Dissolved air flotation for algae removal



Dissolved Air Flotation (DAF) units ready for deployment.

Xylem has recently completed the installation and startup of a DAF-based treatment system for the removal of algae and other suspended solids from a small municipal treatment system in Texas. The primary objective of the system was the reduction of TSS concentrations from 100-300 mg/L (mainly algae) to below discharge limits of 90 mg/L.

The system was installed by the client adjacent to the final of a series of facultative treatment ponds prior to direct discharge to a stream. The municipality had been having problems in meeting their effluent quality limits for TSS due to algae blooms in the ponds during warm weather months. Other treatment options, including the use of biocides, had failed, leading to the DAF option. Wastewater from the pond is pumped to the flocculation tank ahead of the DAF. A cationic polymer is added to the tank to facilitate flocculation, followed by removal of these solids in the DAF. The DAF solids are discharged by gravity to a holding tank for pumping and disposal. The clarified effluent is discharged through an existing flow monitoring system and out to the receiving stream.

Flocculation
Xylem Model FC-50-P Flocculation Tank System including an HDPE flocculation tank and an Xylem Hellbender® Model HBM-125 mixer with VFD control

Dissolved Air Flotation
Xylem Model RT-30 DAF, stainless steel construction, 100 gpm capacity, recycle pump, top skimmer, gravity bottom discharge

Polymer Addition
Polymer emulsion blend/feed system interlocked with DAF operation

Controls
NEMA 4X, stainless steel enclosure with motor load protect ion and interlocked with feed pump system for manual start/automatic shut down operation

> “Members of the city council were very pleased... they could not believe the results.”
>
> Consulting engineer for municipality

System performance

Parameter	Influent	Effluent	Removal percentage
Flow, gpm	75	N/A	N/A
BOD, mg/L	48	10	79.2
TSS, mg/L	116	24	79.3



DAF systems can effectively mitigate algal blooms for municipal applications.



DAF systems are ideal rentals as well as permanent solutions.

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