ELECTRICAL AUTOMATION SYSTEMS TOWARDS INTELLIGENT AND ENERGY EFFICIENCY APPLICATIONS

Musse Mohamud Ahmed

IIUM PRESS

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

ELECTRICAL AUTOMATION SYSTEMS

TOWARDS

INTELLIGENT AND ENERGY EFFICIENCY

APPLICATIONS

Musse Mohamud Ahmed

Electrical and Computer Engineering Department,
The Faculty of Engineering, IIUM

IIUM Press

Published by:
IIUM Press
International Islamic University Malaysia

First Edition, 2011

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

ISBN: 978-967-418-170-3

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM
(Malaysian Scholarly Publishing Council)

Printed by :
IIUM PRINTING SDN.BHD.
No. 1, Jalan Industri Batu Caves 1/3
Taman Perindustrian Batu Caves
Batu Caves Centre Point
68100 Batu Caves
Selangor Darul Ehsan
Tel: +603-6188 1542 / 44 / 45 Fax: +603-6188 1543
EMAIL: iiumprinting@yahoo.com

CONTENTS OF THE BOOK

CHAPTER 29

AIR BLOWING EQUIPMENT

Musse Mohamud Ahmed, Rafizah Rahmatullah and Syarifah Nur Zati Abdul Rashid

Department of Electrical and Computer Engineering, Faculty of Engineering
International Islamic University Malaysia

29.1 Introduction

In this chapter, an air blowing equipment is a device that utilizes the mechanical energy of a rotating impeller to produce both movement of the air and an increase in its total pressure so does the fan are discussed and presented. The great majority of fans used in mining are driven by electric motors, although internal combustion engines may be employed, particularly as a standby on surface fans. Compressed air or water turbines may be used to drive small fans in abnormally hot conditions, or where an electrical power supply is unavailable.

29.2 Air Blowing Equipment Problems

Today with improvements in design, materials and drive methods, fans are used in a multitude of applications from bathroom ventilation to providing safe working environments within a mine. The energy used to drive these fans is provided by fossil fuels, however the last 40 years has shown a growing awareness that these fuels are a finite resource and may have a damaging affect on the environment. Other methods of electricity generation have also proved problematic for the environment.

Thus, to maximize the life of our declining energy supply, it is necessary to find a way to maximize the efficiency of this equipment that uses the fans. It has been calculated that the worldwide electrical consumption of fans is approximately 20% of total usage. The fan industry is global and ISO standard has produced a set of common fan standards that may be applied throughout the world in the field of fan engineering.

With the concerns for environment and other factors has led to the development of a standard for the efficiency of fans. The main purpose of this standard is that it should be used by Government and manufacturers to set a minimum efficiency for fans in the power consumption range of 0.125kW to 500kW[5].