

Electrical Power Engineering



By



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Lecture (5)



D.C. Power Distribution

D.C. Power Distribution Systems

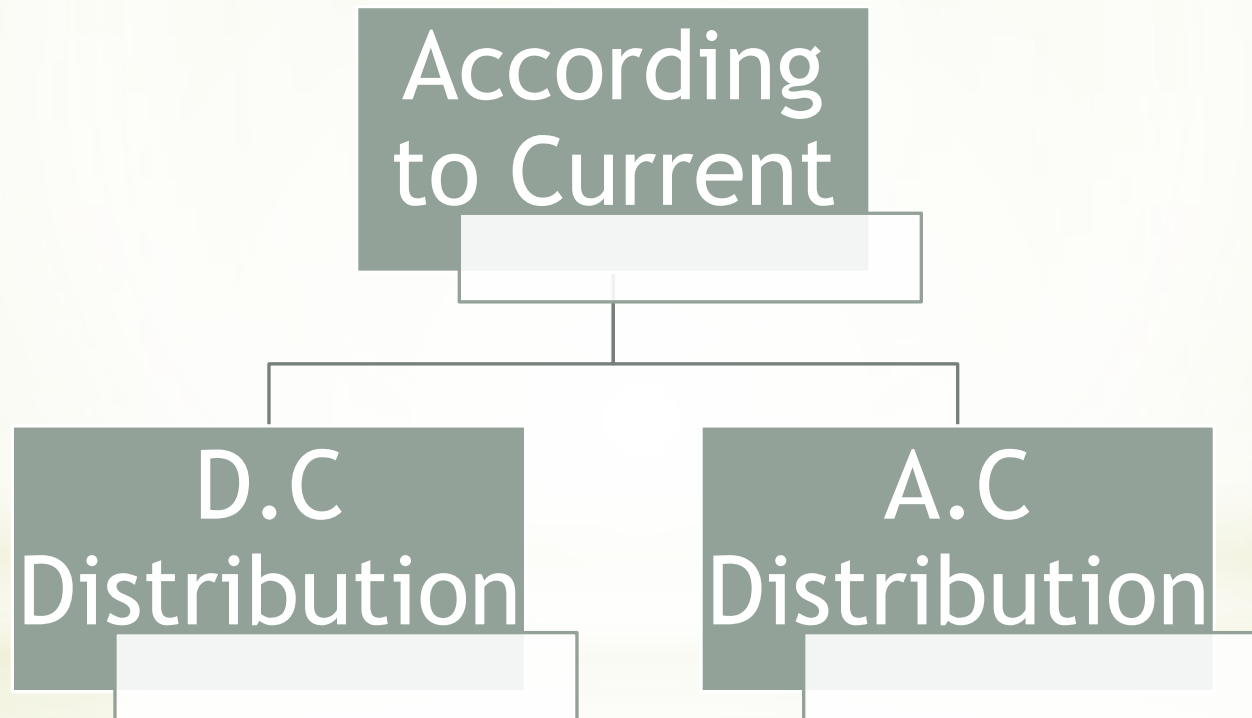
■ Primary Distribution System

At the distribution substation the voltage is stepped down to 11 or 33 or 66 KV and power at this voltage is conveyed to different substations for distribution and to the bulk supply consumers.

■ Secondary Distribution System

From these substations various low voltage (400 volts between phases and 230 volts between phase and neutral) distributors radiate out and feed the consumers.

