

FilterClear™



Wastewater Reuse: Nirlon Commercial Park



Background

Nirlon is a commercial park of offices in Mumbai, India, which uses 800 m³/day of water. The commercial park has its own wastewater treatment plant comprising an aerated balance tank, a moving bed bioreactor (MBBR) followed by a dissolved air flotation (DAF) plant. Mounting pressures on water efficiency, together with the opportunity to reduce the costs of water supply and wastewater disposal, led Nirlon to install a water recycling system.

Solution

A FilterClear™ filter was installed at Nirlon in 2013 to remove residual solids from the treated wastewater, following the DAF plant. Up to 600 m³ per day of filtered water is chlorinated and recycled for toilet flushing, reducing the costs for water supply and disposal by approximately 75%.

The FilterClear™ plant comprises a single filter containing four layers of media, namely anthracite, silica, alumina and magnetite. To maintain permeability, the filter is automatically cleaned by periodically air scouring and backwashing with product water. During these backwashes, which last for up to 15 minutes, the filter feed is stopped and wastewater accumulates in the balance tank. Using the existing flow balancing capacity has avoided the need for a standby filter to treat flows during backwashing.



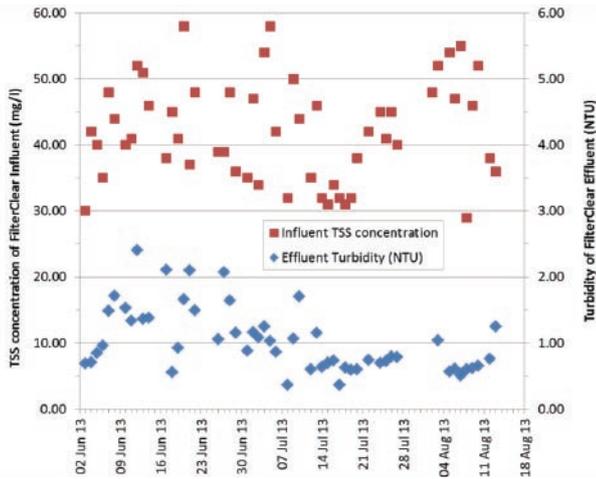
Figure 1. FilterClear™ Filter Containing Four Layers of Media

FilterClear™

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Figure 1 Performance of FilterClear Since Commissioning



The total suspended solids (TSS) concentration of the influent (DAF effluent) has varied from 30 mg/l to 60 mg/l. The TSS concentration of the filtered water is too low for practical measurement so turbidity is automatically measured instead. The data demonstrate that filtration performance improved following commissioning, with turbidity averaging only 0.70 NTU over the last month of the monitoring period.

The filter automatically backwashes when the inlet pressure reaches 1.4 bar; following backwashing, the inlet pressure drops to 0.3 bar. The average filtration pressure is approximately 0.7 bar.

Despite the comparatively high solids loading on the FilterClear™ plant, the average run time between backwashes during the monitoring period was between 8 and 16 hours. Given the comparatively high concentration of the filter influent, such runtimes represent excellent performance.



The biological treatment plant was commissioned at the beginning of May 2013 and the FilterClear™ plant was commissioned at the beginning of June, operating at a loading velocity of 24 m/h. Figure 1 shows the daily performance of the FilterClear plant since commissioning.

Conclusion

FilterClear™ has exceeded the client's performance requirements by a substantial margin and has been chosen for the treatment plant to serve Phase 2 of the commercial development.

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