

Case Study - Upflo Sand Filter Plant



Application Filtering Thickener Overflow
Location Pilbara

Waterex Upflo Filters

The Waterex range of Upflo Filters are designed for applications having high dirt holding demands. They are typically used where coarser materials may also be present in appreciable quantities.

Upflow filtration offers several advantages including in-depth filtration, graded filtration from coarse to fine in a continuous media grading plus a high service filtration velocity. Waterex Upflo Filters in several applications may be cleaned with the raw feed water. These features make the Upflo Filter the most robust media filter for onerous high load applications.

Application

Providing a normal running capacity of 500 m³/hr for 24 hours, a day the purpose of these filters is to strip 100 mg/l from thickener overflow liquor. This total suspended solids (TSS) can rise up to 200 mg/l under adverse conditions.

The design has the flexibility and capacity to increase the flow rate to 1000 m³/hr peaking at 1400 m³/hr or alternatively accept a peak dirt load of 500 mg/l for short duration or even both.



Location
Pilbara



Upflo Filters

The Challenge

The challenge of this project was to provide a filter plant that could handle the high amount of TSS while providing the required duty point of 500 m³/hr. The plant was further required to fit in the limited amount of space provided. Being located in a remote area with limited supply support services it was also desirable to design a simple filtration system that is easy to operate. Double decker Waterex Upflo Filters were therefore the filters of choice.

The Waterex Approach

Waterex selected to use two Upflo Filters, each with two beds. This double decker array provides a compact footprint to filter 400-1000 m³/hr capable of a peak flow of 1400 m³/hr. The air scour feature with controlled backwash/backflush water cycles ensures the effective cleaning of the media through each layer of its stabilised beds, each bed being cleaned in sequence.

The Result

At the design flowrate a single train bed Upflo Filter reduced the raw feed TSS from 255 - 285 NTU (125-147 mg/l) to 33 NTU (15 mg/l) TSS.

The catalytic action of the media removes iron precipitates and ions from the process liquor. The effective air scour/backwash cycles indicates that the small amounts of excess polymer are being flushed to drain. The second twin bed Upflo Filter is therefore run as a 100% standby unit providing the intended maximum flexibility demanded of this critical process liquor recovery plant.



Plant Overview



Piping



Media in Filter