A MATHEMATICAL MODEL OF A DC MACHINE

By

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Statement of Originality

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Ning Chuang
October 2004
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ABSTRACT

This research aims to determine how a mathematical model may predict the effects of a shorted and/or opened armature coil on a d-c machine. A mathematical model and a simulating computer were developed for a particular 0.375 kW d-c machine under both healthy and faulty conditions.

The model was based on the coupled-coil theory, with a set of first order differential equations that were solved in the time domain. New techniques for measuring inductances on a particular d-c machine were implemented in order to acquire data for development of a simulation. The research found that measurements of armature current waveform, including commutator ripple, agreed quite well with the simulated waveform.
Acknowledgement

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