

### **Safety Issue in a Power Laboratory**

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Type: Project  
Student time: One week  
Location: Power laboratory and take home

#### **Summary**

Power laboratories operate on high voltages and large currents. They have DC motors, AC transformers, AC motors, and other power components. Nowadays many electrical students use lower voltage devices. It is likely that we ignore the safety issue in the real world.

This project is concentrated on the safety issue in the power laboratory. First year electrical engineering students are required to investigate several topics assigned by the instructor. Then, each group of students should make their recommendation of safety operational guidelines. Finally, the existing operational manual will be introduced to them.

#### **ABET Descriptors**

Eng. Sci Content: Freshmen, introduction to electrical engineering  
Type: Safety Education  
Elements: Establish requirements  
Features: Laboratory introduction  
Constraints: Instructor monitoring, inspection before switch on the circuit  
Effort: Small group

### **Safety Issue in a Power Laboratory**

Students shall work in groups on this project.

The whole class should visit the power laboratory in the electrical engineering department. They are introduced to three phases and single phase power supplies, transformers, resistors, induction motors, DC power supplies, DC motors, and some of the metering. An operation demonstration is conducted.

Next, the group investigate the following safety issues and make suggestions.

- What is the last thing to do when you start an experiment?
- What is the first thing to do when you finish an experiment?
- What is the safe way to operate a switch in the power laboratory?
- What do you do when adjusting operating equipment?
- Is AC or DC more dangerous?
- How do protection devices and shields work?
- Are protection cloths required?
- Why a group leader is required from the safety point of view?

#### **Project deliverables**

A report of the investigation is required. Any suggestions to improve the current situation will be discussed.

#### **Evaluation Criteria:**

Detailed report (word processor)  
Presentation

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### **Engineering Notes:**

Intended learning outcomes for students from this project include:

- Ability to conduct an investigation.
- Development of skills in determining the safety way to do the power experiment
- Ability to read power laboratory manual
- Development of the skills necessary to do the power experiment.
- Development of skills to work as a group.

### **Expected Outcomes:**

Safety and group operation are the most important things for the power laboratory. This project should be assigned to the freshmen. Make every student in the electrical engineering department aware that safety is one of the most important issues for an electrical engineer