



# **BITS Pilani**

Pilani | Dubai | Goa | Hyderabad | Mumbai

**BIRLA INSTITUTE OF TECHNOLOGY &  
SCIENCE (BITS) PILANI**

**("INSTITUTE")**

**RENEWABLE ENERGY CLUB, PILANI CAMPUS**

**OASIS Co-ordinator: Deepak Aggarwal**

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## **Projects:**

### **Plastic Use Survey**

Conducted a field survey of the plastic usage on campus based on the type of plastic (Polyethylene Terephthalate, High Density Polyethylene, Low Density Polyethylene). Using the Data collected we determined the total amount of plastic that can be recycled and amount of plastic that is adding to the pollution in the local area.

### **Waste Management System: Plastic sorting and recycling project**

The groundwork of this project consisted of an extensive survey of the campus and its plastic usage, later a recycling process was planned consisting of purification and extrusion of HDPE waste. Finally, the project consisted of sorting the waste at the producer level by colour-coded dustbins for different types of plastics

### **Cyclotron**

Developed for our OASIS and APOGEE events, a competition that will test participants' cycling skills and endurance. Each contestant has 20 seconds to pedal a stationary cycle placed on a fixed stand. The cycle is connected with a magnet on the wheel and a magnetic reed sensor on the rim side, which marks each revolution. The magnetic reed sensor is connected to Arduino which processes the information and outputs the distance covered and speed. As participants pedal, LEDs integrated into the setup will glow according to the distance covered. The person covering maximum distance will be crowned the winner. Additionally, We are also calculating energy saved, and the maximum speed achieved. It's a good chance to have a great time while promoting sustainable practices.

## **Upcoming Projects**

### **Project 1: Piezoelectric Panels for Small-Scale Electricity Generation**

This project aims to create piezoelectric panels for small-scale electricity generation. We're aiming to analyze materials like PZT and PVDF and designing durable panels optimized for energy conversion. An energy harvesting system will be implemented, and field test prototypes for real-world validation will developed. The generated electricity can power low-energy devices, sensors, and remote monitoring systems.

## **Project 2: Small-Scale Biomass Gasification/Pyrolysis Unit**

With this project, we aim to convert biomass like agricultural residues and waste into syngas and biochar. The reactor design, feedstock analysis, and gas cleaning processes are currently being considered for efficient operation. The project explores the potential of biochar in agriculture and integrates syngas into power generation systems.