



Vidya Jyothi Institute of Technology

(Accredited by NAAC, NBA, Approved by AICTE New Delhi & Permanently Affiliated to JNTUH)

Aziz Nagar Gate, C.B. Post, Hyderabad-500 075

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Z to A Approach

PREPARED BY: Dr. D Bala Gangi Reddy

SUBJECT: Electrical Power Systems

ACADEMIC YEAR:2020-2021

Title of Innovative method/activity: Z to A Approach

In this method applications of a particular concept are explained first and then the concept is then explained later.

Aim of the method:

1. To make a particular concept clear.
2. To develop interest among the students to know exactly the concept.
3. To create long lasting memory of a concept

Implementation/Portrayal of method:

The teacher will explain the applications and its areas in elaborate to the students. The students are expected to conceptualize the topic and present in their own words.

Benefits of method: Students will be able to memorize the concept for long time and reproduce it during their examinations. This was very much useful for lengthy topics. The topic for which this method is implemented is “power generation, transmission & distribution”.

Applications: Grids, Transmission, distribution and Generation applications, SCADAetc.

Explanation: The power system is a network which consists generation, distribution and transmission system. It uses the form of energy (like coal and diesel) and converts it into electrical energy. The power system includes the devices connected to the system like the synchronous generator, motor, transformer, circuit breaker, conductor, etc.

Generation: Electricity generation is the process of generating electric power from sources of primary energy. For utilities in the electric power industry, it is the stage prior to its delivery to end user.

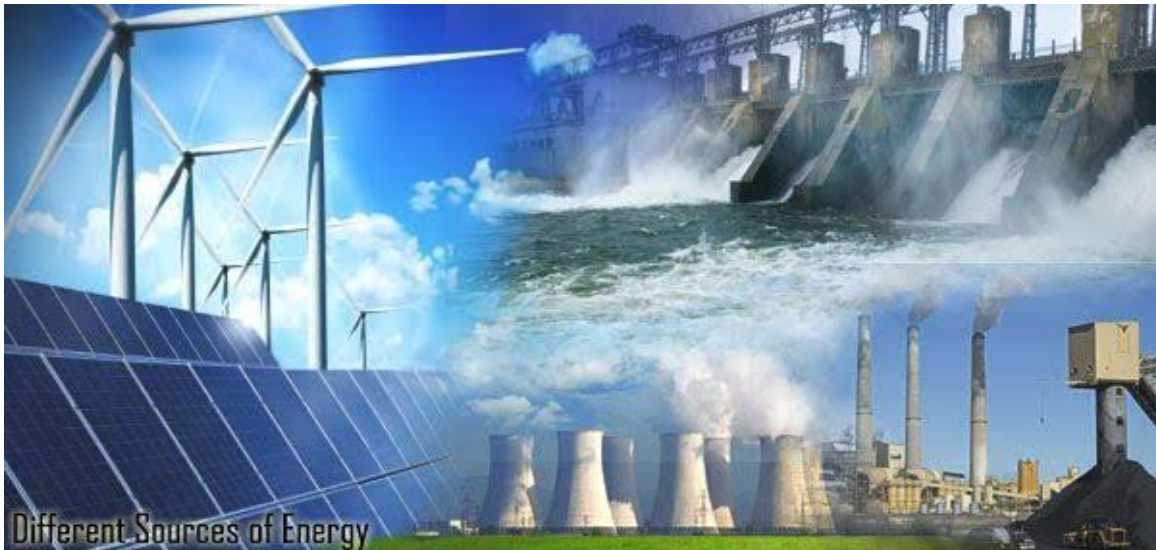


Fig 1: Power Generation

Transmission: Electric power transmission is the bulk movement of electrical energy from a generating site, such as a power plant, to an electrical substation. The interconnected lines which facilitate this movement are known as a transmission network. This is distinct from the local wiring between high-voltage substations and customers, which is typically referred to as electric power distribution. The combined transmission and distribution network is part of electricity delivery, known as electric grid.

