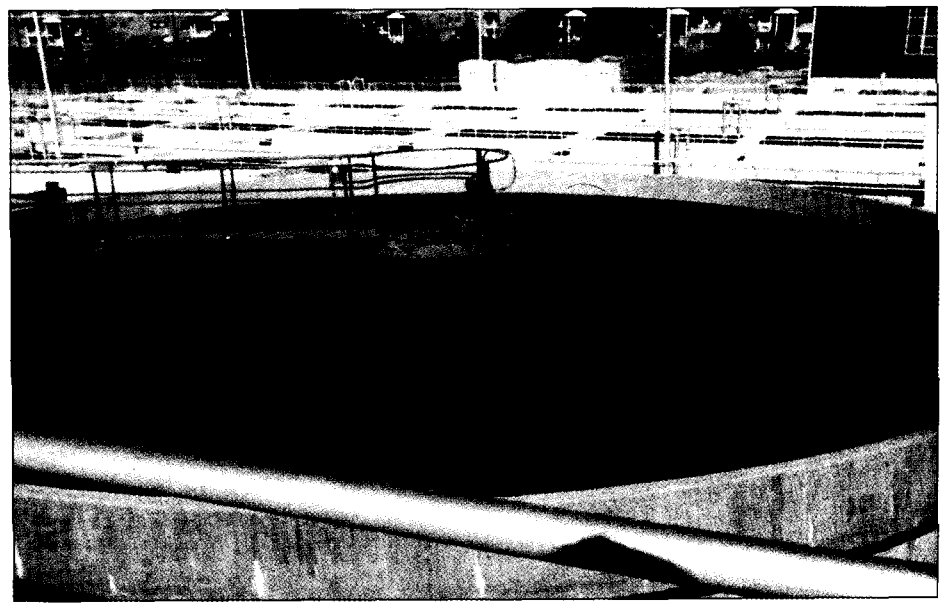
CASE Study

Rehabilitation of
Wastewater Treatment Aeration Systems

By Circul-Aire

The city of Bridgeport, Connecticut, employed different technologies to increase both the quality and efficiency of the West Side wastewater treatment plant.



Wastewater sludge settling tank

Exhaustive demands presently imposed on municipal wastewater systems in most cities in North America, primarily due to increased population density, has forced a substantial amount of municipalities to review their existing infrastructure. The city of Bridgeport, Connecticut is one such municipality that required a substantial refurbishment of the West Side wastewater treatment plant. The Water Pollution Control Authority of Bridgeport mandated the Kasper Group Inc and Hazen and Sawyer (PC) to design and implement the modifications to their West Side plant.

Outdoor air particulate reduction for aeration process

A substantial amount of outside air (32,000CFM) was required to supply to the newly designed aeration system. Since the wastewater plant is located in close proximity to the Eastern Sea Board, local concentrations of salt, present in the outdoor air, posed a corrosion risk as well as increased potential of contaminating the aeration process. The engineers faced a second design constraint in regards to the substantial amount of particulates that were present in the outdoor air year round. As a result, based on these limiting parameters, a Circul-Aire Modular-808-SP was supplied to ensure contaminant free process air.

Custom air handler designed to meet industrial design parameters

In order to meet a very elaborate and detailed design specification, Circul-Aire provided a three sectioned modular unit, consisting of two air filter assemblies, each 168"Lx105"Wx112"H. A third section, the central air plenum, was manufactured to be 48"Lx105"Wx112"H. The three sections were field assembled by blind flanges inherent in the respective section structure.

The two filter assemblies were constructed to be the exact mirror image of one another, thereby allowing outdoor air to enter from either side independently or simultaneously, depending on the partial or full load requirements. Each section in direction of air flow consisted of an intake plenum, 20% efficiency automatic roll filter, intermediate stage filters designed to meet 90% efficiency ASHRAE Test Standard 52-76 and a final stage filter assembly incorporating 95% efficiency on 0.3 micron particles when

Circul-Aire model: Modular-808-SP

tested using DOP test method. A stainless steel motorised damper assembly was the last component in place to allow for air flow control before the air entered the central plenum.

Superior structural design techniques

The filter system enclosure was constructed to meet exceptional structural specifications, incorporating a 16 gauge wall construction and a 10 gauge galvanised construction for the floor system. The entire system was painted completely inside and outside to achieve a 10mil paint thickness using a 3 stage anti-corrosion paint coating.

A total of five airtight heavyweight steel marine-type doors were installed with double pane glass viewports in each. The Circul-Aire differential pressure monitoring system(DPMS) was incorporated into the control sequence to ensure filter pressure drop and dust loading analysis could be monitored on a continuous basis.

Maintenance monitoring and start-up inspection through Tech-Chek™

The maintenance and start-up inspection of the air handling filtration unit has also been simplified with the TECH-Chek™ Services supplied by Circul-Aire. With this exclusive service, an analysis of the process can be performed to guarantee filtration efficiency.

This start-up service is monitored by a computerised program from Circul-Aire that indicates the in-situ filter particulate arrestance efficiency.

The particle count analysis, supplied at no additional charge, not only guarantees proper installation, but also ensures the highest performance of the air handling filtration system installed at the West Side wastewater treatment plant.

About the Contributor

Circul-Aire Inc is a subsidiary of Dectron Internationale.

For further information on the contributor, write to us at content@eawater.com