The use of simulations to identify operational improvements on deep level mine compressed air systems

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Abstract

As operational costs of deep level mines increases and gold ore grades decrease, profitability in the gold mining sector is becoming difficult. Electricity tariff increases have contributed a rise in cost to operate a mine. Compressed air systems utilise a large portion of a mine's total energy. It has been shown that many deep level mine compressed air networks have large inefficiencies and often can not meet performance set-points. Therefore improving the efficiency could result in a reduction of operational costs by reducing the energy required to produce compressed air. Additionally an improvement in service delivery could be achieved.

Previous studies have shown the use of simulation to develop improvements for large mining systems. Literature has shown identification compressed air inefficiencies as well their interventions.

A methodology was then developed to identify system inefficiencies and quantify improvement strategies through simulation. Two case studies were evaluated. Several scenarios were simulated in each case study. The studies showed that improvements in compressed air system efficiency. An application of the simulated scenarios verified the simulations.

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List of symbols

Acronyms

Glossary

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KY pipe -¿ PTB .
DCS
Kobus von tonder
SW
Matthews v. Niekerk
Jeandre Jonker

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Something

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Something else

Bibliography

[1] P.N. Neingo and T. Tholana. Trends in productivity in the south african gold mining industry. *The Journal of the South African Institute of Mining and Metallurgy*, 2016.