

**OPTIMIZATION OF LOAD–HAUL–DUMP MINING SYSTEM CASE STUDY: KABINI
LIMESTONE QUARRY, EAST AFRICAN PORTLAND CEMENT**

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ABSTRACT

This project entailed the study of how material loading and haulage can be optimized at Kabini Quarry located in Sultan Hamud, Machakos County. The basic aim was increasing and making production cost effective, time conscious and more efficient at the Plant. It involved analysis of the shovels and trucks that are used to load and haul material to the crusher, with regard to generally improving truck and shovel combinations that would meet the company's production requirements while at the same time reducing cost were optimized. OEE (overall equipment effectiveness) was used to identify both shovel and truck losses and introduces procedure to record time losses. This gave the overall measure of how effectively the equipment was being used. The match factor in this case was simply the ratio of truck arrival rate to loader service time, and it was used to determine a suitable truck fleet size. From the analysis it was possible to predict the effect of mismatching and bunching. The Overall Equipment Effectiveness was evaluated and found out to be 23% for shovel and 25% for truck with a match factor of 0.9092.