



## Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

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### INDUSTRIAL VISIT REPORT

#### Industry: Vijay Transformers – Guntur

16<sup>th</sup> February 2026

#### 1. Introduction

An industrial visit was conducted to Vijay Transformers, Guntur, to understand the practical manufacturing process of electrical transformers. Transformers are static electrical devices used to transfer electrical energy between circuits through electromagnetic induction. They are mainly used in power generation, transmission, and distribution systems.

The visit provided knowledge about raw materials, core construction, winding process, insulation, oil filling, testing, and quality control procedures followed in transformer manufacturing.

#### 2. About the Industry

Name of Industry: Vijay Transformers

Location: Autonagar, Guntur, Andhra Pradesh

Type: Electrical Transformer Manufacturing Unit

The company manufactures distribution transformers and undertakes repair and maintenance of transformers used for industrial and domestic power supply. The factory consists of separate sections for:

- Core cutting section
- Winding section
- Assembly section
- Tank fabrication section
- Testing section

#### 3. Step-by-Step Manufacturing Process of Transformers

##### Step 1: Design and Specification

The manufacturing process begins with design calculations based on:

- Voltage rating (e.g., 11kV/433V)
- Power rating (kVA)
- Frequency (50 Hz)
- Cooling type (Oil cooled / Dry type)

## **Step 2: Raw Material Inspection**

Important raw materials used:

- CRGO Silicon Steel Laminations (for core)
- Copper / Aluminium conductors (for windings)
- Insulation paper and pressboard
- Transformer oil
- Mild steel sheets (for tank)

All materials are checked for quality before production.

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## **Step 3: Core Cutting and Core Assembly**

- CRGO sheets are cut into required shapes using cutting machines.
- Laminations are stacked in layers to form the transformer core.
- The laminated structure reduces eddy current losses.
- Core is tightly clamped to reduce vibration and noise.

Core assembly is one of the most important stages as it affects efficiency.

## **Step 4: Winding Process**

- Copper or aluminium conductors are wound on winding machines.
- Primary winding and secondary winding are prepared separately.
- Proper insulation paper is placed between layers.
- Coil shape may be cylindrical or rectangular depending on design.

After winding, coils are checked for:

- Proper turns count
- Uniform spacing
- Insulation strength

## **Step 5: Core and Coil Assembly**

- Windings are carefully placed over the core limbs.
- Proper insulation blocks and spacers are inserted.
- Connections are made between winding terminals and bushings.

Mechanical supports are provided to withstand short circuit forces.

### **Step 6: Tank Fabrication**

- Transformer tank is fabricated using mild steel sheets.
- Welding is done carefully to avoid leakage.
- Cooling fins/radiators are attached for heat dissipation.
- Tank is cleaned and painted with anti-corrosion coating.

The tank protects internal parts from environmental damage.

### **Step 7: Drying Process**

- Core and coil assembly is kept in a heating chamber.
- Moisture is removed by vacuum drying.
- This increases insulation strength and life of transformer.

Moisture removal is very important for long life operation.

### **Step 8: Oil Filling**

- Transformer oil is filtered and tested.
- Oil is filled inside the tank under vacuum condition.
- Oil provides insulation and cooling.

Oil level indicator and conservator tank are fixed.

### **Step 9: Testing and Quality Control**

Before dispatch, transformers undergo several tests:

1. Insulation Resistance Test
2. Turns Ratio Test
3. Winding Resistance Test
4. No-Load Test
5. Load Test
6. High Voltage Test

These tests ensure that the transformer operates safely and efficiently.

### **Step 10: Final Inspection and Dispatch**

- Nameplate with ratings is fixed.
- Final painting is done.

- Transformer is packed properly.
- It is then dispatched to the customer site.

#### 4. Observations During Industrial Visit

- Proper safety measures were followed inside the factory.
- Skilled workers operated winding and cutting machines.
- Testing section had specialized equipment for electrical testing.
- Quality control was strictly maintained at every stage.

#### 5. Conclusion

The industrial visit to Vijay Transformers, Guntur helped us understand the complete practical manufacturing process of transformers. The step-by-step process includes design, core preparation, winding, assembly, oil filling, and testing. Each stage plays a vital role in determining transformer efficiency and performance.

Transformers are essential equipment in power systems, and proper manufacturing ensures reliability, safety, and long service life.

#### INDUSTRIAL PHOTOS:







Dr. B. Loveswara Rao, Professor of the EEE Department, explained and demonstrated Transformer concepts to the students during the visit.



The 2nd Year students of the EEE Department participated in an Industrial Visit on 16-03-2026.

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