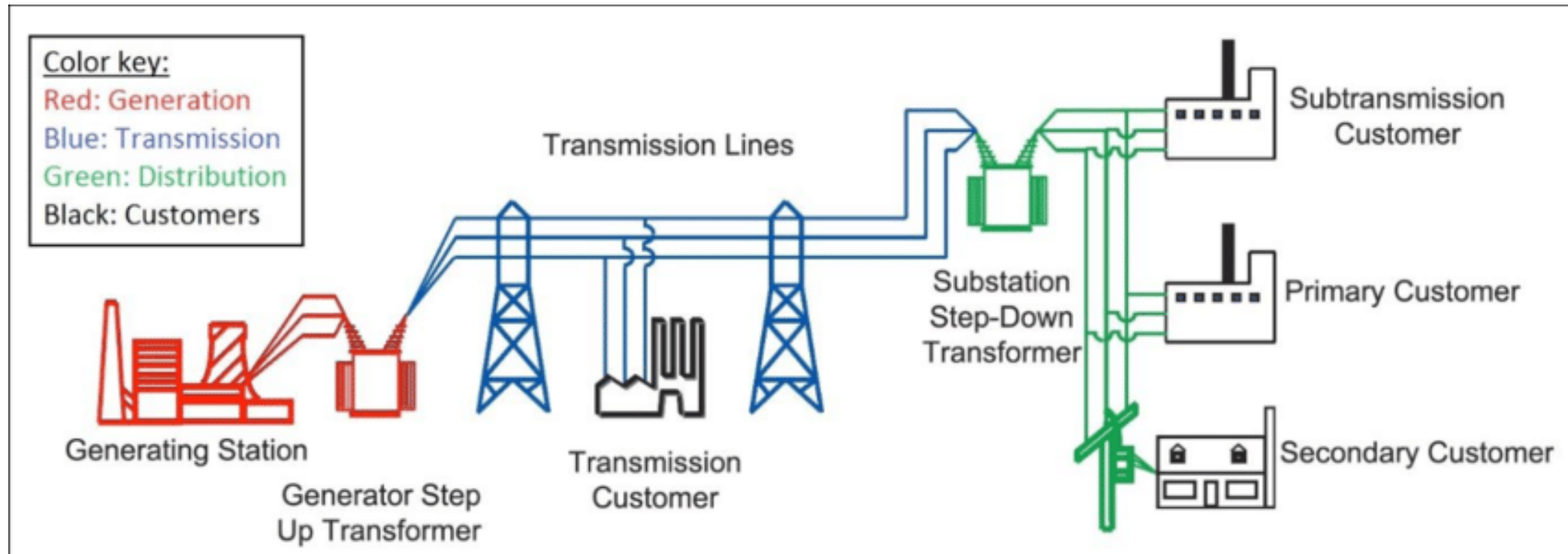


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Hard work matters!

Transmission line parameters



Topics to be covered today:

- Parts of transmission system
- Operating voltage
- Conductor materials
- Transmission line parameters
- Skin effect

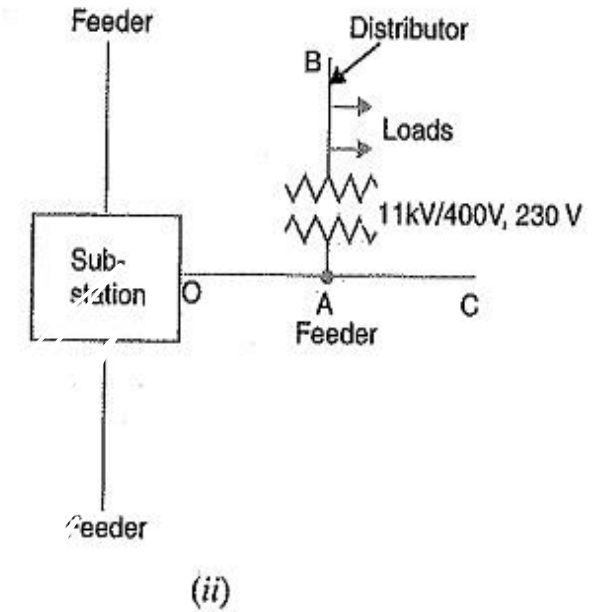
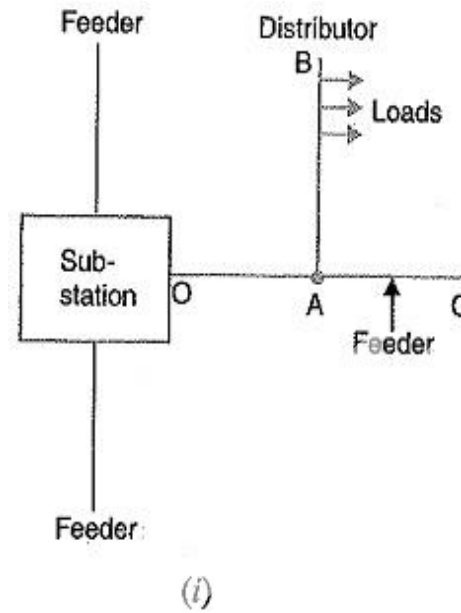
Parts of transmission system

