SIF TECHNOLOGIES
Chemical-free Water Treatment

Case Study

One of the largest Oceanariums in Asia Improve Overall Tank Management with DPA System

Inhibit substrate growth and improve living conditions of Sea Dragon

Challenges in Tank Management

Snapshot of a Sea Dragon

High nutrient levels is a major ecological and environmental problem for one of the largest Oceanariums in Asia. When Sea Dragons excrete or left-over feed and fecal is broken down, organic nutrients such as nitrate or phosphate will increase. This is an especially pronounced problem in the closed environments of display tanks where nutrients are not readily diluted. High concentrations of nitrogen and phosphorous will spur the growth of substrate on the sides and bottom of the tank, leading to heavy substrate buildup after prolonged usage

Recommended Solutions

SIF Technologies recommended a chemical-free, eco-friendly and more sustainable solution to improve the tank management system of the oceanarium. DPA System is a proprietary technology developed based on the principles of Cavitaton. The usage of DPA system does not require huge amounts of electrical energy and eliminates the need for chemical biocides and additives. The DPA system was integrated into the existing water circulation system of the Sea Dragon display tank on 29 November 2006.

Results Achieved

Reduced Labour and Operational Risks

Previously, the Oceanarium had to perform thorough cleaning once every 6 months or earlier. Now, there was savings in 18 manpower hours as it usually took about 2-3 workers from 8pm to 2am (approximately 6 hours) to transfer the sea dragons out as well as to clean up the tank. This also implied a reduction in the risk of injuring or stressing the sea dragons during tank overhaul transfer.

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Reduction in Substrate and Sludge

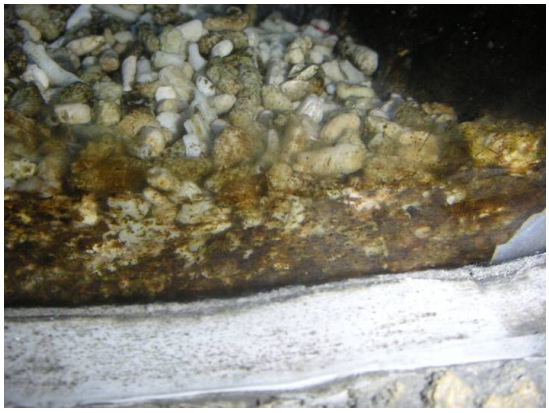

Figure 1: Picture taken on 14 November 2006. Typical sludge buildup in the Sea Dragon display tank after 6 months of usage.

Figure 2: Photos was taken on 20 July 2007. No sign of sludge build up and substrate build-up under control

From the oceanarium's historical records, it would usually have taken 2 months for substrate to be visible. However, after DPA system was installed, it has been close to 6 months but no significant substrate buildup has been observed in the tank. For instance, figure 2 shows the state of the tank on 14 November 2007, with heavy buildup of substrate at the bottom. Subsequently, the tank was given an overhaul and installed with the DPA system on 20 November. Figure 2 shows that the tank was not plagued by substrate problems even after 6 months.

Enhanced Total Dissolved Oxygen Levels

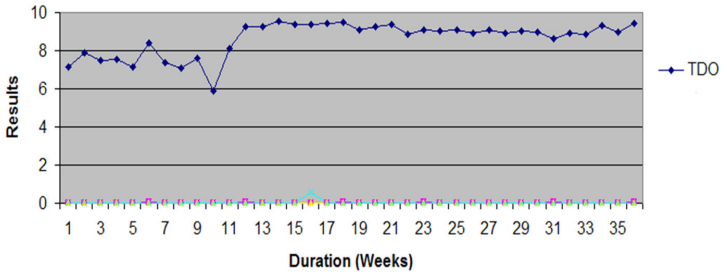

Figure 3: Analysis of Total Dissolved Oxygen (ppm)

Throughout the entire phase of testing and deployment, regular testing and analysis were conducted to monitor the key water parameters. Before deploying SIF's DPA System, the Total Dissolved Oxygen (TDO) levels fluctuated frequently and ranged between 6 to 8 ppm but after deploying the DPA system for an extended period of 25 weeks, it was found that the TDO levels have risen to between 9 to 10 ppm and consistently remained at that level.

What the Client Says:

"the sea dragons have been eating well…."

"there has been no incidence of copepod* in the past 6 months…."

*Copepods are free-living, symbiotic, or internal or external parasites on animals in water.

Note: Statistics and facts cited in this case study are supported by testimonials and documentation from previous solutions that were implemented. Individual results are subjected to variation depending on other extraneous variables such as temperature or contamination.

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