

DISTRIBUTION & POWER TRANSFORMER



A distribution transformer provides the final voltage transformation in the electric power distribution system, stepping down the voltage used in the distribution lines to the level used by the customer. The invention of a practical efficient transformer made AC power distribution feasible; a system using distribution transformers was demonstrated as early as 1882.

If mounted on a utility pole, they are called pole-mount transformers. If the distribution lines are located at ground level or underground, distribution transformers are mounted on concrete pads and locked in steel cases, thus known as pad-mount transformers.

Distribution transformers normally have ratings up to 200 KVA, although some national standards can describe units up to 5000 KVA as distribution transformers. Since distribution transformers are energized for 24 hours a day (even when they don't carry any load), reducing iron losses has an important role in their design. As they usually don't operate at full load, they are designed to have maximum efficiency at lower loads. To have a better efficiency, voltage regulation in these transformers should be kept to a minimum. Hence they are designed to have small leakage reactance.

- I. Efficiency better than 98% at full load.
- II. Nil wave form distortion.
- III. No effects of load power factor.

Distribution transformers are classified into different categories based on certain factors such as :

- Mounting location – Pole, pad, underground vault
- Type of insulation – Liquid-immersed or dry-type
- Number of Phases – Single-phase or three-phase
- Voltage class
- Basic impulse insulation level (BIL).

Distribution transformers are normally located at a service drop, where wires run from a utility pole or underground power lines to a customer's premises. They are often used for the power supply of facilities outside settlements, such as isolated houses, farmyards or pumping stations at voltages below 30 kV. Another application is the power supply of the overhead wire of railways electrified with AC. In this case single phase distribution transformers are used.

The number of customers fed by a single distribution transformer varies depending on the number of customers in an area. Several homes may be fed off a single transformer in urban areas; rural distribution may require one transformer per customer. A large commercial or industrial complex will have multiple distribution transformers.

Pad mount transformers are used in urban areas where the primary distribution lines run underground. Many large buildings have electric service provided at primary distribution voltage. These buildings have customer-owned transformers in the basement for step-down purposes. In a secondary network system as used in urban areas, many distribution transformers may be connected in parallel, each equipped with its own network protector circuit breaker to isolate it from the secondary network in case of a fault.

Distribution transformers are also found in the power collector networks of wind farms, where they step up power from each wind turbine to connect to a substation that may be several miles (kilo meters) away

Distribution & Power Transformer:

- Upto 100 KVA, 1-Phase, 11 KV or below
- Upto 3000 KVA 11 & 33 KV
- Upto 3000 KVA OLTC, 33 KV or below