



Sarvajank College of Engineering & Technology

Department of Electrical Engineering

Expert Lecture

“Recent Developments in Power Transmission Systems”

Objective of Expert Talk:

- ✓ To aware students about practical expects of power transmission system
- ✓ To identify transmission voltage level from tower structure
- ✓ To give idea about recent advancement in power transmission

Date: 17th February, 2016

Time: 10:00 am. To 12:00 noon

Venue: TIFAC Hall

Audience: PG students , B.E. IV, B.E. III students (both Shift) & Faculty members

Coordinator: Prof. Naman B. Bhatt, Asst. Professor

Speaker:

Prof. (Dr.) Ritesh Patel, Professor and Head, G H Patel College of Engineering & Technology, Vallabh Vidhyanagar

Summary:

The power transmission and transformation system belongs to a part of the power system which is composed of power production part, power transmission part, power transformation part and power use part. So, it bridges between power generation and utilization. The main aim is to transfer electrical power from one point to another point with minimum loss and years by years we see enhancement and advancement towards maximising the transmission efficiency and reliability. For young minds it is crucial to get their self updated with this change in trend so in future they can become contributor to improving system further more hence as part of it Department of Electrical Engineering, SCET had organized an expert talk on **Recent Developments in Power Transmission Systems**.

The power transmission and transformation system is composed of conductors, transformers, switches and high voltage insulators, support towers and advancement is observed in almost each and every component. In expert talk major focus was given to transmission line Towers and different mechanical component of it component identification along with their advancement.

➤ Identification of transmission line voltage:-

Transmission line voltage can be identifying by just visual inspection of certain components of supporting tower:

1. Corona Cage:-

Corona discharge occurs at 300kV hence a tower having corona cage must be 400kV or 765kV as per Indian standards.

2. Earth Wire:-

Line with 2 earth wire must be 400/765kV line. While single earth wire line can be of 132/220kV.

3. Bundle Conductors:-

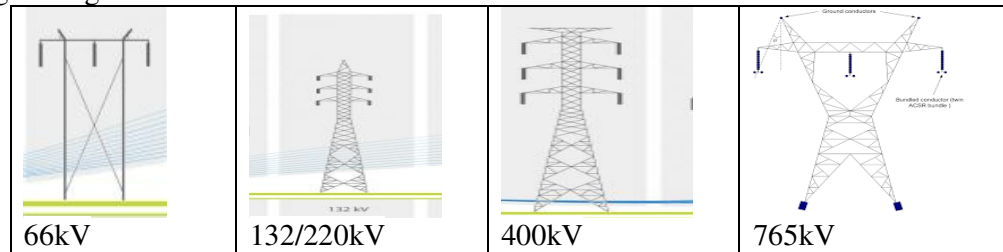
Up to 220kV single conductors are used in each phase but above 220 kV 2 conductors per phase for 400kV and 4 conductors per phase are used for 765 kV.

4. Shape of Guard Ring:-

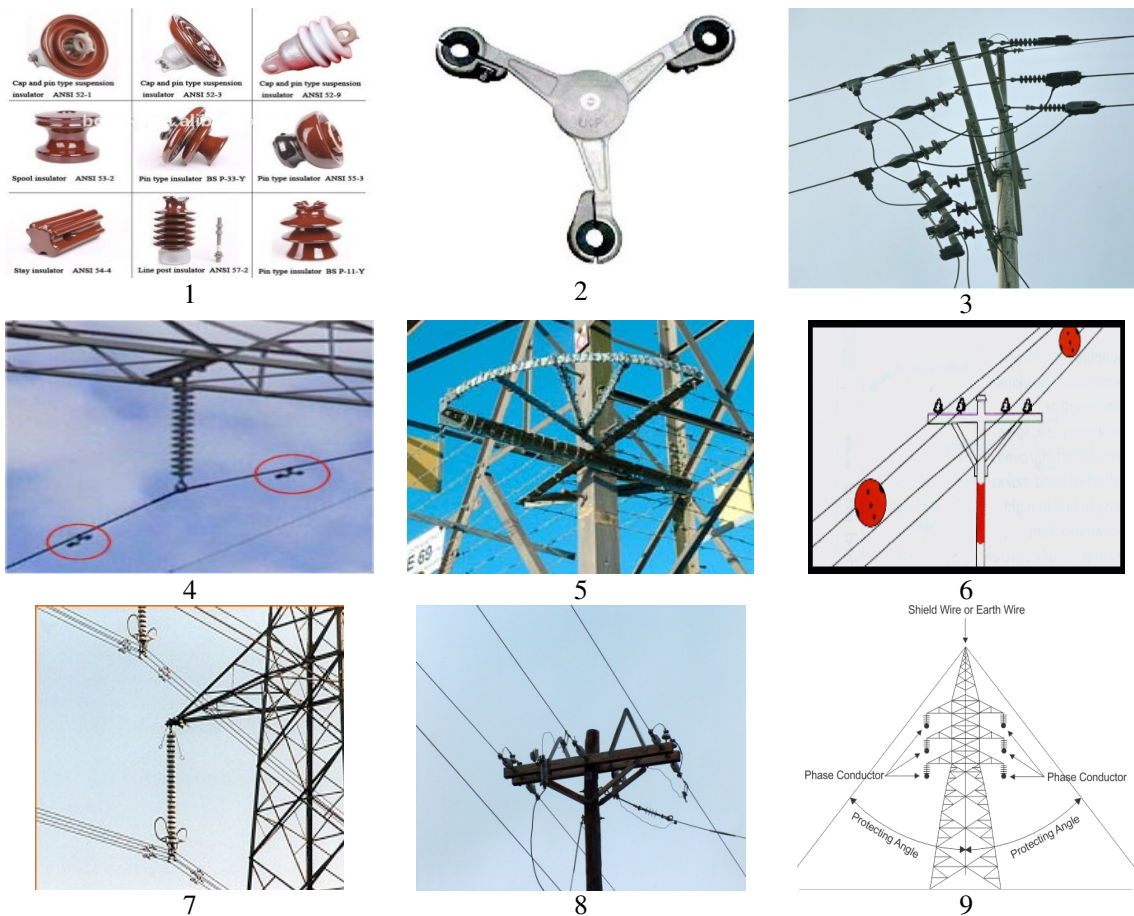
U or a shape guard ring indicates 220kV power line.

5. Tower Shape:-

As per Indian standard mainly following tower structure are used for different voltage ratings.



• The main component of transmission line:



1.Line Insulator

4.Vibration Damper

7.Guard Ring

2.Spacer

5.Anti Climbing Device

8.Bird Guard

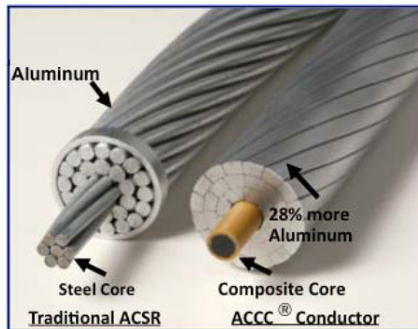
3.Jumper wire

6.Powe Line Markers

9. Earth Wire

- **Self damping and Trapezoidal Conductors:-**

Recently in power transmission circular cross sectioned ACSR are replaced by Trapezoidal and self damping conductors which permits longer spans, provides increased reliability, and lowers overall line cost. It also reduces sag, as well as cuts ice and wind loads. The steel core and the two layers of trapezoidal shaped aluminium wires in this design are separated by a gap designed to provide self-damping characteristics to control Aeolian vibration—eliminating the need for vibration dampers.



Herewith, we have attached some glimpses of our expert lecture.

