International J. of Engg. Research & Indu. Appls. (IJERIA).
ISSN 0974-1518, Vol.3, No. I (2010), pp 51-67

AN APPROACH TO FORM FIELD DATA BASED MODEL FOR ROOF BOLTING OPERATION IN UNDERGROUND MINE

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Abstract

This paper investigates the factors which are most influencing on roof (Supporting) bolting operation in underground coal mine. From an engineering standpoint, roof bolts are inherently more effective than the wood timbers. Roof bolting is one of the primary tasks and makes up 50-60% of the total time for the three- man crew on the miner. It is a repetitive task that involved awkward postures and can be physically demanding on the neck, shoulder, back, and forearms and the consumption of Human Energy is substantial. An attempt is made to form the mathematical model for this operation by applying theories of experimentation, sensitivity analysis, optimization of model and ANN simulation so as to minimize the Human Energy, time of drilling operation and improve the productivity of the operator. The results shows anthropometry of operator and relative humidity are the most influencing factors in roof bolting operation.

Keywords : Ergonomics, Design of Experimentation, data analysis.