

# New Hydrometallurgical Tools for Optimal Production Planning

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## ABSTRACT

Production planning is a sensitive subject at all hydrometallurgical plants due, among others, to lack of robust predictors providing assertive forecast in line with the industrial results and the compromises of the high management of the company.

A new leach plant simulator of the daily metallurgical balance is here presented. This simulator is part of an integrated four-block predicting machine: Block 1 is drilling and blasting at the mine; Block 2: is the crushing plant; Block 3 is the leaching plant; and Block 4 is the ripios removal and disposal at the dump. This paper is referred just to block 3.

The mine plan containing tonnage and grades is the starting point. The module loading plan and the module irrigation plan, are first computed. Wetting ramps are accepted as well as optional irrigation period with ILS/Raffinate solutions. Heap leaching, ROM leaching and Ripios leaching and all main ponds can be part of the flowsheet.

The leach models are dynamic in character and mass balance for solution, copper, acid and optionally ferric/ferrous iron and chloride ions, are computed.

The strong predictive capacity allows to explore better options other than the base case, making possible to perform “optimizing planning” according to the actual mine plan and the plant facilities. The normalized structure of the models is attractive as a standard tool to be used within a company with several assets. The average error of calculated monthly production is below 5%.

Several study cases are shown to illustrate potentiality of the above-described simulator. Three different hydrometallurgical companies are currently adapting it as part of the standard procedures for production planning issues and one more, for process optimization purposes.

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