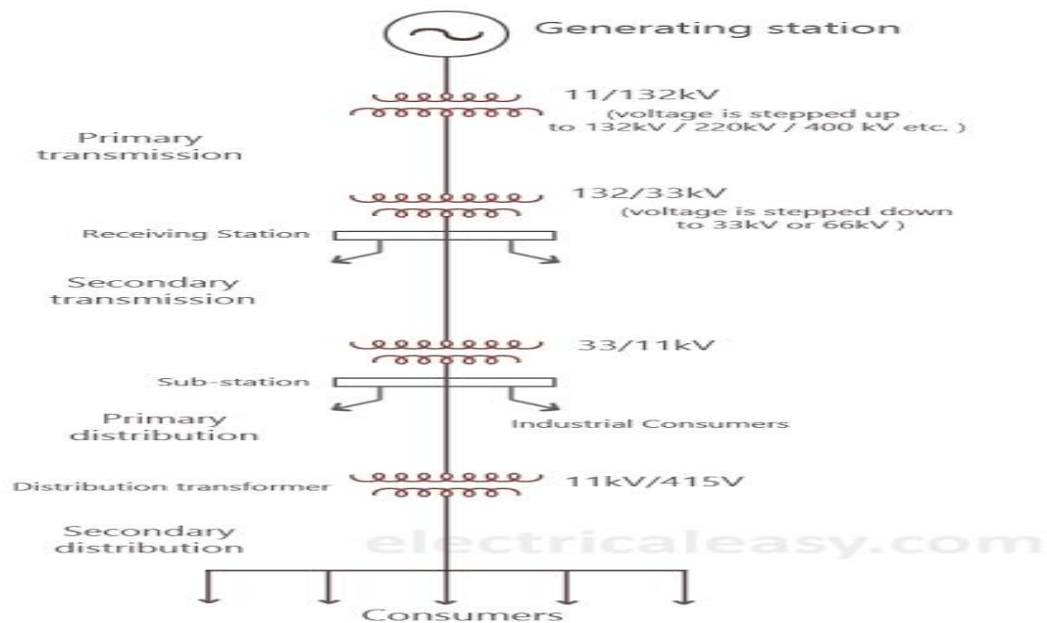


Fig2: Power Transmission

Distribution: Electric power distribution is the final stage in the delivery of electric power, it carries electricity from the transmission system to individual consumers. Distribution substations connect to the transmission system and lower the transmission voltage to medium voltage ranging between 2 kV and 35 kV with the use of transformers. Primary distribution lines carry this medium voltage power to distribution transformers located near the customer's

premises. Distribution transformers again lower the voltage to the utilization voltage used by lighting, industrial equipment and household appliances. Often several customers are supplied from one transformer through secondary distribution lines. Commercial and residential customers are connected to the secondary distribution lines through service drops. Customers demanding a much larger amount of power may be connected directly to the primary distribution level or the sub transmission level.

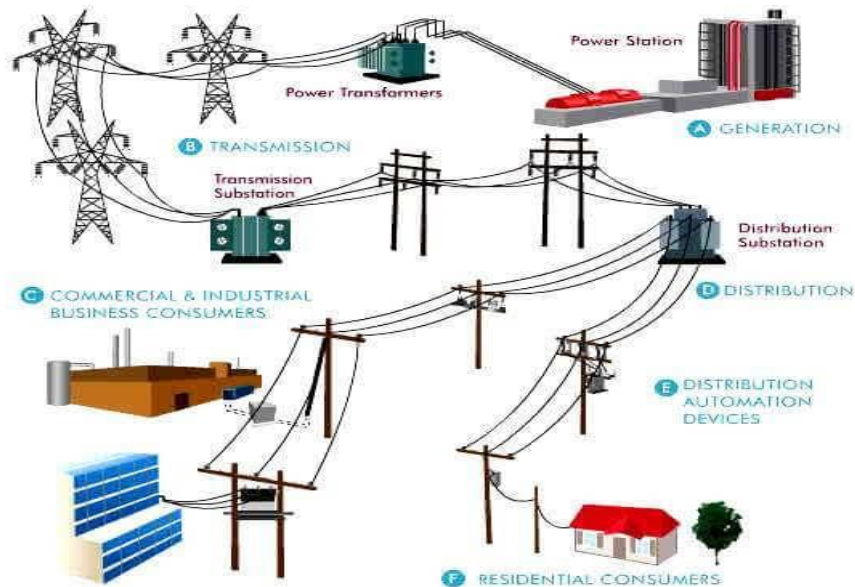
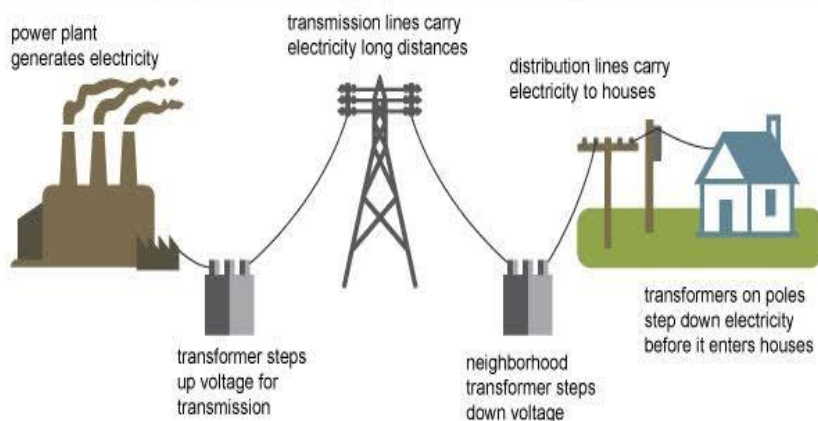


Fig3: Power Distribution

An electric power system is defined as a network of electrical components used to generate, transmit, and consume electric power. Electric grids can be divided into three-layered complex interconnected networks consisting of generation, transmission, and distribution components.

Electricity generation, transmission, and distribution



Source: Adapted from National Energy Education Development Project (public domain)

Fig4: Power generation, transmission& Distribution

Outcome: Better understanding of a topic by students & able to memorize the concept for long time.

For review contact: bgreddy@vjit.ac.in

