

Water Efficiency and Environmental Sustainability Practices at Fresnillo Operations in Mexico

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ABSTRACT

Fresnillo Plc (Fresnillo) is a Mexican Company owned by the “BAL Group”, focused on the production of gold and silver. It was established in 2008, initially consisting of three companies, Minera Fresnillo, Minera Mexicana La Ciénega and Minera Penmont and had an annual production of 52 million silver equivalent ounces.

By 2017, Fresnillo was producing 113 million silver equivalent ounces, by establishing two new companies:

- Minera Saucito that currently has two flotation plants and a pyrite leaching plant utilising a Dynamic Leaching / Merrill Crowe processes, and
- Minera San Julian that currently has two processing plants, one using flotation and the second one using the Dynamic Leaching / Merrill Crowe processes.

Assisting the doubling of production was the establishment of two new gold and silver Dynamic Leaching / Merrill Crowe Plants, and the employment of new technologies such as derrick screens together with hydrocyclones in the primary grinding circuits, flotation cells using the latest technological developments and vertical stirred mills that regrind to about 10 microns.

This paper focuses on the achievements in water efficiency and environmental sustainability, which were essential in order to double the silver equivalent ounce production. The four plants that operate in the Fresnillo District, in the State of Zacatecas, use treated wastewater from the City of Fresnillo and currently the company is developing another Wastewater Treatment Plant to provide the freshwater (new water) requirements for two new projects under development.