

A structured methodology to optimise throughput of production lines

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Abstract

The increasing social and environmental demands, financial and operational restraints, and high qualification requirements constantly affect the competitiveness and performance of the mining industry. In the literature, a wide range of techniques have been developed to cope with these challenges. However, a structured methodology to integrate solutions of a diverse nature considering physical asset management perspectives has not been developed in depth. In this work, we introduce a continuous improvement methodology based on prioritising and optimising the best opportunities in different asset management areas to achieve throughput targets. The proposed procedure, called throughput-oriented system improvement methodology, starts with a criticality analysis to identify the bottleneck components. It is followed by the application of an optimisation technique, finishing with the implementation and evaluation of policy changes. The aforementioned steps have to be applied cyclically until the production target is reached. We illustrate its use in a case study from a mining company in northern Chile. Results show that the operational efficiency can be significantly improved by optimally changing the maintenance policy and the plant layout..