1. Transmission line: Line connecting generating station to substation is called transmission line



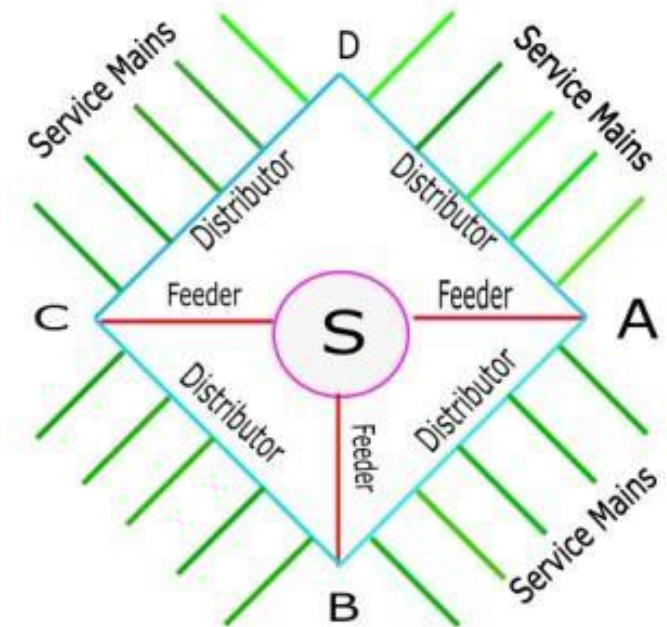
2. FEEDER

2. Feeder: line connecting substation to distributor is called feeder



3. Distributor



3. Lines connecting secondary substation to service main is called distributor.



Operating voltage level:

- High voltage: 11 kv,33 kv
- Extra high voltage: 66 kv,132 kv,220kv,400kv
- Ultra high voltage:765 kv or above

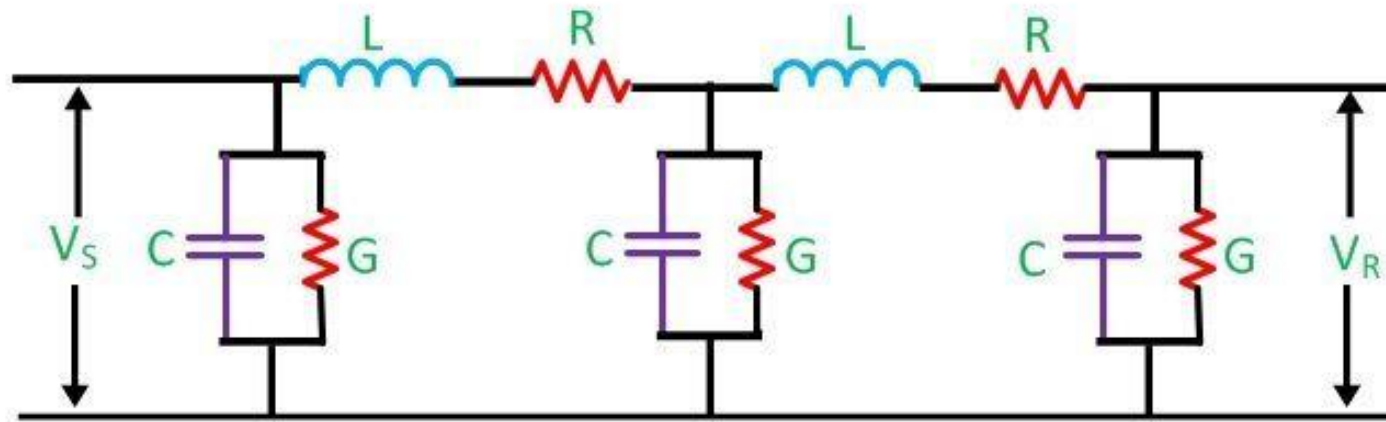
Conductor materials:

- The material used as conductor must possess the following props:
 1. Low specific resistance
 2. High tensile strength 
 3. Low specific gravity to give low weight 
 4. Low cost in order to use over long distance

Types of conductors:

1. Solid conductors
2. Stranded conductors
3. Hollow conductors

Parameters of transmission lines:



