

Integrity Municipal Systems' Lime Slaker System Reduces Operating Costs and Increases Sustainability at Abatta WTP, Abidjan, Côte d'Ivoire, West Africa

The West African City of Abidjan in Côte d'Ivoire has historically provided drinking water to its five million residents from water treatment plants that use hydrated lime systems. But because of the high content of carbon dioxide in the local groundwater, up to 160 ppm, setting the water to calcium carbonate equilibrium using hydrated lime was economically, operationally and environmentally challenging for the city of

“Importing hydrated lime costs a lot of money and creates a lot of headaches in terms of operation and maintenance.”

Mr. Eugène Bouafou
Director, System Operations Control and Water Quality
Office National de l'Eau Potable
(National Potable Water Board)
Abidjan, Côte d'Ivoire

Abidjan. When the new Abatta Water Treatment Plant was built to address growth in the region, they chose quicklime, generated on-site, instead of hydrated lime, saving money and improving environmental conditions.

At treatment plants using hydrated lime, lime is imported, using more than four ships of hydrated lime and one ship of water, challenging limited financial resources and causing operational problems for the

City of Abidjan. With its poor rate of solubility in water, producing lime water by dissolving hydrated lime in a decantation basin is operationally inefficient. And when processing with hydrated lime, more than 20% of the lime is lost, literally, in the mud, either in the form of insoluble calcium carbonate or in the valuable lime trapped in the mud. This waste, as much as hundreds of tons of mud, is both environmentally unfriendly and inconvenient for the people who live in the neighborhood of the treatment plants.

In 2014, local contractor OCSI Côte d'Ivoire SARL brought innovation to the water treatment process at the new Abatta Water Treatment Plant in Abidjan. The Abatta plant was built with a nominal capacity of 1,500 m³/hour (8 million gallons per day), for setting to calcium carbonate equilibrium a crude water consuming 25 ppm of quicklime, CaO. By using quicklime and replacing the decantation basin dissolver for hydrated lime with the Integrity Municipal Systems (IMS) A-758 Lime Slaker System, a much smaller and more efficient system, lime is generated on site, saving the city the expense and inconvenience of transporting hydrated lime.

Through the pioneering use of paste-type slaking technology, the new IMS Lime Slaker System produces a more reactive lime slurry, requiring less energy and less operator attention. The pre-engineered system, compact with a flexible configuration and a capacity of 450 kg/h, safely converts the dry pebble quicklime fed by the lime feeder into lime slurry, which is then piped by gravity directly to the process.

“Since the installation of the IMS Lime Slaker System, the water treatment process has become cheaper, simpler, more reliable, and environmentally friendly,” said Mr. Kouassi Adolphe Kouadio, General Director of OCSI Côte d'Ivoire SARL. “We no longer have to pay to ship boat-loads of water, as we used to do when we were using the hydrated lime system. As quicklime has twice the density of hydrated lime, we dramatically decreased the

amount of equipment involved; saving a lot of money by using less power, less chemicals and having less maintenance requirements.

On top of that, we shifted from a space-consuming decantation basin system to a small, robust packaged system, making the operators' lives safer and easier.

We delivered a more reliable process using a more reactive lime

slurry; direct injection of the lime milk allows the implementation of analogical dosing pumps and a better automation for calcium carbonate equilibrium. We are very happy because we achieved for our city a much better solution, saving water, heat, and power and eliminating hundreds of tons of lime mud in the environment while improving the quality of the drinking water delivered in Abidjan.”



IMS A-758 Lime Paste Slaker at Abatta