

Nanobubble Technology Restores Water Quality

Rangsagar Lake, Udaipur, Rajasthan, India

Location

Rangsagar Lake, Udaipur, Rajasthan

Lake Size

~ 11 Acres

Unit Type

NanoAqua N-500 Nanobubble Generator

Project Objective

The objective of the project was to improve dissolved oxygen levels in Rangsagar Lake using nanobubble technology and support natural biological treatment processes. The project aimed to reduce organic pollution, control foul odours and algal growth, and enhance overall water quality. The ultimate goal was to restore ecological balance and ensure the long-term sustainability of the lake ecosystem.

Rangsagar Lake is a large urban lake that receives runoff and wastewater inflows from surrounding areas. Due to its size and depth variation, maintaining adequate oxygen levels across the water column becomes challenging. Organic matter accumulation and poor circulation further contributed to deteriorating conditions. These factors required a solution capable of improving oxygen transfer and supporting natural remediation processes.

Prior to the intervention, Rangsagar Lake was experiencing significant water quality deterioration. Low dissolved oxygen levels affected aquatic life and slowed natural biological processes. High organic pollution resulted in elevated BOD and COD, while hydrogen sulfide and ammonia caused strong foul odors. Frequent algal growth and eutrophication further disrupted the lake ecosystem and reduced its visual appeal.

Nanobubble Intervention

The NanoAqua N-500 system introduces oxygen nanobubbles that remain stable in water and gradually release oxygen. This improves dissolved oxygen levels and supports beneficial microbial activity that breaks down organic pollutants. The increased oxygen availability also helps oxidize hydrogen sulfide and ammonia responsible for foul smells. Over time, improved water chemistry helps control algae growth and stabilize the ecosystem.



Results Achieved

Following the installation, dissolved oxygen levels increased, creating healthier conditions for aquatic organisms. BOD and COD levels gradually decreased as organic matter was biologically degraded.

The foul odour around the lake was eliminated, significantly improving the surrounding environment. Algal growth was controlled, and the overall water clarity improved, restoring the lake's aesthetic and ecological value.

Conclusion

The Rangsagar Lake project highlights the effectiveness of nanobubble technology in restoring degraded water bodies. By improving oxygen transfer and enhancing natural biological processes, the NanoAqua N-500 system helped improve water quality without chemical treatment.

The lake now shows signs of ecological recovery and improved environmental conditions. This project demonstrates the potential of nanobubble technology for sustainable lake restoration across urban India.



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