

ONLINE MINING STRUCTURES DEFORMATION MONITORING USING BOTDR TECHNOLOGY

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ABSTRACT

The use of BOTDR technique (Broullin Optical Time Domain Reflectometry) for on-line mining deformation monitoring has no more than five years history. The first tests in El Teniente-Codelco mine (2005) demonstrated the viability of this technology in the mining industry. During 2007-2009, new sensors were developed for this technology. Additionally, an on-line information system was implemented. This system contains alarms designed to handle the huge quantity of data information and to allow an adequate interpretation. To study the effect of the mining progress upon the pillar stability, a continuous monitoring of production pillars as from early 2008. Also a continuous and simultaneous monitoring is now been carried out since early 2009, of a Primary Crushing Chamber, fortification bolts, drill holes, and main fault activation due to the mining activity in the production and undercut levels in the El Teniente mine. From the different applications data collected, a quantitative analysis of deformations and displacements was carried out. As a result, the effect of mining progress and activity upon various mining structures was successfully detected.