

# **Report on Industrial Visits** Department of Electrical Engineering July –Dec. 2024

## Industrial Visit at AC Loco Shed in Jhansi

## Date of Visit: 24.10.2024

## Organised by: Dept. of EE, ITM University Gwalior

**Introduction:** A group of second and third-year students from the Electrical Engineering (EE), Electronics and Communication Engineering (ECE), Mechanical Engineering (ME), and Civil Engineering (CE) departments visited the AC Loco Shed in Jhansi. The visit aimed to provide students with practical insights into the maintenance and operation of electric locomotives used by the Indian Railways.

**Purpose of the Visit:** The objective of the visit was to enhance the technical understanding of the students in various disciplines. The AC Loco Shed plays a crucial role in the maintenance of electric locomotives, offering valuable exposure to real-world applications of engineering principles. Students were introduced to the working environment of the shed, enabling them to connect theoretical knowledge with practical applications.

### **Key Highlights:**

- Electrical Engineering (EE) & Electronics and Communication Engineering (ECE):
  - Students observed the electrical systems of the AC locomotives, including the traction motors, transformers, and power electronics systems.
  - The visit provided an understanding of the control systems used for propulsion and braking, the role of microprocessors in locomotives, and the use of high-power electrical components.

## • Mechanical Engineering (ME):

- Mechanical students gained insights into the structural aspects of locomotives, focusing on the maintenance of bogies, axles, and the mechanical linkages between various parts of the train.
- They observed the wear and tear analysis of critical components and the lubrication processes.



They learned about the design and maintenance of railway tracks, foundations for heavy locomotives, and structural considerations for loco sheds.

**Conclusion:** The visit to the AC Loco Shed in Jhansi was a highly informative experience for the students, providing them with practical exposure to the maintenance and functioning of electric locomotives. The interaction with the shed's engineers helped the students bridge the gap between academic learning and industrial practices.















## Industrial Visit Report Supreme Industries Limited, Malanpur

## Date of Visit: 27th November 2024

### Organised by: Dept. of EE, ITM University Gwalior

#### 1. Introduction

An industrial visit to Supreme Industries Limited, Malanpur was organized on 27th November 2024 for the students of the Electrical Engineering Department. The purpose of the visit was to provide students with real-world exposure to electrical engineering applications in a large-scale manufacturing environment. Supreme Industries is a renowned leader in the plastic products sector and operates state-of-the-art automated production lines powered by advanced electrical systems.

### 2. Objective of the Visit

The primary objectives of the visit were to:

- Understand the practical implementation of power supply and distribution systems in an industrial setup.
- > Gain exposure to automation and control systems including PLCs, SCADA, and robotics.
- Learn about energy efficiency practices and sustainability measures in industrial operations.
- > Study maintenance protocols and safety measures for electrical systems.

### 3. Key Learning and Observations

#### a. Power Supply and Distribution Systems

Students were introduced to the high-voltage power supply infrastructure of the facility. The visit included insights into:

- The functioning of substation equipment, including transformers and switchgear.
- The layout of internal power distribution systems, ensuring uninterrupted operations.



#### b. Automation and Control Systems

A tour of the automated production lines revealed:

- Use of Programmable Logic Controllers (PLCs) and Supervisory Control and Data Acquisition (SCADA) systems.
- > Integration of **robotics and sensors** for optimizing process efficiency.
- > The role of electrical engineers in designing, programming, and maintaining these systems.

#### c. Energy Efficiency and Sustainability

The company shared several practices aimed at reducing energy consumption:

- > Continuous monitoring of power usage to identify areas for efficiency improvement.
- > Use of energy-saving technologies and exploration of renewable energy sources.
- > Implementation of energy management systems (EMS) to align with sustainability goals.

#### d. Maintenance and Safety

The importance of maintenance and safety in high-demand environments was emphasized through:

- > Demonstration of **preventive maintenance schedules** and diagnostic tools.
- Overview of safety standards and protocols followed to protect both personnel and equipment.
- > Training and awareness programs conducted for all technical staff.

