INDUSTRIAL VISIT REPORT

Based on Experiential Based Learning

Under the Subject

"Optical Fiber and Communication (OFC)"
(Subject Code: ECT413)

Date of Visit: **15 October 2025**

Venue: **BSNL Office, Kollam**

Organized by

Department of Electronics and Communication Engineering (ECE)

S7 Students

Bishop Jerome Institute, Kollam

A Centre of Excellence in Professional Education for
Engineering and Technology, Management and Architecture
Catholic Diocese of Quilon

Fatima College Road, Karbala,
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Introduction

As part of the **Experiential Based Learning (EBL)** initiative under the subject *Optical Fiber and Communication (OFC)* (Subject Code: ECT413), the Department of Electronics and Communication Engineering organized an industrial visit to the **BSNL Office, Kollam** on **15 October 2025**.

The main purpose of this visit was to provide students with practical exposure to optical fiber communication systems and understand their real-world applications in the field of telecommunication. Through this visit, students were able to observe how theoretical concepts such as optical transmission, attenuation, and multiplexing are implemented in live communication networks.

The visit aimed to bridge the gap between classroom learning and field experience, enhancing the students' technical knowledge, analytical skills, and overall understanding of optical fiber networks. It served as an opportunity to connect academic concepts with industrial practices, thus promoting experiential learning and professional growth among students.

About the Subject – Optical Fiber and Communication (OFC)

Optical Fiber and Communication (OFC) is a subject in the **Electronics and Communication Engineering (ECE)** curriculum that focuses on the principles and applications of light wave transmission through optical fibers. It deals with the design, working, and performance analysis of optical communication systems used for high-speed data transfer.

Topics such as fiber optic components, attenuation, dispersion, optical sources, detectors, and multiplexing techniques are integral to this course. The subject also emphasizes the advantages of optical fiber—such as high bandwidth, low signal loss, and immunity to electromagnetic interference—making it a vital element in modern communication systems.

This industrial visit to **BSNL, Kollam** provided students with a real-time understanding of the technologies and tools that bring these theoretical concepts to life, thereby enhancing their practical knowledge and technical insight into the field of optical communication.

About BSNL (Bharat Sanchar Nigam Limited)

Bharat Sanchar Nigam Limited (BSNL) is a leading government-owned telecommunications company in India, established in the year 2000. It plays a vital role in providing broadband, mobile, and landline services across the nation, with a special emphasis on extending reliable connectivity to rural and remote areas.

BSNL's extensive **optical fiber network** forms the backbone of India's communication infrastructure. It supports a wide range of services such as internet connectivity, leased lines, 4G/5G backhaul, and enterprise communication solutions, contributing significantly to the country's digital growth.

At the **BSNL Office, Kollam**, engineers manage a vast network of fiber optic routes that interconnect major telecom exchanges and data centers. The facility is also responsible for essential operations such as fault monitoring, fiber splicing, and testing of optical fiber links, ensuring uninterrupted communication services and optimal network performance.

Objectives of the Visit

The industrial visit was designed with the following learning objectives:

- To understand the installation and maintenance of optical fiber cables.
- To observe optical transmission and distribution systems in operation.

- To gain knowledge of network management systems used for fault detection and service reliability.
- To experience how theoretical OFC concepts are practically applied in telecommunication systems.
- To interact with industry professionals and gain insights into current telecom practices and technologies.

Experience and Learning Outcomes

During the visit, **BSNL engineers** provided an in-depth demonstration of the optical fiber communication process, including how signals are transmitted through fiber cables with minimal loss. Students observed splicing and jointing procedures, where optical fibers are fused using precision splicing machines to maintain signal continuity.

A live demonstration of **Optical Time Domain Reflectometer (OTDR)** testing helped students understand how fiber faults and losses are detected and analyzed in the field. The team also explained **Network Operation Center (NOC)** activities, where they monitor network performance and handle real-time fault management.

The engineers shared valuable insights on the layout of BSNL's fiber network, distribution systems, and underground cable routing techniques. Through these hands-on demonstrations and expert interactions, students were able to relate classroom theories—like attenuation, dispersion, and wavelength division multiplexing—to practical telecom applications.

