



Akhil Bharatiya Maratha Shikshan Parishad's  
Anantrao Pawar College of Engineering & Research



Record No.: ADM/D/36B

DoI: 01/02/2025

Revision: 00

**Internal Correspondence**

Date:- 12/03/2026

**Industrial Visit Report**

**Department:** Electronics and Telecommunication Engineering

**Class:** Second Year (SE E&TC)

**Date of Visit:** 28/02/2026

**Place of Visit:** Giant Metrewave Radio Telescope (GMRT), Khodad.

**Faculty Coordinator:** Prof. A. M. Naikwade and Prof. A. A. Suryawanshi.

**Total Students:** 30

**1. Introduction**

The Department of Electronics and Telecommunication Engineering organized an industrial visit for Second Year students to the **Giant Metrewave Radio Telescope (GMRT), Khodad** on the occasion of National Science Day. The visit was arranged to provide students with exposure to advanced technologies used in radio astronomy, antenna systems, and communication engineering.

Industrial visits are an essential part of engineering education as they help students bridge the gap between theoretical knowledge and practical implementation. Through this visit, students were able to observe real-time applications of concepts such as electromagnetic waves, antennas, signal processing, and RF communication systems.


**2. Objectives of the Visit**

The main objectives of the industrial visit were:

1. To understand the working principle of radio telescopes and radio astronomy.
2. To study large antenna arrays and their communication systems.
3. To learn about signal reception, amplification, and processing of radio signals.
4. To expose students to modern research facilities in electronics and communication engineering.

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5. To motivate students toward research and innovation in communication and space technology.

### 3. About GMRT

The **Giant Metrewave Radio Telescope (GMRT)** is one of the world's largest radio telescope arrays operating at meter wavelengths. It is located near Khodad village in Pune district of Maharashtra and is operated by the National Centre for Radio Astrophysics, a research center of the Tata Institute of Fundamental Research.

GMRT consists of **30 fully steerable parabolic dish antennas**, each having a diameter of **45 meters**. These antennas are distributed over a region of about **25 kilometers** forming a large array system.

The telescope receives radio signals emitted by celestial bodies such as galaxies, pulsars, and stars. These signals are extremely weak and require sophisticated electronic systems for amplification and processing.

### 4. Activities during the Visit

During the visit, students attended an introductory session conducted by GMRT scientists and engineers. They explained the significance of radio astronomy and the role of GMRT in astronomical research.


Students were taken to the antenna field where they observed the **large parabolic dish antennas**. The experts explained the structure and working of the antenna system and how radio waves from space are collected by the dish.

The students also visited the **control room**, where engineers monitor and control the operation of the antennas. They learned how signals received from different antennas are combined using correlation techniques to form high-resolution astronomical images.

The experts demonstrated how advanced **signal processing techniques**, RF electronics, and computer systems are used to analyze astronomical data.

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### 5. Learning Outcomes

After the visit, students gained knowledge about:

- Practical implementation of antenna systems.
- RF communication and signal processing technologies.
- Applications of electronics in space research and astronomy.
- Large-scale scientific instrumentation and control systems.

The visit enhanced students' understanding of core electronics concepts and encouraged them to explore research opportunities in communication engineering and space technology.

### 6. Conclusion

The industrial visit to the **Giant Metrewave Radio Telescope (GMRT)** on the occasion of National Science Day was a valuable and informative experience for the students. It helped them understand the practical applications of electronics and telecommunication engineering concepts in the field of radio astronomy and space communication. Such visits play a significant role in motivating students toward research and innovation in advanced technologies.



### Photos of Visit



1. Delivering information about how GMRT makes image from signals.

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**2. Understanding of telescope arrays operating**



**3. GMRT Lab equipment's**


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**CO-PO-PSO Mapping**

Activity / Learning Outcome	CO	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2
Understanding the working of radio telescopes	CO1	✓	✓		✓	✓	✓	
Study of antenna systems and RF communication	CO2	✓	✓	✓	✓	✓	✓	✓
Observation of signal processing techniques	CO3	✓	✓	✓	✓	✓	✓	✓
Interaction with scientists and technical staff	CO4	✓	✓		✓		✓	✓
Understanding applications of E&TC in space research	CO5	✓	✓	✓	✓	✓	✓	✓

  
**Dr. Amar B. Deshmukh**

**HOD (E&TC)**

  
**Dr. S. B. Thakare** 16-3-26

**Principal**