Classification of Distribution System



Classification of Distribution System

According to character of service

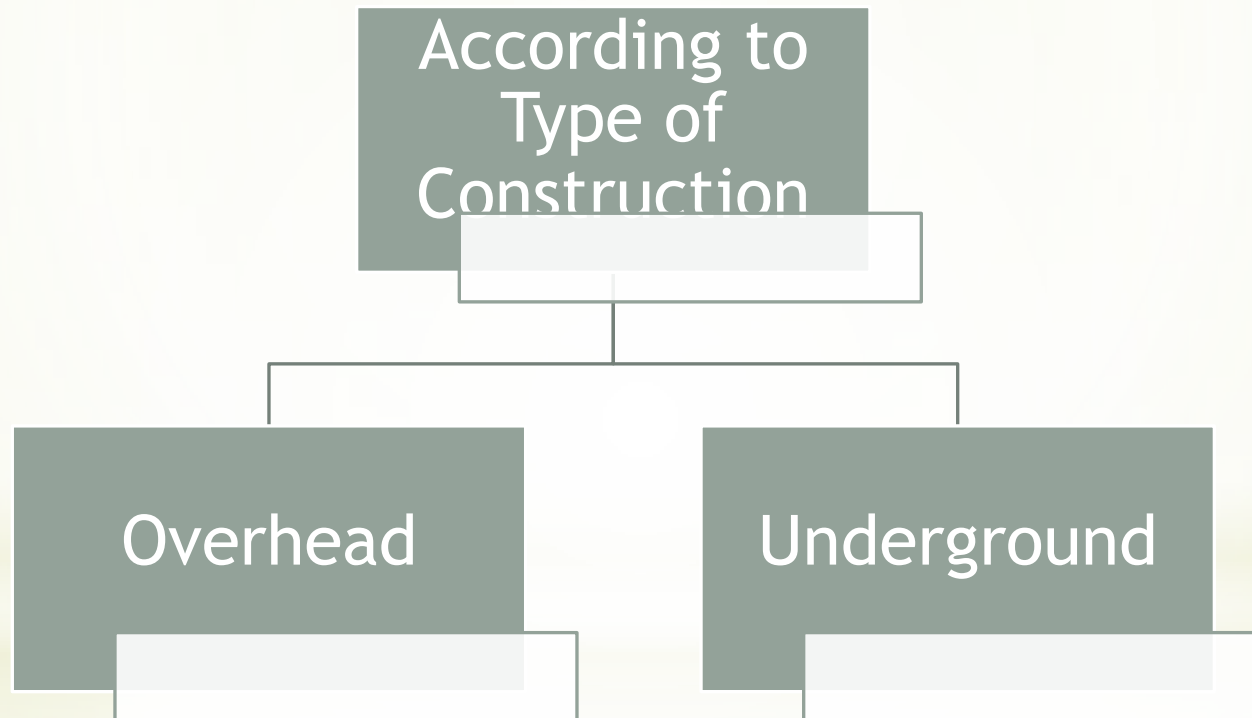
General Light and Power

Industrial Power

Railway

Street Lighting

Classification of Distribution System



Classification of Distribution System

According to
Number of
Wires

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graph TD; A[According to Number of Wires] --> B[Two]; A --> C[Three]; A --> D[Four];
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The diagram is a hierarchical flowchart. At the top is a dark green box containing the text 'According to Number of Wires'. A vertical line descends from the bottom center of this box to a horizontal line. From the left, middle, and right ends of this horizontal line, three vertical lines descend to three separate dark green boxes. The left box contains the word 'Two', the middle box contains 'Three', and the right box contains 'Four'. Each of these three boxes has a light gray rectangular bar at its base.

Two

Three

Four

Classification of Distribution System

According to
Scheme of
Connections

Radial

Ring

Interconnected

Radial System

■ Advantages

- (1) Simple.
- (2) Lowest in first cost.
- (3) Fed at one end.

Radial System

■ Disadvantages

- (i) The end of the distributor nearest to the supply end would be Heavily loaded.
- (ii) The consumers at the farthest end of the distributor would be subjected to serious voltage fluctuations with the variation in load.
- (iii) The consumers are dependent on a single feeder so that a fault on feeder or distributor cuts off the supply from all consumers who are on the side of the fault away from the station.

Ring Main System

■ Advantages

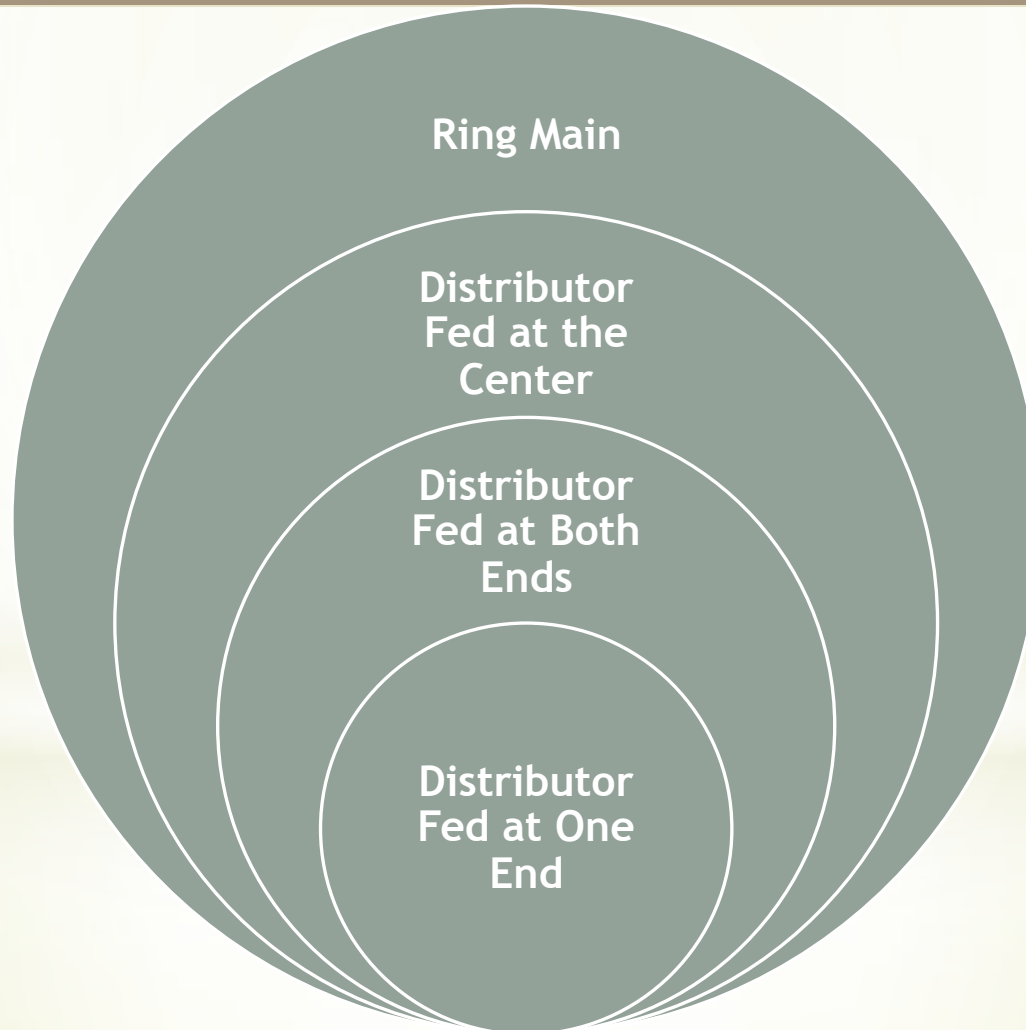
- (i) Each consumer is supplied via two feeders.
- (ii) Less is required as each part of the ring carries less current than in radial system
- (iii) Less-voltage fluctuations.
- (iv) It is more reliable. In the event of fault on any one section the continuity of supply to all consumers can be maintained by isolating the faulty section.

