

Commutator Fault Detection of Brushed DC Motor using Thermal Assessment

Abbas A. Wahab^{}, N. F. Abdullah, M. A. H. Rasid*

Faculty of Mechanical Engineering, Universiti Malaysia Pahang, 26600, Malaysia

abbasibnuzaki@gmail.com

Abstract

In this paper fault detection of brushed DC motor is described. Recently, Thermal Signature Analysis (TSA) has become a common tool for fault analysis of AC induction motors. Currently, very little research has been performed using thermal signature analysis on brushed DC motors. This paper is a present fault detection of DC motors using thermal signature analysis. In order to organize the detection, the thermal behaviour of DC motor was analysed using the K-type thermocouple with data logger. The thermocouples were mounted on 4 part of the DC motor, casing, permanent magnet, brush and bearing. The initial measurements of thermal behaviour were realized by using healthy DC motor as a sample of a thermal behaviour. Furthermore, made the measurements of thermal behaviour for the same type of motor with thick carbon impurities on commutator. The significant observation on steady state temperature of thermal behaviour between healthy DC motors and faulty DC motor will be analysed. From the analysis of thermal behaviour between healthy DC motor and commutator fault of DC motor, we clearly recognize the commutator fault by through the different of characteristic temperature profile of DC motor.