

Integrity Municipal Systems (IMS) A-758™ Paste-Type Lime Slaker Helps Meet World Bank Requirements in Bingerville, Côte d'Ivoire, West Africa

In February 2020, the Government of the Republic of Côte d'Ivoire received a credit from the International Development Association (IDA) to finance the activities of the Urban Drinking Water Supply Reinforcement Project (PREMU). Part of this credit was used to improve the drinking water supply in Bingerville, Abidjan, a city of 100,000 inhabitants.

The contract for the PREMU works in Bingerville required the use of the cleanest and most efficient water treatment products available. In view of such constraints, the contracting authority, the Office National de l'Eau Potable (ONEP), selected the Optimized Quicklime Process™ (OQP™), an Ivorian patented, engineered process that utilizes the IMS A-758™ paste-type lime slaking system to soften the water and reduce turbidity. The process consists of the following treatment stages:

Groundwater is pumped at a rate of 500 m³/h and directed to the water treatment plant. Naturally occurring residual carbon dioxide is stripped from the raw water, reducing the concentration from 160 g/m³ of CO₂ to 45 g/m³. The water is then disinfected by injecting sodium hypochlorite (NaOCl) to a concentration of 1 g/m³.

Finally, calcium carbonate equilibrium is achieved by injecting milk of lime, slaked onsite using the A-758™ paste-type lime slaking system provided by Integrity Municipal Systems LLC, to a concentration of 20 g/m³. The treated water is then stored for future distribution.

The OQP™ process relies on the IMS A-758™ paste-type lime slaking system to produce milk of lime capable of achieving drinking water turbidity of 0.6 to 0.8 NTU, well within the maximum turbidity standard of 1.0 NTU .

The OQP™ process employing the IMS A-758™ paste-type lime slaking system offers several major advantages to the Bingerville Water Treatment Plant:

1. An environmentally friendly water treatment process

The treatment process in Bingerville uses milk of lime produced by slaking quicklime in the IMS A-758™ paste-type lime slaking system. Production of hydrated and micronized quicklime onsite by the A-758™ paste-type lime slaking system minimizes the environmental and economic costs associated with managing lime muds and hydrated lime. With the A-758™ lime paste slaker installed, less than two kilograms (2 kg) of sludge needs to be treated as household waste every two weeks.

2. A water treatment unit capable of treating groundwater at over 99% efficiency

Using the OQP™ process, the Bingerville plant is able to treat 500 m³/h of raw ground water with 99.9% efficiency. No water flow is lost to filter washing or sludge discharge processes. The raw water is almost completely treated and released for consumption.



3. A treatment process that minimizes operating costs (chemicals, energy, maintenance)

Treating water with quicklime slaked onsite using a paste slaker has many advantages over using pre-slaked hydrated lime. The objective in slaking quicklime is to thoroughly hydrate the calcium oxide (CaO) to produce calcium hydroxide (Ca(OH)²). The A-758™ paste-type lime slaker system produces a slurry of small, highly reactive particles that provide a larger surface area for chemical reactions to occur. The cost per pound of quicklime is also much lower than the cost per pound of hydrated lime. Using pioneering paste-type slaking technology, the Series A-758™ paste-type lime slaker system consistently produces a more reactive lime slurry requiring less energy and less operator attention. These factors make the installed A-758™ paste lime slaker more efficient at slaking various grades of quicklime (CaO) at a substantial savings over other slaking methods.

The IMS A-758™ paste-type lime slaker system deployed in the OQP™ process at Bingerville enables the end-user to save up to 70% of the plant's operating budget due to the dramatic reduction in overall operating cost resulting from lower energy demand, reduced consumption of treatment products, and decreased maintenance requirements.

