Veolia Water Technologies Retrofits Wastewater Treatment Facility with New Scaling-Resistant Solution

Food & Beverage | Case Study



KEY PROJECT INFO

CLIENT
Dairy Processing Plant

PROJECT LOCATION
USA

ABOUT THE CLIENT
A leading producer of premium quality mozzarella and the largest US exporter of whey and lactose products.

KEY FIGURES

Flow:	800,000 gpd
BOD:	23,352 lb/d
COD:	34,340 lb/d
TSS:	6,667 lb/d
TKN:	733 lb/d
NH_3-N:	100 lb/d
Temperature:	25°C - 40°C
pH Range:	6.0 - 9.0

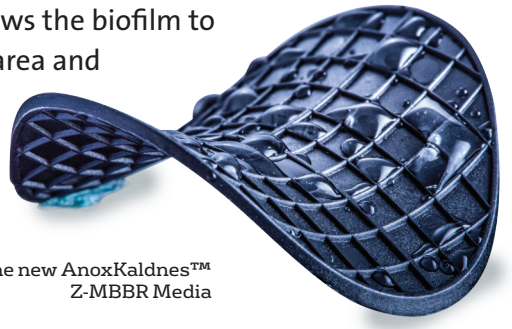
Challenge

Wastewater from dairy operations is typically high in strength, quite variable, and challenging to treat. The wastewater stream at this particular facility had elevated concentrations of calcium and phosphorus. This characteristic created a significant amount of scaling on the biofilm carriers of the client's existing MBBR (Moving Bed Biofilm Reactor). The MBBR was designed to be a pretreatment step prior to an activated sludge process; however, the excessive scaling caused a significant amount of the media to sink to the bottom reactor. This prevented the system from reducing total soluble COD and caused the downstream treatment processes to become overloaded during peak flow rates. The client needed to find a cost-efficient solution to accommodate the increasing flow rates of its high-strength waste stream.

The Solution

Veolia was able to retrofit the client's existing MBBR with the newly designed Z-MBBR media by AnoxKaldnes™.

The Z-MBBR's innovative design creates multiple benefits over traditional MBBR media types. It allows the media to self-clean and maintain a consistent biofilm thickness. While moving in the reactor, the carriers scour each other to remove excess growth and limit scaling. The elevated grid pattern of the Z-MBBR media allows the biofilm to grow within a protected area and maintain a uniform thickness on the carrier.



The new AnoxKaldnes™ Z-MBBR Media

CASE STUDY CONTINUED ON NEXT PAGE



Carriers from the Previous MBBR prior to Retrofit

Wastewater from dairy applications has high amounts of calcium and phosphorus. This characteristic may cause scaling on the media of a Moving Bed Biofilm Reactor and may cause poor COD removal.

The Result

Performance of the retrofitted MBBR with the Z-MBBR media has exceeded expectations. The media has limited scaling and the system is removing an average of 42% of soluble COD.

The enhanced MBBR pre-treatment step has improved the operation of the entire wastewater system. The largest benefit to the client is that it significantly reduces the load on downstream processes to maximize the treatment performance and to provide additional treatment capacity.



The Z-MBBR carriers were retrofitted into the wastewater treatment plant's existing MBBR reactor (Shown Above)



AnoxKaldnes™ Z-MBBR Media

The AnoxKaldnes™ MBBR technology is based on the biofilm principle with an active biofilm growing on small specially designed plastic carriers (shown above) that are kept suspended in the reactor. The technology utilizes the advantages of both activated sludge and other biofilm systems (e.g. biofilters, biorotors, etc.) without being restrained by their disadvantages.

Z-MBBR - THE NEW DIMENSION

The new carrier design is covered with a grid of defined height, allowing the biofilm to grow on the outside of the carrier in a protected environment.

Due to scouring from other carriers, the biofilm cannot grow higher than the grid height, and so biofilm thickness is controlled.

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