

## BiOWiSH® POME

### BiOWiSH® POME Reduces COD and Sludge levels at Palm Oil Refinery Processing Plant – Kalimantan Island, Indonesia



#### Executive Summary

CV Abatemen Karya Bersama, an authorized distributor of BiOWiSH® water treatment products in Indonesia, helped to reduce the high levels of COD and sludge volume at a palm oil refinery processing plant located in Kalimantan Island, Indonesia. This plant belongs to the Minamas Group, one of the largest palm oil groups in Indonesia.

#### Background

##### About BiOWiSH Technologies

Headquartered in Cincinnati, Ohio, BiOWiSH Technologies, Inc. is a global provider of biotechnology solutions for the agriculture, aquaculture and environment management industries.

As part of our environmental management offering, we provide advanced microbial bioaugmentation solutions for the natural treatment of surface and wastewater. Palm oil mill effluent (POME) treatment systems tend to use large volume sequential pond arrangements to provide long hydraulic retention times (>90 days) to allow natural biological degradation to take its course. This leads to very inefficient organic degradation.

BiOWiSH® POME, however, delivers a natural, non-toxic and easily implemented solution to most of the typical operational problems these systems face. The product has been specially formulated for palm oil mill effluent treatment in both aerobic and anaerobic ponds. The technology rapidly breaks down organics and reduces higher concentrations of palm oil. The breakdown and decrease of sludge results in reduced frequency of pond desludging. For more information, visit [biowishtech.com](http://biowishtech.com).

#### BiOWiSH® POME



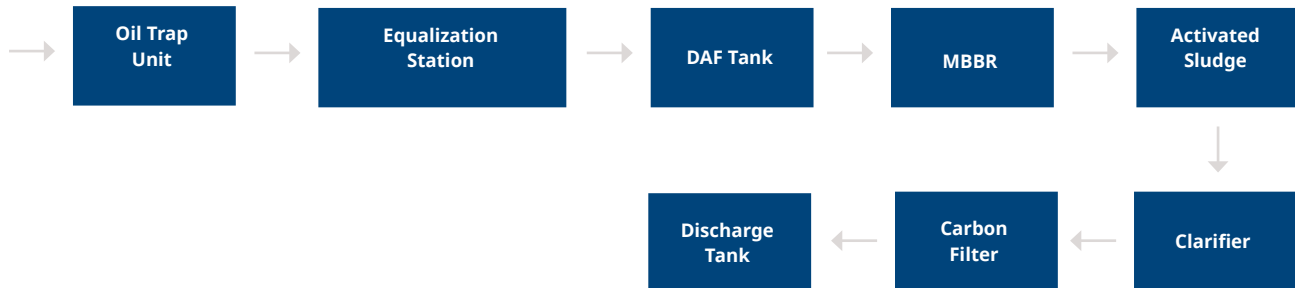
- Accelerates the decomposition of organic waste (sludge)
- Preserves pond hydraulic capacity and treatment outcomes
- Degrades surface crust to improve pond natural aeration
- Reduces odor emissions

## About the Minamas Group

The Minamas Group is one of the biggest palm oil groups in Indonesia, and their oil refinery processing plant is located in Kalimantan Island. The crude palm oil (CPO) being processed here is obtained as raw material from several other locations in Kalimantan Island.

The oil refining process generates 200 m<sup>3</sup>/day of wastewater with chemical oxygen demand (COD) content at approximately 1000 mg/L.

Water Treatment Process Flow Diagram



## Objective

The main objective of bioaugmentation was to reduce the high levels of COD and sludge volume in the aeration tank. CV Abatemen Karya Bersama, authorized distributor of BiOWiSH Technologies in Indonesia, introduced the BiOWiSH<sup>®</sup> POME product in July 2020 in an effort to solve these problems.

## Implementation Program

The dosing was performed daily with 4 kg/day of BiOWiSH<sup>®</sup> POME in the first week as a shock dose, followed by 2 kg/day for the next seven weeks. Starting month three, the site continued with 1 kg/day as a regular maintenance dose. For dosing, the recommended quantity of BiOWiSH<sup>®</sup> POME was dissolved in the water and dosed directly in the moving bed biofilm reactor (MBBR) and aeration tank. Influent and effluent COD levels were monitored on a daily basis throughout the BiOWiSH bioaugmentation program.

