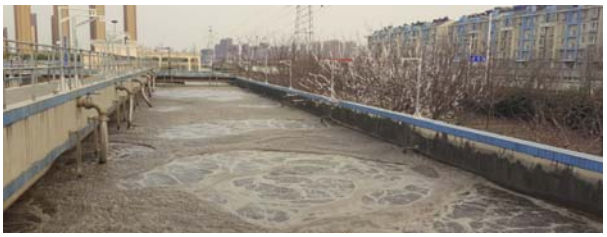
Benefits of IFAS for Enhanced Biological Nutrient Removal

BioCell
MBBR & IFAS Technology



Case study	Municipal Wastewater
Start Up	October 2016
Capacity	200,000 m^3/d
Location	Anhui China

Overview

One of the major concerns regarding municipal wastewater treatment plant discharge is the rising concentration of nutrient compounds, specifically nitrogen and phosphorus.Nitrogen and phosphorus are the primary causes of cultural eutrophication (i.e., nutrient enrichment due to human activities) in surface waters. The most recognizable manifestations of this eutrophication are algal blooms that occur during the summer. Chronic symptoms of over-enrichment include low dissolved oxygen, fish kills, murky water, and depletion of desirable flora and fauna.

Algal blooms can present problems for ecosystems and human society.

Challenges

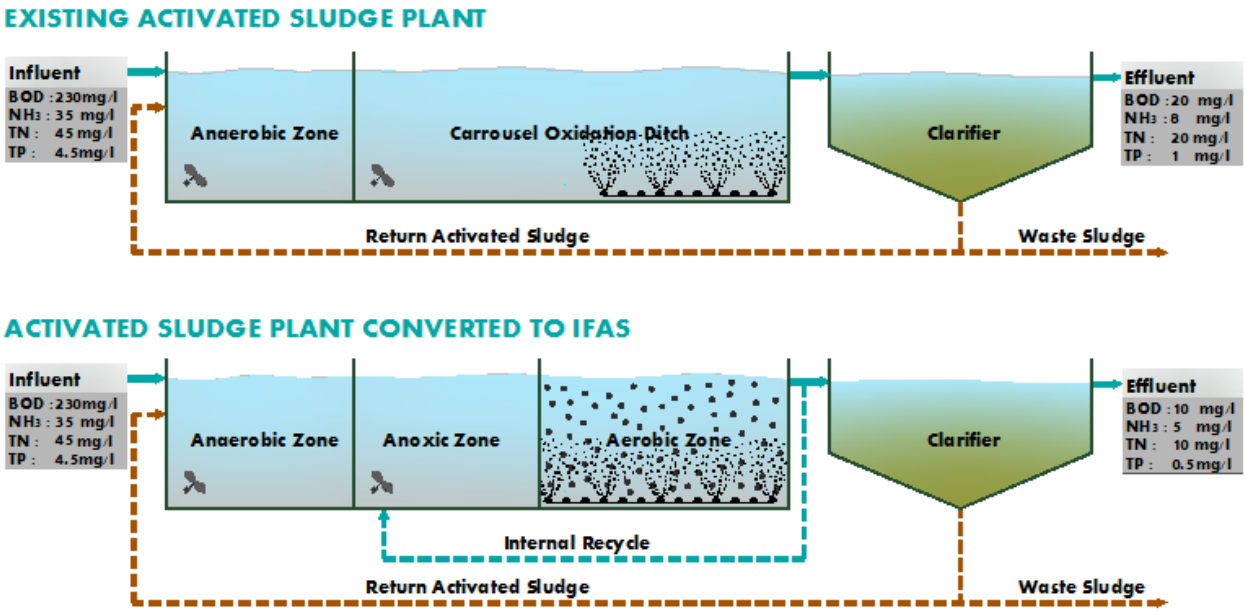
Challenges Faced by Existing Plants Wastewater treatment plants that employ conventional biological treatment processes designed to meet secondary treatment effluent standards typically do not remove total nitrogen (TN) or total phosphorus (TP) to the extent needed to protect receiving waters.However, wastewater treatment facilities are increasingly being required to address this issue by implementing treatment processes that reduce effluent nutrient concentrations to levels that regulators deem sufficient to protect the environment. Implementation usually involves major process modifications to a plant, such as: making a portion of the aeration basin

anaerobic and/or anoxic, which reduces the aerobic volume and limits nitrification capacity. Clarifier solids loading is usually the factor that limits the concentration of biomass available for nitrification, so common practice is to increase bioreactor volume in order to increase treatment capacity. This can be very expensive and sometimes impossible if space is limited.

Solution

One cost-effective solution to achieve Biological Nutrient Removal is the BioCell process, developed by BioCell Company. The BioCell process employs the benefits of fixed-film systems into the suspended growth activated sludge process. This hybrid process is referred to as Integrated Fixed-film Activated Sludge (IFAS) technology.

The BioCell IFAS process is typically divided into a series of stages that include anaerobic, anoxic, and aerobic volumes. Within the BioCell IFAS process, media is filled in the aerobic stages and retained by stainless steel wedge-wire screens located at the effluent end of the process stage.



Results

The plant operates efficiently since the start up. Due to the low water temperature of 10℃, an almost full development of the biofilm was noticed in less than a month.