

Contents

Abstract	1
List of symbols	1
Acronyms	2
Glossary	3
1 Introduction and background	4
1.1 Preamble	4
1.2 Compressed air systems in the mining industry	4
1.3 Characteristic inefficiencies within compressed air systems	4
1.4 Inefficiency identification methods in industry	4
1.5 Problem statement	4
1.6 Dissertation overview	4
2 Literature study	5
2.1 Preamble	5
2.2 Identification of inefficiencies in compressed air systems	5
2.3 The use of simulation in industry	5
2.4 Compressed air operational improvements in industry	5
2.5 Conclusion	5
3 Developing a periodic simulation process	6
3.1 Compressed air system investigation	6
3.2 Simulation model development	6
3.3 Model verification	6
3.4 Periodic implementation	6
3.5 Analysis of data	6
3.6 Identifying and quantifying operational improvements	6
3.7 conclusion	6
4 Validation of Results	7
4.1 Preamble	7
4.2 Case study: Mine A	7
4.3 Case study: Mine B	7
4.4 Discussion of results	7
4.5 conclusion	7

5	Conclusion	8
5.1	Conclusion	8
5.2	Recommendations for future studies	8

Abstract

List of symbols

Acronyms

Glossary

Chapter 1

Introduction and background

- 1.1 Preamble
- 1.2 Compressed air systems in the mining industry
- 1.3 Characteristic inefficiencies within compressed air systems
- 1.4 Inefficiency identification methods in industry
- 1.5 Problem statement
- 1.6 Dissertation overview

Chapter 2

Literature study

2.1 Preamble

2.2 Identification of inefficiencies in compressed air systems

2.3 The use of simulation in industry

2.4 Compressed air operational improvements in industry

2.5 Conclusion

Chapter 3

Developing a periodic simulation process

- 3.1 Compressed air system investigation
- 3.2 Simulation model development
- 3.3 Model verification
- 3.4 Periodic implementation
- 3.5 Analysis of data
- 3.6 Identifying and quantifying operational improvements
- 3.7 conclusion

Chapter 4

Validation of Results

4.1 Preamble

4.2 Case study: Mine A

4.3 Case study: Mine B

4.4 Discussion of results

4.5 conclusion

Chapter 5

Conclusion

5.1 Conclusion

5.2 Recommendations for future studies