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The application of geophysics in South African coal mining and exploration

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Abstract

Coal remains South Africa's most abundant and cheapest source of energy, and there is an ever-increasing necessity for optimal and safe extraction of the remaining reserves. Increasing focus on cost-effective mining and zero harm to the environment and miners has resulted in a shift in attitude towards the application of geophysics in local coal mining and exploration. Furthermore, technological advances have contributed to geophysics being embraced more readily by the coal mining industry, compared to a decade or two ago. Predictably, the growing interest in geophysical technologies has also created a need for education and training in the basic principles and application of geophysical methods, as local coal mining companies generally do not have in-house geophysicists. Consequently, the Coaltech Research Organisation's Geology and Geophysics working group forum compiled a textbook aimed at addressing this need: to produce a guide for applying geophysics to coal mining problems in South Africa. The target audience for such a book would be coal geologists, mine surveyors, mine planners, and other mining staff with limited or no geophysics background. This paper provides a very brief overview of the book by summarizing key sections and selected examples. In doing so, the value of geophysics to solving a range of coal mining and exploration problems is highlighted.