

## No Más! As Black Waters end bad odours at the paper mil

**A new aeration system has rescued a paper mill in El Salvador that was on the brink of \$M fines for causing major odor issues.**

Changes to environmental regulations had put the company into a crisis situation, despite the fact that they had already installed four 30HP surface aerators in their aeration tank in an attempt to quell the increasingly bad odor problems.

With the authorities set to take serious punitive measures, the paper mill called in leading wastewater treatment business, Black Waters to see if they could bring about a solution.

“This was a major challenge,” said Roberto Escalante, Principal of Black Waters. “Nobody in our industry particularly relishes working with a slanted floor (!) rectangular tank (1,000m<sup>3</sup>), but

I can tell you that the twisted face of the paper mill's CEO was in far more pain than mine!

“It was primitive; in a bad way, resulting in the possibility of substantial fines that caught the paper mill completely off guard,” he added. “The odors were awful, so we went straight into action with a sludge sampler to see what was going on, in order to establish a proper profile.”

Across the 75.4' (23m) length tank, which has a shallow end at 6.2' (1.87m) and a deep end of 13' (4m), Roberto found that only five of the one-meter sections were free from sediment. The rest ranged from 0.8" to as much as 18" of sediment, varying from light brown towards the shallow end to thick dark gray at the deep end. “No wonder it stank so much,” added Roberto.

“At the deep end it was septic, because the surface aerators couldn't mix the tank comprehensively. The slanted tank had become a biological reactor, but with the buildup of sediment, there just wasn't enough oxygen to allow the bugs to do their job properly. They couldn't ‘breathe’ and so would die. It was nasty.”



Written by Chris French

## Dire situation very much needed some oxygen

He continued: “All well and good having some mixing, but this dire situation very much needed some oxygen. The wastewater from the paper, which in this case was from a process manufacturing tissue paper, is surprisingly abrasive. Surface aerators can make it appear as if there is lots happening, but underneath the surface it can be a totally different story. In a fairly short space of time, foul odors will soon tell you that something is seriously wrong!”

With a potential \$M lawsuit for violations on the horizon, Black Water urgently sought a rapid but long-lasting solution, consulting with contacts in the US and beyond to see what might be available.

“With a slanted tank,” added Roberto, “they all said they wouldn’t blame me if I walked away. But we are engineers of course, so we’ll always want to find an answer, even in this case, where it possibly couldn’t be a perfect world solution. They told me I was crazy taking it on, but I already knew that. At least I’ll never be as crazy as the person who thought that it was such a good idea to design a slanted-floor rectangular tank for a paper mill’s wastewater! Additionally, the tank was divided into two halves by a concrete wall, so we had to cut eight-inch holes across it to try to even out the flow distribution.”

## Simultaneously mixing and aerating

The recommended solution certainly wasn’t the cheapest, but it came in the form of a simple design, combining a proven chopper pump with a venturi nozzle; the Landia AirJet.



Simultaneously mixing and aerating, this system effectively keeps wastewater fresh; economically delivering dissolved oxygen to provide complete aeration.

The next challenge for Black Water was how to incorporate what would be six of the new Landia AirJets onto both sides of the tank.

“Landia helped us calculate the best positioning,” said Roberto, “and I was really pleased that their vastly experienced Aftermarket Manager, Ken Jacobs came over from the US to help ensure that the installation went smoothly. The Landia AirJets had to be installed with middle guideline poles that had to be embedded in specially built concrete blocks. This allowed the aerators to be then slid to the bottom of the basin. The Landia Chopper Pumps that are part of the AirJet system do a great job, and are proving very reliable. Everything is fine now. Thank goodness those horrible odors are no more!”

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