulator, the processing facilities engineered by Vista treat an average of approximately **38.7 MM m3 of produced water** each year, more than twice the volume of Calgary's Glenmore Reservoir.

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Highlighted Water Treatment Capabilities

TECHNIQUE	DESCRIPTION	USE
Membrane Separation	Stripping of dissolved gas from a water stream can be critical to meet the water quality requirements of downstream equipment.	» Dissolved gas removal
Inclined Plate Settler (Lamella Decanter)	Removal of large volumes of solids/particulate matter from a water stream.	» Particulate removal
Chemical Treatment	Injection of chemicals is often required to facilitate other separation processes. Preparation, feed and measurement of the chemical streams is often critical to success of the downstream equipment.	» Oxygen Control » Precipitation (e.g. oxidation of iron for filtration) » Chemical preparation for use (e.g. flocculants)

Contaminated Water: An Avoidable Risk

In processing facilities, common contaminants such as calcium and magnesium can combine with silica to form metallic silicates. These precipitate and stick to facility piping, forming a glass-like insulating barrier on the walls.

The insulating barrier inhibits heat transfer, leading to poor performance, dangerous working conditions, equipment damage and ultimately resulting in failures requiring extensive downtime and repair costs.

EXAMPLE OF INSULATING BARRIER ON TUBE WALLS

TUBE FAILURE DUE TO CONTAMINATED WATER

Reducing Costs with Customized Solutions

Industry standard methods of preventing silicate formation have high capital and operating costs, and use hazardous chemicals. Vista has over 30 years of experience successfully implementing customized solutions in new and existing facilities for our clients to meet their water needs with the most cost-effective solution.

Contact Vista

For more information about Vista's water treatment capabilities, please contact our Business Development group at businessdevelopment@vistaprojects.com

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ENGINEERING OIL & GAS FACILITIES