

RESEARCH CELL REPORT

Bengal College of Engineering and Technology, Durgapur

Report for the Month of July 2025

1. Introduction

The Research Cell of Bengal College of Engineering and Technology (BCET), Durgapur, has been actively engaged in promoting research and innovation among faculty and students. In line with the decisions taken in the meeting held on 15th January 2025, the Cell has given special emphasis to **water management** as a key research and campus-sustainability initiative during the first half of 2025.

2. Key Focus Area: Water Management

Recognising the critical importance of efficient water usage and conservation, the Research Cell prioritised the development of a smart water management system for the campus. The objective was to monitor water consumption, detect leakages at an early stage, optimise distribution, and generate research data for academic and applied research purposes.

3. Installation of Water Management Sensors

A major achievement of the Research Cell during this period has been the successful installation of a large number of **water management sensors** across the campus. The details are as follows:

- Ultrasonic water level sensors installed in all major overhead tanks and underground reservoirs.
- Electromagnetic and ultrasonic flow sensors installed at key distribution points (Main Gate, Academic Blocks, Hostels, and Administrative Building).
- Water quality sensors (pH, turbidity, and TDS) installed at selected drinking water points and storage tanks.
- Sensors integrated with a central IoT-based monitoring dashboard for real-time data acquisition and visualisation.

The installation work was completed in phases between March and June 2025 under the coordination of the Research Cell members.

4. Locations Covered

Sensors have been installed at the following major locations:

- Administrative Block and Central Library
- Academic Blocks A, B and C
- Boys' Hostels and Girls' Hostels
- Main underground reservoirs and overhead tanks
- Pump houses and primary water distribution lines

5. Outcomes and Benefits

- Real-time monitoring of water levels and consumption patterns has been established.

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- Early detection of leaks and abnormal consumption has become possible, leading to reduced water wastage.
- Valuable research data is now available for faculty and student projects on smart water management, IoT applications, and sustainable campus initiatives.
- The system serves as a living laboratory for research and hands-on learning.

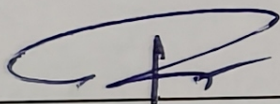
6. Future Plans

- Expansion of the sensor network to remaining campus areas.
- Development of predictive analytics and automated control systems for pumps.
- Encouragement of student projects, minor research grants, and research publications based on the sensor data.
- Exploration of external funding opportunities for further research in smart water management systems.

7. Conclusion

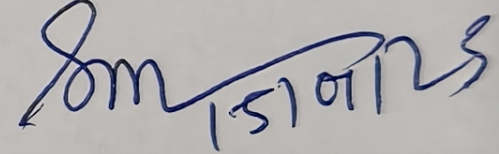
The Research Cell has made significant progress in the domain of water management through the successful installation of numerous water management sensors across the BCET campus. This initiative not only contributes to campus sustainability but also opens new avenues for research, innovation, and experiential learning. The Committee remains committed to further strengthening research activities in this and other emerging areas.

Prepared by:



Dr. Rajesh Agrawalla
Convener, Research Cell

Approved by:



Dr. Santanu Modak
Dean (R&D)

Dr. Santanu Modak
Dean (Research)
Bengal College of Engineering & Technology (CC:125)