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Predictive Models for High-Energy Blasting, Production and Energy Conservation in Mining

Abstract. The operations in an open-pit mine require a large amount of energy consumption, such as electricity and diesel fuel. To understand energy performance, we work along with a major open-pit copper mine, Highland Valley Copper, to develop a set of Key Performance Indicators (KPIs) suitable to the needs and priorities of HVC in supporting decision making of efficient operations, and providing benchmarks and monitor tools for energy conservation.

The investigation includes to build several models of mill throughput, in relation with key variables such as the rock hardness, the powder factor used in blasting, the percentage of high energy, and trim & buffer (wall control) blasting. Several statistical techniques (time-shifting, piece-wise correlation analysis and rolling average analysis) were used and sensitivity analysis was conducted. The final product resulted in throughput models which had stronger predictive abilities than the original model that was in use, and it improves the understanding of the impact of high energy blasting on the throughput.

Dr. Roger Yu is a full professor of Mathematics and Director of the Centre for Optimization and Decision Science (CODS), who specializes in graph theory and combinatorial. He has been an active researcher for the past 25 years and has held various NSERC Grants as PI for more than 20 years. His research areas range from matching theory, network flow, transportation management, various scheduling problem, mine-to mill process optimization, to wetland sustainability management.

CODS
(Centre for Optimization and Decision Science)

Interdisciplinary Seminar

**Thursday, March 12, 2015
OM 1751
11:30 – 12:30**

This presentation is accessible to the general public

Everyone is Welcome

Cake will be served ☺