Key Learnings

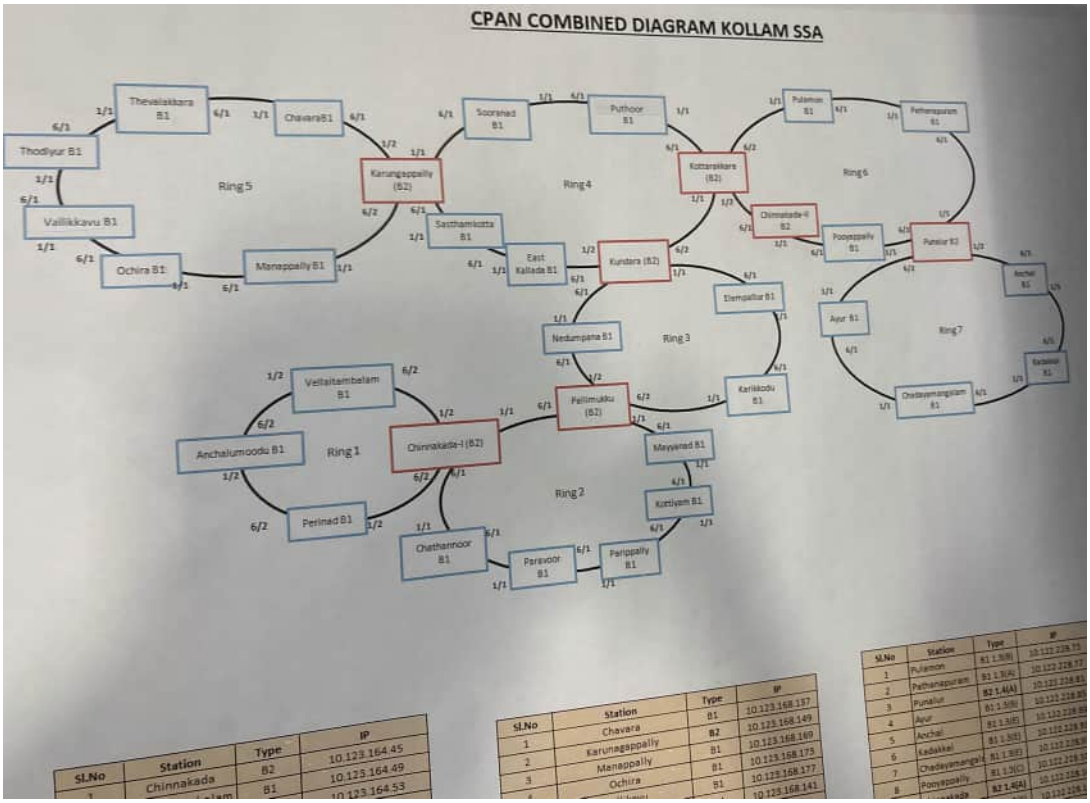
- Real-world understanding of fiber optic communication systems.
- Familiarity with BSNL's network topology and infrastructure.
- Exposure to splicing, testing, and network monitoring equipment.
- Awareness of safety practices in fiber optic installation.
- Insight into the future of optical communication technologies.

Photo Section

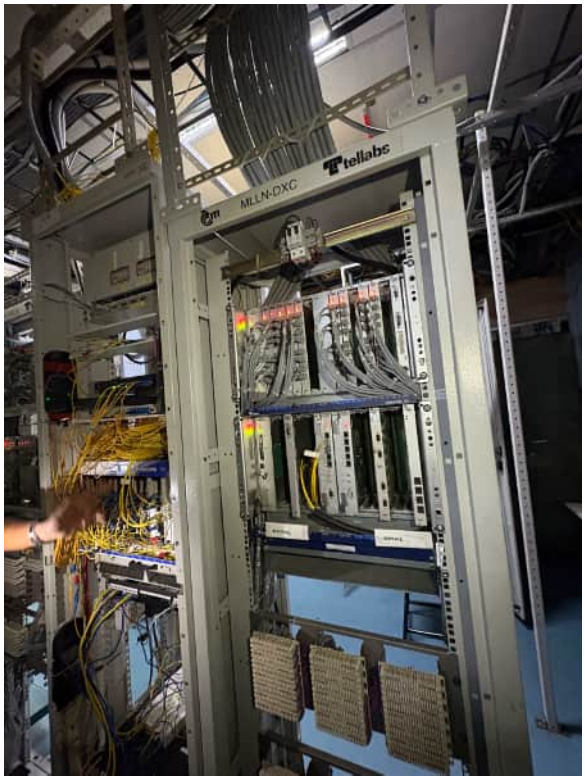
Figure 1: Group photo of S7 ECE students.

Demonstration of optical fiber splicing and testing.

Students observing OTDR testing at the network lab.



fiber cable layout



OLT - Optical Line Terminal

BNG – Broadband Network Gateway

Interactive session with BSNL engineers.

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Electronics and Communication Engineering.

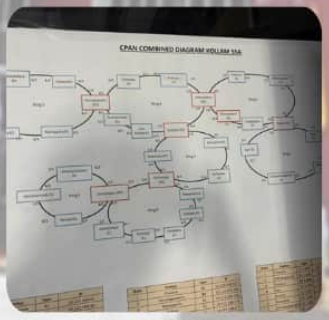
Industrial Visit to BSNL Office,kollam

Exploring Optical Fiber Communication (OFC)

S7 ECE






15/10/2025

Conclusion

The industrial visit to **BSNL, Kollam**, served as a highly valuable learning experience . It effectively linked theoretical knowledge with practical exposure, giving students a clear perspective on how optical fiber communication forms the backbone of today's digital world.

By observing live demonstrations and interacting with BSNL engineers, students gained practical insights that strengthened their conceptual understanding and prepared them for future roles in telecommunications and networking industries.

The visit not only enhanced technical learning but also inspired students to explore careers in the field of communication engineering and fiber technology.