

AHT Product Scope - Wash Water Conditioning



Overview

Within the Wash Water Conditioning unit, the process water from wet gas cleaning is efficiently treated and recycled. Through a multi-stage separation process, including flotation and solid removal, contaminants such as fine particles, tar residues, and suspended matter are extracted from the wash water. The separated solids are discharged for disposal, while the purified water is returned to the gas conditioning system. This closed-loop approach significantly reduces freshwater demand, lowers wastewater generation, and ensures stable long-term operation of the overall gas conditioning process.



Products

Through our technology, AHT CleanTec offers a specialized Wash Water Conditioning System designed for closed-loop sustainability by utilizing advanced dissolved air flotation and flocculation technology. As such it ensures highly efficient solids separation from water, and integrated heat recovery that can be recycled for usage in other processes.



Wash Water Conditioning

Technical Data

HydroCycle Specifications	
Foul Water Capacity	~35 m³/h (@~44°C)
Solids & Tar Removal from Foul Water	Depending on Process (With correct settings, wash water conditioning allows for a full recycling of foul water for the purpose of wet gas conditioning)*
Outlet Pressure of Wash Water	<1.5 bar(g)
Outlet Temperature of Wash Water	~40°C
Total Heat Recuperated from Wash Water	~60 kW (@~32°C)
Fresh Water Consumption	<1 l/m³
Additive Consumption	~30 ml/m³ (Flocculant) ~45 ml/m³ (Coagulant)

Process Breakdown

- 1** A flocculating and coagulating agent is dosed into the contaminated wash water to bind and agglomerate suspended particles into larger flocs, preparing them for efficient separation
- 2** Next, the water-floc mixture is pumped into the flotation tank, where dissolved air is introduced to promote separation of the flocs from the water stream.
- 3** After that, air bubbles carry the agglomerated flocs to the water surface, forming a concentrated layer which is skimmed off, allowing effective solid removal without the use of filters.
- 4** Separated solids are continuously removed with a surface scraper and transferred to designated containers for disposal or possible reuse in the gas generation process.
- 5** Following this, the conditioned wash water is passed through a wash water heat exchanger, returning thermal energy into a low-temperature circuit that can be reused (e.g., for feedstock drying).
- 6** Finally, the treated and cooled wash water is recycled back into the gas conditioning plant, ensuring efficient reuse with minimal fresh water demand.

Benefits

Listed below are an example of some benefits that our Wash Water Conditioning can provide.

01 Low Maintenance Cost

As our conditioning unit operates with an optimized water and additives consumption, this results in a robust process where maintenance requirements are minimized, resulting in a low maintenance cost overall.

02 Closed-Loop Operation

As the treated wash water from the conditioning process is recycled, this means that it can be reused in the conditioning process again, thus forming a closed-loop operation.

03 Efficient Separation of Solids

Through our process, contaminants are efficiently separated into solids without filters, by using flocculants and flotation units. This forms a sludge that can be disposed of, or recycled back into the gas-generation process.

04 Optimized Heat Recovery

With our optimized conditioning process, thermal energy is efficiently recovered via the wash water heat exchanger. As such, the heat can then be reused for other processes, thus reducing overall energy requirement.