Transmission Line Model

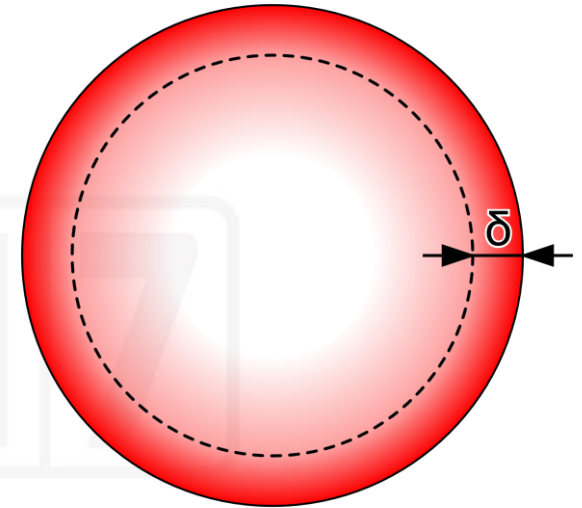
$$Z = R + j\omega L, Y = G + j\omega C$$

Circuit Globe

Resistance:

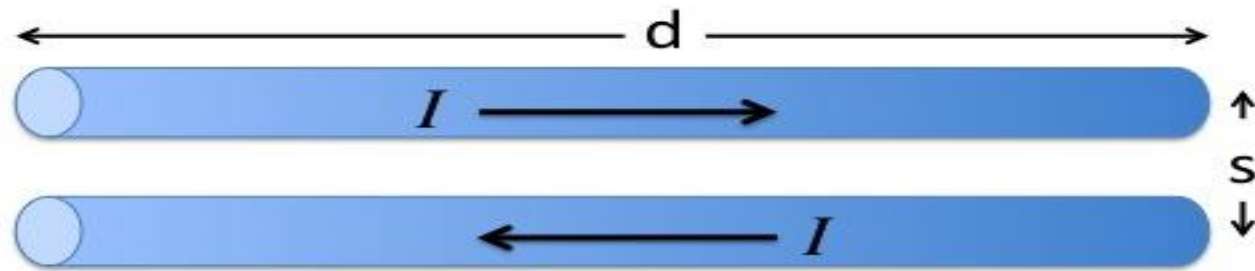
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Skin effect:

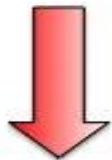
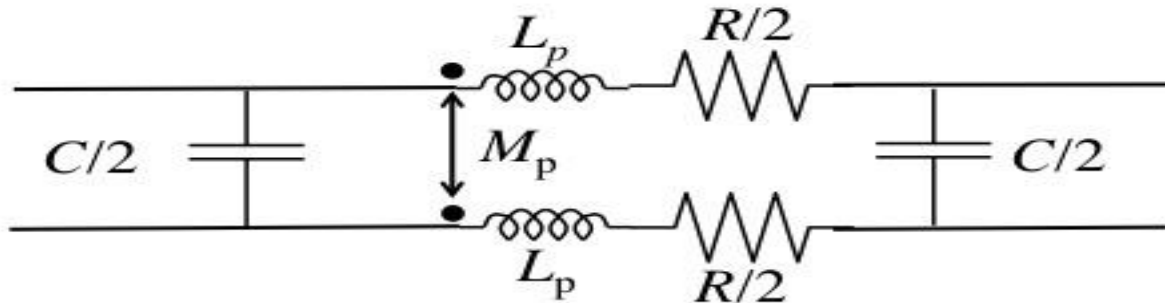


Inductance of transmission lines:

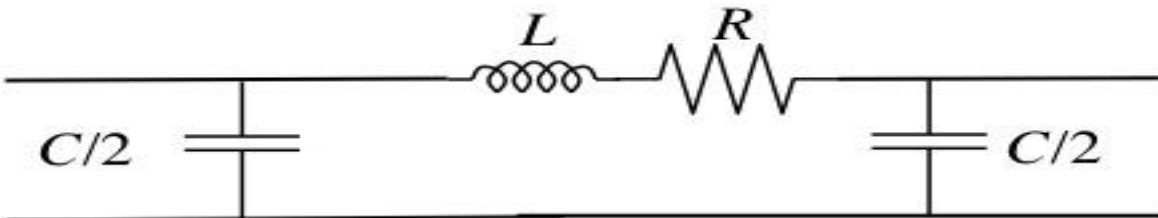
Physical two-wire transmission line



Equivalent circuit with partial inductances and resistances



Simpler equivalent circuit with loop inductance and resistance



Inductance of transmission lines:



Topics to be covered tomorrow:



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