## 4. Conclusion

The industrial visit to Supreme Industries Limited provided students with a comprehensive understanding of the real-world applications of electrical engineering principles. It bridged the gap between classroom learning and industrial practice, enhancing students' knowledge in areas such as power systems, automation, energy management, and safety standards.

Such exposure is instrumental in preparing future engineers to meet the technical and ethical demands of the industry



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## **Industrial Visit to Railway Spring Factory**

## Date of Visit: September 17, 2024 Organised by: Dept. of EE, ITM University Gwalior

An industrial visit to the **Railway Spring Factory** was organized on **September 17, 2024**, for B.Tech Electrical Engineering students. The purpose of the visit was to provide practical exposure to the manufacturing and engineering processes involved in the railway sector, particularly the production of vital components such as railway springs.

The visit aimed to bridge the gap between classroom learning and industrial application by showcasing real-world practices in electrical and mechanical integration within manufacturing systems. Students were taken through various key departments including **manufacturing, heat treatment, testing**, and **quality control**. In the **manufacturing section**, students observed the design and fabrication of heavy-duty railway springs. The process involved precision forming techniques and material handling systems, where electrical systems play a key role in powering and automating machinery.

During the tour of the **heat treatment department**, students learned about the controlled heating and cooling procedures that impart strength and durability to the springs. Electrical engineering concepts were observed in the operation and regulation of industrial furnaces and temperature control systems. The **testing and quality assurance sections** highlighted the importance of maintaining high performance and safety standards. Students saw how springs are tested for strength, elasticity, and fatigue resistance using advanced testing machines and sensor systems. Overall, the visit offered valuable insights into how electrical engineering supports and enhances manufacturing efficiency, automation, and quality control in the railway industry. It was an enriching experience that helped students connect theoretical knowledge with industrial practices.



"CELEBRATING DREAMS"





#### "CELEBRATING DREAMS"







## Industrial Visit at AC Loco Shed in Jhansi

## Date of Visit: 21.10.2024 Organised by: Dept. of EE, ITM University Gwalior

## **Introduction:**

On 21.10.2024, the first-year students of the Electrical, Electronics & Communication, Mechanical, and Civil Engineering departments had the opportunity to visit the AC Loco Shed in Jhansi. The visit was aimed at giving students practical exposure to locomotive maintenance, operations, and the application of engineering principles in real-world settings.

## **Purpose of the Visit:**

The primary objective of the visit was to provide students with hands-on knowledge of the functioning of AC locomotives, their maintenance procedures, and how various engineering disciplines contribute to the efficient operation of the railway system.

## **Key Highlights:**

### 1. Overview of AC Locomotives

Students were briefed on the working principle of alternating current (AC) locomotives, the role of power conversion in driving motors, and the advantages of AC over DC in railway systems.

#### 2. Maintenance Procedures

The loco shed engineers demonstrated the periodic maintenance activities carried out on the locomotives, including inspections, overhauling, and troubleshooting of key components such as traction motors, circuit breakers, transformers, and cooling systems.

#### 3. Role of Engineering Disciplines:

- **Electrical Engineering (EE):** Focused on the electric traction system, transformers, and power circuits.
- **Electronics and Communication Engineering (ECE):** Highlighted the role of communication systems and electronic control units in locomotive operations.
- Mechanical Engineering (ME): Covered the mechanical components like bogies, suspension systems, and braking mechanisms.
- **Civil Engineering (CE):** Students learned about the structural aspects of the shed, track design, and how civil engineers contribute to railway infrastructure.



#### 4. Interaction with Engineers:

Students engaged in interactive sessions with the loco shed engineers, gaining insights into the challenges faced during maintenance, advances in locomotive technology, and the importance of interdisciplinary knowledge in solving practical problems.

## **Conclusion:**

The visit to the AC Loco Shed, Jhansi, was a valuable learning experience for the students, as it allowed them to bridge the gap between theoretical knowledge and practical applications. The students left with a better understanding of how their respective fields of study contribute to the functioning of complex systems like railway locomotives.