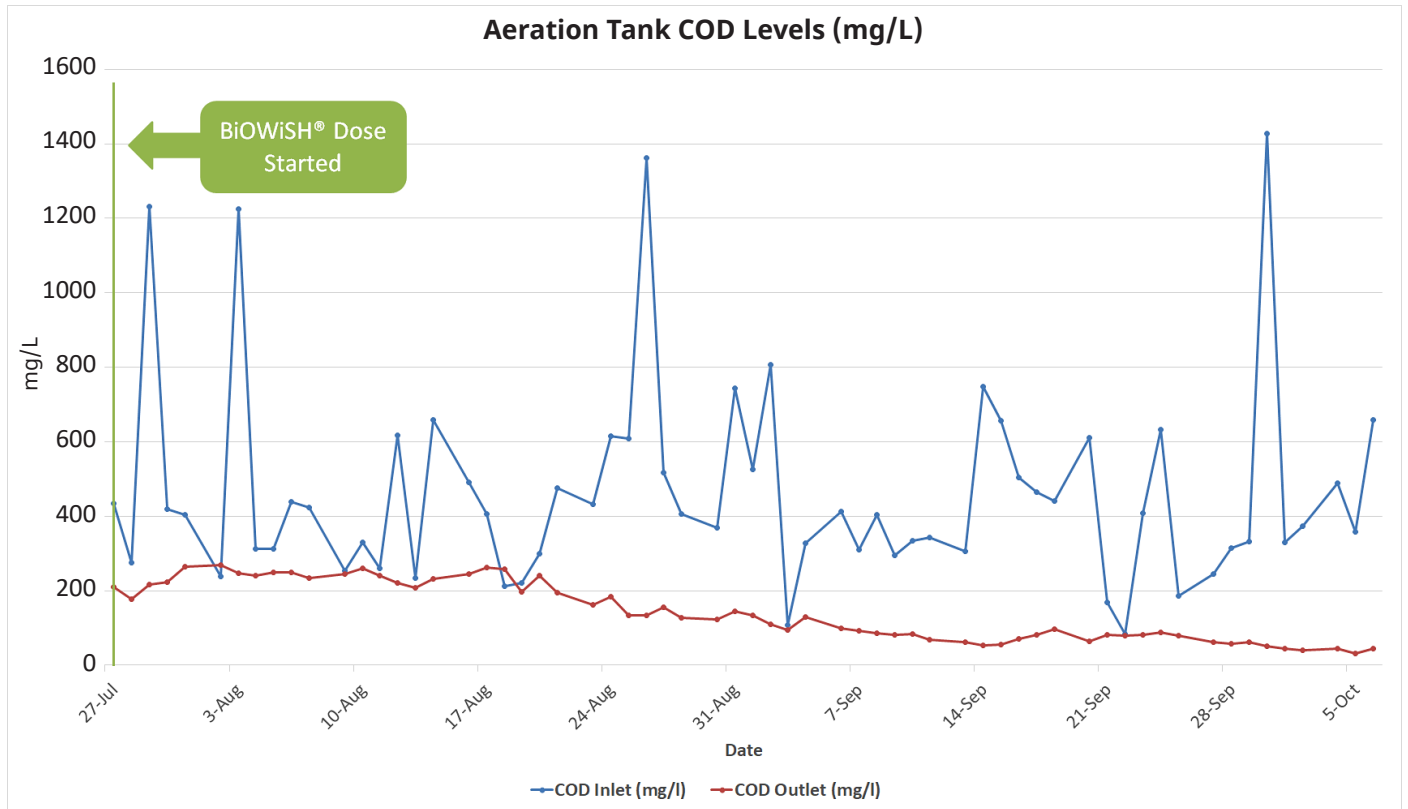


*BiOWiSH<sup>®</sup> POME dosing application*

## Results

Within the first month of the BiOWiSH® POME implementation, the aeration tank outlet showed stable COD levels below 200 mg/L. In the past, the site had always experienced fluctuations in the COD outlet levels, reaching up to 300 mg/L. However, during the BiOWiSH bioaugmentation program, the site did not experience any instability in the COD outlet levels. In the second month, COD levels were observed below 100 mg/L, and starting the third month, COD levels were stable below 50 mg/L.

The site also experienced significant improvement in the sludge volume (SV) in the aeration tank from 90 mL/L in the first month to 60 mL/L in the third month.



COD levels - before and after BiOWiSH® POME Bioaugmentation

Parameter	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 8	Week 10	Week 11	Week 12	Week 13
Inlet COD (mg/L)	553	506	377	400	408	653	502	352	511	353	358	591	509
Outlet COD (mg/L)	230	244	235	239	183	135	123	83	64	80	70	43	38

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## Conclusion

The application of BiOWiSH® POME to the palm oil refinery proved to be highly effective. Significant reduction in COD levels and sludge volume were observed rapidly within the first two months of bioaugmentation, resulting in improved stability.

The application of BiOWiSH® POME proved to be so successful that the site management decided to continue with maintenance dose of BiOWiSH® POME regularly to achieve stable results.



BiOWiSH® is a registered trademark of BiOWiSH Technologies International, Inc.

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1693-01-EN