

Commodity
Copper

Technology
**LoadIQ® Smart Sensor
Technology**

Application
Primary Grinding

Study type
Customer Story

Country
Americas

How a major copper mine increased revenues by USD 150 million with LoadIQ® smart mill systems

A large copper mine in the Americas achieved an almost USD 150 million gain in revenue after the installation of LoadIQ mill scanning technology on its SAG mills. The gains were made over a 5,900 hour period during which an average 10% increase in throughput was observed. Output variability was also reduced, as was energy consumption per tonne of copper produced.

The milling circuit at the mine comprises three milling lines, each with a 40 ft x 24 ft SAG mill for primary grinding. The lines can be controlled manually or automatically via an advanced process control (APC) system. LoadIQ was connected to the APC system and reacts to changes in grinding conditions to maximise tonnage:

- Smart sensor technology and cameras accurately measure volumetric load and ore trajectory in real time to measure the feed F80.

- AI data analysis then correlates maximum breakage rates with incoming ore types and liner profiles, enabling operators to run the milling circuits more efficiently.

LoadIQ improved milling performance across all three lines:

- Line 1: 11% throughput increase (459 t/h) with a 3% reduction in variability.
- Line 2: 6% throughput increase (266 t/h) with a 4% reduction in variability.
- Line 3: 14% throughput increase (523 t/h) with a 3% reduction in variability.

In total, LoadIQ increased throughput by 1248 t/h: a 10% increase on the 12,215 t/h baseline. Based on a head grade of 0.42% and copper price of USD 3.80 per pound, this equates to an additional USD 150 million in copper revenue. Specific energy consumption also fell by 8%, equating to a 9% decrease in energy per tonne of copper produced (GJ/t Cu-eq).

The throughput gains with LoadIQ help remove SAG milling as a bottleneck to production. By producing more with lower energy consumption, LoadIQ has also reduced costs and CO₂e emissions per tonne of copper produced.



10%

Increase in throughput



1248 t/h

Increase in throughput



8%

Reduction in energy consumption



9%

Reduction in energy per t/Cu



\$25k/h

Increase in revenue (USD)

Copyright © 2022 FLSmidth A/S. All Rights Reserved. FLSmidth is a (registered trademark) of FLSmidth A/S. This study makes no offers, representations or warranties of any kind (express or implied), and information and data contained in this study are for general reference only and may change at any time. FLSmidth does not guarantee or make any representation regarding the use or the results of the information or the data provided in the study in terms of its correctness, accuracy, reliability or otherwise, and shall not be liable for any loss or damage of any kind incurred as a result of the use of the information or data provided.

FLSmidth A/S
www.flsmidth.com