

Graduation Design Project Proposal Form 496

Project # P3

Project Title Design and build electric and magnetic sensors.

Professor(s) Name(s): Prof. A. Al-Arainy & Prof Yasin Khan

Number of Students: Two

Students Qualifications

Students should have good background in High Voltage (preferable if they took EE 446)

Statement of Problem

High Voltage systems are associated with high electric and magnetic fields. These fields has many problems for nearby personals and apparatus. These fields can be detected and measured by optical sensors This project deals with the designing, building and testing of such sensors. This will need designing the circuit and its implementation and testing in the lab.

Brief Description of the Project

The students are required to understand the sources of EM field , and methods to produce them in the lab..Also they need to understand the latest relative latest technology .Then they will be required to design the various elements of these sensors. Then they will build it in the HV lab and tested it on real applications.

Objectives

- (1) Understanding the theory behind the subject
- (2) Acquire the know how to do the complete design
- (3) Implementation of the proposed design of the sensors system
- (4) Testing of the sensors and to study its performance.

Technical Approach and Expected Deliverables

- Literature search of the project topics,
- Design of the sensors circuit.
- Construction of the various components of this system
- Testing the built system on real voltage and current sources.
- Report preparation

Project # E7

Project Title: Smart Electronic Fire Alarm System
Professor(s) Name(s): 1. Dr. Ahmad Fauzi Abas 2. Dr. Mohammed Alresheedi
Number of Students: Two
Students Qualifications Knowledge and skills in electronics circuit development and microcontroller programming.
Statement of Problem Nowadays many safety measures are taken to prevent and combat the occurrence of fires. However, there are still some cases where buildings are on fire, but by the time the firemen arrive, the entire property has been destroyed. In addition, while the owners are panic, they are not able to think quickly and hence the damage done extends to a higher level. This project proposes of utilizing the Internet of Things (IoT) concepts to integrate various sensors that are interface with a variety of devices. These sensors information will be collected in one database that can be connected to the internet and then can be controlled remotely. This system should be embedded with 'smart' elements for example automatic emergency notification through mobile devices, fire location, e.g. GPS coordinate, efficient type of alarm.
Brief Description of the Project In this project the students need to: <ol style="list-style-type: none">1. Design the concept of the system2. Develop the printed circuit board (PCB) of the controller circuit3. Use microcontroller as the brain of the system4. Determine and install required sensors Many design parameters can be studied such as the reading accuracy, control response time, the best location to install the control circuit, its size and the shape, and its smart aspect.
Objectives <ol style="list-style-type: none">1. To design the detection and control system concept2. To develop a system PCB3. To use microcontroller as the system decision maker4. To integrate full system
Technical Approach and Expected Deliverables To achieve above objectives, the students need to first analyze all possible system designs. Once the final design is selected, the student need to start designing the required electrical circuit, test and verify its performance. At the same time, the students need to work with the microcontroller, which can provide the 'smart' features to the board. The student will know that this project has reached it complete state once they manage to build a working system of fire alarm system, that can accurately notify the fire department and related parties about the fire within the shortest time possible. This is the expected deliverable from this project.