

# Switchgear and Protection

**Mr. B Srisatya Ganeshpardhu**  
**Assistant Professor Department of EEE,**  
**Aditya Engineering College,**  
**Surampalem.**

**Course:** Switchgear and Protection  
**Topic:** Static over current relays  
**Semester:** VII  
**Academic Year:** 2021-22  
**Teaching Methodology:** Debate

**About the Course:** This course is specially designed for VII Semester students. This will give the students to apply the various types of protective schemes used for feeders and bus bar protection. They will get to know about the concepts of various protective schemes.



**Fig. 1 Active participation of students in the Debate**

**Innovative Teaching Methodology:** Debate

To improve the communication skills, debates are conducted. Debating involves students in expressing their opinions from two competing perspectives with the goal of contradicting each other's arguments.



**Fig. 2 Debate**

### **About the Topic:**

The relay which does not contain any moving parts is known as the static relay. In such type of relays, the output is obtained by the static components like magnetic and electronic circuit etc. The relay which consists static and electromagnetic relay is also called static relay because the static units obtain the response and the electromagnetic relay is only used for switching operation.

The input of the current transformer is connected to the transmission line, and their output is given to the rectifier. The rectifier was rectifying the input signal and pass it to the relaying measuring unit.

### **Static-relay**

The rectifying measuring unit has the comparators, level detector and the logic circuit. The output signal from relaying unit obtains only when the signal reaches the threshold value. The output of the relaying measuring unit acts as an input to the amplifier.

The amplifier amplifies the signal and gives the output to the output devices. The output device activates the trip coil only when the relay operates. The output is obtained from the output devices only when the measurand has the well-defined value. The output device is activated and gives the tripping command to the trip circuit.

The static relay only gives the response to the electrical signal. The other physical quantities like heat temperature etc. is first converted into the analogue and digital electrical

signal and then act as an input for the relay.

#### Advantages of Static Relay

- The static relay consumes very less power because of which the burden on the measuring instruments decreases and their accuracy increases.
- The static relay gives the quick response, long life, high reliability and accuracy and it is shockproof.
- The reset time of the relay is very less.
- It does not have any thermal storage problems.
- The relay amplifies the input signal which increases their sensitivity.
- The chance of unwanted tripping is less in this relay.
- The static relay can easily operate in earthquake-prone areas because they have high resistance to shock.

#### **Course Outcomes:**

Student will be able to:

- Understand the various types of protective schemes used for feeder protection.
- Understand the various types of protective schemes used for bus bar protection.