Power Electronics & Electrical Machine Design Research Cluster

Introduction

Power Electronics and Electrical Machine Design Research Cluster consists of 4 core research elements from three different courses namely, Electrical System, Industrial Electronics and Energy System which are, Power Electronics System, Electrical Machine Design, Power System and Renewable Energy.

Objectives

The main objectives of this Cluster are to identify problems related to power electronics, electrical machines and power system and provide innovative solutions to design and improve electrical machines such as transformers, motors and generators and to design and improve power electronics equipment such as variable speed drives, power supplies, inverters and others, to be more reliable, robust and energy efficient. The Cluster also welcomes participation and partnerships with other Malaysian universities and industry as well.

Research Area

POWER ELECTRONICS

- Switch-mode power supplies and UPS.
- Applications of power electronics in power system
- Motor drives and motion control

ELECTRICAL MACHINE DESIGN

- Analysis and design of electrical machines

RENEWABLE ENERGY

- Solar energy and distributed energy

POWER SYSTEM

- Power quality such as harmonic, voltage sag, K- factor, power factor improvement for improvements in transmission and distribution systems.

Current Projects

- Development of Single Phase Inverter for Photovoltaic Application
- Comparative Study of Motor Drive Control Scheme for Electrical Vehicles Application
- Modelling and Analysis of Permanent Magnet Brushless DC Motor For Electric Vehicles Using Numerical Methods
- Impact of Capacitor Bank switching on Harmonic Distortion in Distribution Network
- Development and Analysis of a Prototype 500 watt Solar Energy System for Electrical Power Generation
- Impact of Capacitor Bank Switching of Harmonics and Sag in Distribution Systems
- Investigation of Harmonics and Sag in Distribution Systems

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