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on Advances in Science and Technology
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IJCA Proceedings on International Conference

ICAST 2014 - Number 4

Year of Publication: 2015

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{bibtex}icast5041.bib{/bibtex}

Abstract

In order to increase the efficiency of desired work inside the long tunnel drilling, rating of electrical drives at tunnel face has significantly increased. Due to the high rating concentration of electrical drives at tunnel face significant voltage must be required which is need of an hour to finish the work in given time interval and to avoid the various dangers. Therefore, planning of electrical power distribution is required and voltage drop across each electrical drives must be taken into account. While power planning drill machine, Armored Face Conveyors (AFC), Shearer, breaker, Stage loader, face lightning, etc. must be given due importance as starting power required to them is very high. Breakaway torque of the AFC is not maintained because of low power, so it is required to start constantly requiring high power as well as it will heat the

environment, which is often hazardous. In order to provide the required power drop and reduce the dangers, some alternative methods must be used. In the present investigation voltage drop compensation technique is developed by providing with optimization of position of transformer. Even though the voltage drop cannot be maintained in such cases boosting transformer with the power thyristor with tap changing is used to control the power instead of tap changer mechanism. In order to operate the various drives in long drilling tunnel and finish the work in desired period one must know the various parameters involved in the system. On line parameter such as voltage, currents, temperature, etc. of electrical drives and environment are measured through PC using various sensors, the sensed data is compared with the standard data. The comparison will help to take necessary decision and helps to reduce the forth-coming dangers in the tunnel or electrical drives.

Refer

ences

- G. Cooper, Electrical Aspects of Coalface, Mining Technology, Aug. 1983.
- A. Reczek, Estimating performance in mining power systems, Mining Technology, Oct. 1998.
- M. K. Mishra, 'Starting problem assessment and use of static line drop compensators for mechanized longwall coal face drives', National conf. on Instrumentation, Mesara (Ranchi), Nov. 1998.
- S. R. Kumbhar, 'Design and Development of Single Phase Induction Motor Using PC', Ph. D. Dissertation, Dept. of Electronics, Shivaji University, Kolhapur. 2002.
- Tieying Zhao, Na Wnag, 'Low voltage early warning system of colamine power grid', EIE and M 2011, Vol. 138, 2012, pp 1003-1009.
- Kawahara K. , Hase H. , Mochinaga Y. , Hisamizu Y. , compensation of voltage drop using static Var compensator at sectioning post in AC electric railway system. , IEEE Power Conversion Conference-Nagaoka 1997, Proceedings, ISBN 0-7803-3823-5 Vol-2 pp 955-960.
- Alan R. Broadfoot, Robert E. Betz, Control problems in Armored face Conveyors for longwall mines,
- B. Lyne, Hazard Management in Longwall Installations, Proceeding of Coal operators Conference, University of Wollongong 2003, pp. 14-20.
- Morley L. A. , Kolher J. L. and Smolnkar H. M. , A model for predicting Motor load For an Armored face-Conveyor Drive ' , IEEE Transactions on Industry Applications, Vol, 24. , No 4. , July/Aug. 1988.
- Alan R. Broadfoot, Robert E. Betz, Control strategies for Armored face conveyors, Proceedings of IEEE IAS Annual Meeting, San Diego, Oct 1996.
- B. K. Bose, Adjustable Speed AC drives, A technology status review, Proc. IEEE, Vol. 70, No. 2, pp 116 - 135, Feb. 1984.
- K. A. Krishnamoorthy, G. K. Dubey and G. N. Ravankar, 'Converter Control with Selective Reduction of Line Harmonics,' Proc. IEEE, Vol. 125, No. 2 pp. 141-145, 1978
- Velenzu M, Lorenz, R. , electronics line shafting control for paper machine drives, IEEE Trans on Industry Applications, 2001, 37(1), pp 158-164.

- Shalihi J. T. , Spix G. J. , 'AC Electric Drive System. Report', No. 3, EPI – 2, 25th Aug. , 1965, pp. 8-14.

Computer Science

Index Terms

Web Services

Keywords

Voltage Drop Parameter Estimation Voltage Compensation .