

Accepted Manuscript

Practical Methods For Electrical And Mechanical Measurement Of High Speed Elongated Arc Parameters

Ali Kadivar, Kaveh Niayesh

PII: S0263-2241(14)00227-9

DOI: <http://dx.doi.org/10.1016/j.measurement.2014.05.017>

Reference: MEASUR 2864

To appear in: *Measurement*

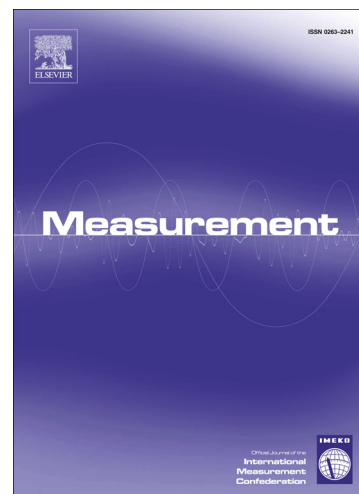
Received Date: 3 January 2014

Revised Date: 24 April 2014

Accepted Date: 8 May 2014

Please cite this article as: A. Kadivar, K. Niayesh, Practical Methods For Electrical And Mechanical Measurement Of High Speed Elongated Arc Parameters, *Measurement* (2014), doi: <http://dx.doi.org/10.1016/j.measurement.2014.05.017>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



PRACTICAL METHODS FOR ELECTRICAL AND MECHANICAL MEASUREMENT OF HIGH SPEED ELONGATED ARC PARAMETERS

Ali Kadivar and Kaveh Niayesh

*School of Electrical and Computer Engineering, University of Tehran, Iran, P.O. Box
14395/515, IR-14395 Tehran, Iran (akadivar@ut.ac.ir)*

ABSTRACT

In this paper, we have presented measurement methods used to evaluate short circuit current interruption capability of a fast opening circuit breaker with opening velocities up to 36 m/s. Such circuit breakers are the most critical components of future hybrid fault current limiting circuit breakers and therefore thorough understanding of fast elongating arcs is essential. The presented methods include measurement of cinematic parameters (displacement, speed and acceleration) and electrical parameters (arc voltage and current) as well as high speed optical measurement of arc appearance. Generated codes for sampling and wavelet de-noising of signals as well as developed image processing method for processing of digital arc images captured by high speed camera have been explained. Based on processed information gained by the measurements, arc starting time, arc ending time and arc temperature contours have also been calculated. Use of advanced simulation tools based on finite element method (FEM) equipped with moving mesh has been discussed to facilitate measurements and also to improve their accuracy. Practical measurements and simulation results prove each other and show good

Download English Version:

<https://daneshyari.com/en/article/7125140>

Download Persian Version:

<https://daneshyari.com/article/7125140>

[Daneshyari.com](https://daneshyari.com)