



Cement industry

Process water treatment plant – 2.6MLD



Problem Statement

This leading cement manufacturer in South Africa is making use of two water sources in its processes, borehole and river. The challenge faced is high hardness levels in the source waters which causes scaling in heat exchange units such as condensers, coolers, cooling towers and boilers. Scaling reduces the work rate of equipment and systems. Hardness differs in all sources: River up to 350mg/l, Borehole up to 1000mg/l.

Solution

After analysis and test work was completed in Watericon Labs, Watericon suggested a process solution. The client, due to the difficult waters and variances during different times, was unsure that the process would work. A major concern is taking a process out of a lab and upscaling it to a full-scale plant. Watericon suggested a 6 month on-site trial where we proved the concept and collected much-needed data to successfully upscale the plant to a 2.6MLD plant.



Plant feed

- Hardness level between 250 to 1000mg/L
- Pilot flow rate – 500LPH
- Full scale plant – 2.6MLD



Performance Target

- Up to 110 m3/hr plant production
- Hardness <50mg/l
- Conductivity <250microsiemens/cm
- RO recovery rate of 70-75%



Process

- Chemical addition
- Reaction tanks
- Settling
- Sand filtration
- Reverse Osmosis
- Sludge handling



Project scope

- Having the capability of a range of trial plants and processes, Watericon is able to pilot and onsite trial a number of technologies. Key data attained during these trials ensure successful upscaling of the process plants.