Impact of geophysics in small-scale mining

Antonio Carlos Martins1, Elisangela Romanelli Terenci1, Giorgio Cesare Francesco de Tomi2 and Ricardo Marcelo Tichauer1

1University of São Paulo, Brazil
2Centro Universitário Anhanguera, Brazil
3Imperial College London, UK

Geological exploration involves drilling campaigns, an expensive activity that takes a long time with no guarantee of financial success. Geophysicist and Business Analyst Ribeiro indicated that the average cost of drilling is US$100/m drilled and the use of geophysics can reduce, by 30% to 50%, the number of negative drill holes (sterile holes), thus reducing time and cost of the investigations. This paper shows how the application of geophysics in two small-scale mining operations, a limestone and manganese mine, resulted in reduced survey time with satisfactory results for the companies. In the limestone mine, geophysics allowed updating of the geological model. In the manganese mine, it contributed to the generation of the preliminary geological model for the deposit. In both cases, there was a significant reduction in time spent on exploration.

Biography

Antonio Carlos Martins is currently a PhD student of Mineral Engineering with Master’s degree in Mineral Engineering from the Department of Mining and Petroleum Engineering at University of São Paulo (2012) and Graduate in Physics from The University Bandeirante of São Paulo (2009). He has experience in the area of mining with emphasis in mining inSite, acting mainly in the themes like geological modeling, cellular automation and mineral resources. He is currently involved in Geological Modeling Project with the use of geophysics. He is a Researcher at NAP Mineração-Responsible Mining Center USP, University of Sao Paulo with actuation in experimental mines.

acmartins@usp.br