Interconnected System

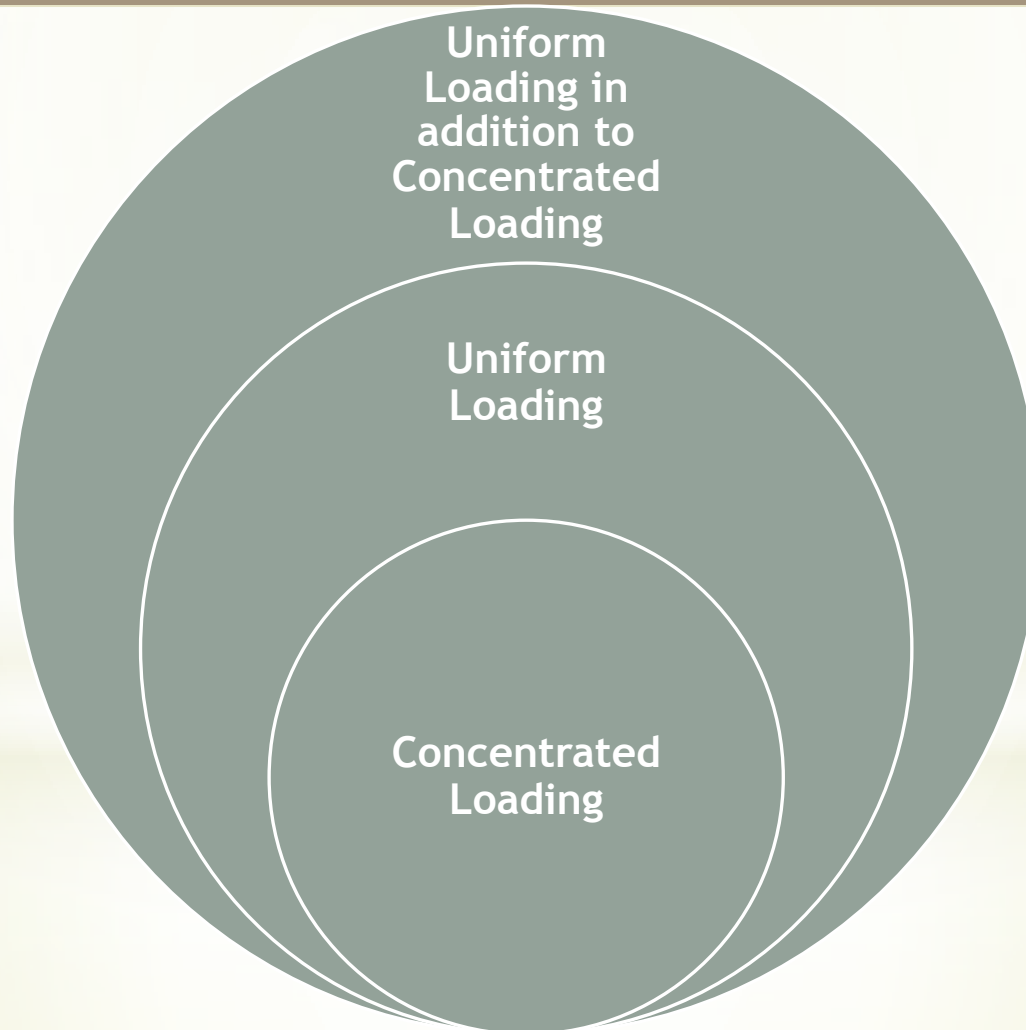
■ Advantages

- (i) Any area fed from one generating station during overload hours can be fed from another power station and thus reserved capacity required is reduced.
- (ii) Reliability of supply is increased.
- (iii) Load factor is increased.
- (iv) Efficiency is increased.

Types of Distributors



Types of Loading



Thank You
For Your Attention



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