

A Case Study;



Water Quality Improvement Chia-Yi County, Tiawan

Problem

A large Plastics Manufacturer polluted vast sections of the Putzi River. Foul odors, no dissolved oxygen (DO), and dead aquatic life were the result. In the worse stretch of the river, there was no DO for up to 5 kilometers. Political and situational constraints prevented construction of a wastewater treatment plant to address the point source problem. Foam would often cover the river, making the situation even more difficult. And sadly, seasonal high water levels and flows did not wash away the problem.

Various river aeration system options were evaluated, including diffused air systems and surface aeration systems. Diffused air was ruled out due to the fouling potential from river sediments. Also, diffused air was determined to have a low efficiency during periods of low water levels. Surface aerators presented problems due to attachments and moorings during high water level periods.



It was decided to perform an on-site clean water oxygen transfer test in a basin constructed near the river to see if adequate performance could be achieved. The test conducted followed the ASCE Standard for Measurement of

Oxygen Transfer in Clean Water, resulting in a transfer rate of 1.14 kgs/kW-hr (2.5 lbs/HP-hr) which achieved the oxygen transfer requirements. A unique, automatically removable aeration system was installed in the Putzi River. Twelve 7.5HP TORNADO Self Aspirating aerators were installed on a winch system with movable cables. A control panel automatically activates winches and pully

systems to lift out and slide the aerators to the shore during high water level periods.

TORNADO aerators feature all stainless steel construction for corrosion free operation.

TORNADO aerators also produce excellent horizontal mixing enhancing the flow of the river.

In just two months of operation, the DO was measured at 3 mg/l up to 1.2 kilometers downstream of the aerator. As the aerators continue to run, the area of positive DO continues to expand.

Solution

Midland Engineering and Ever-Young Engineering collaborated on a surface aerator option involving (12) 5.6kW (7.5HP) TORNADO Self Aspirating Aerators and a lift out mooring system. The option addressed all the needs, but oxygen transfer efficiency was a concern.

