

ROBOTHON

# TEAM SWITCH

working towards a better future.....



# Problem

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## Electricity wastage in washrooms

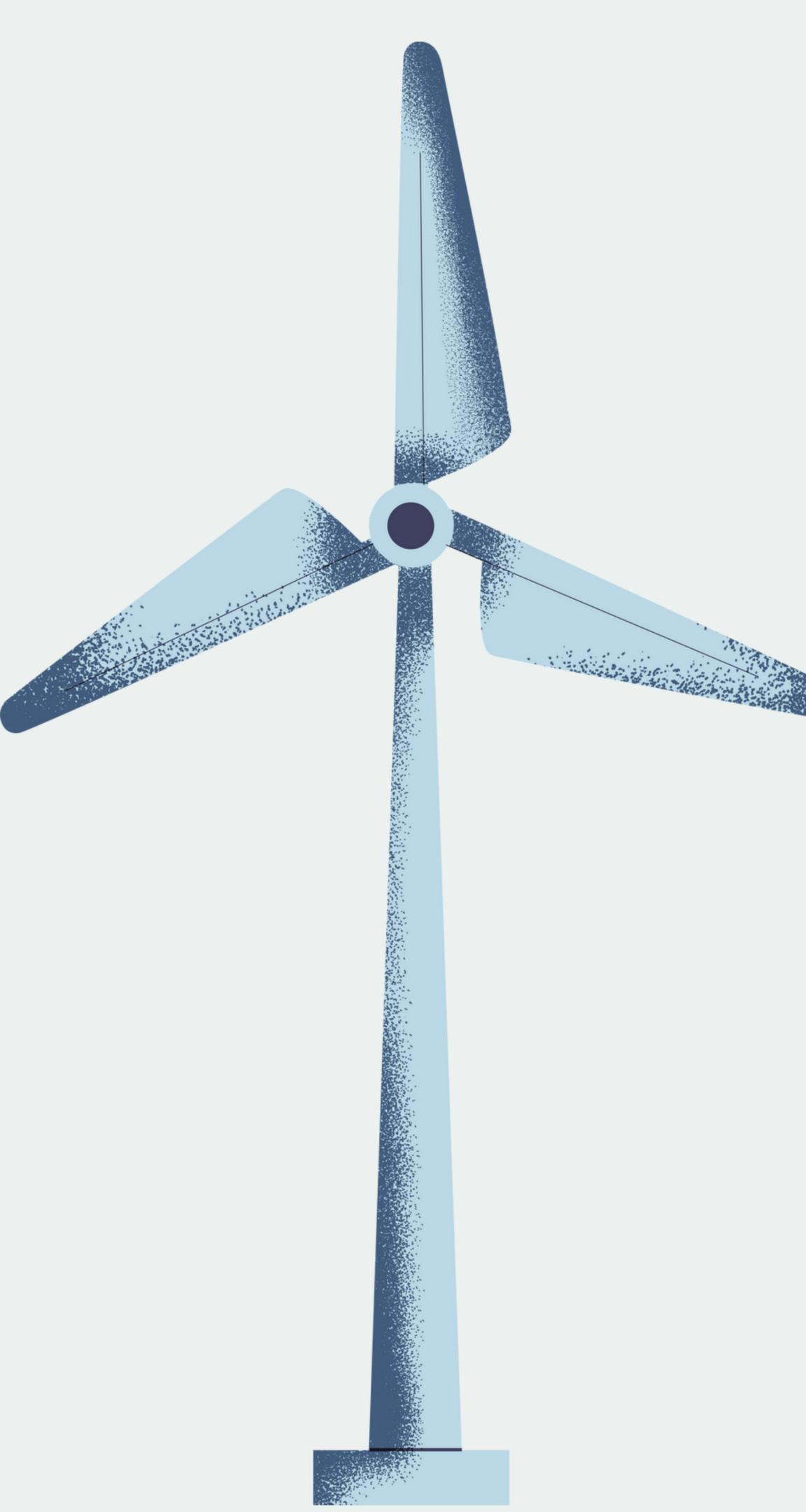
IIT Kanpur is a vast campus with many washrooms, toilets, and restrooms all across the campus which are usually vacant.

But the lights are still....

approximately wasting  
600 kwh daily

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# Solution

We will be creating an “**Automatic SWITCH**” which will switch on the lights when someone enters the washroom and switch it off again.

just simple as that...with great saving....

# ₹Costing

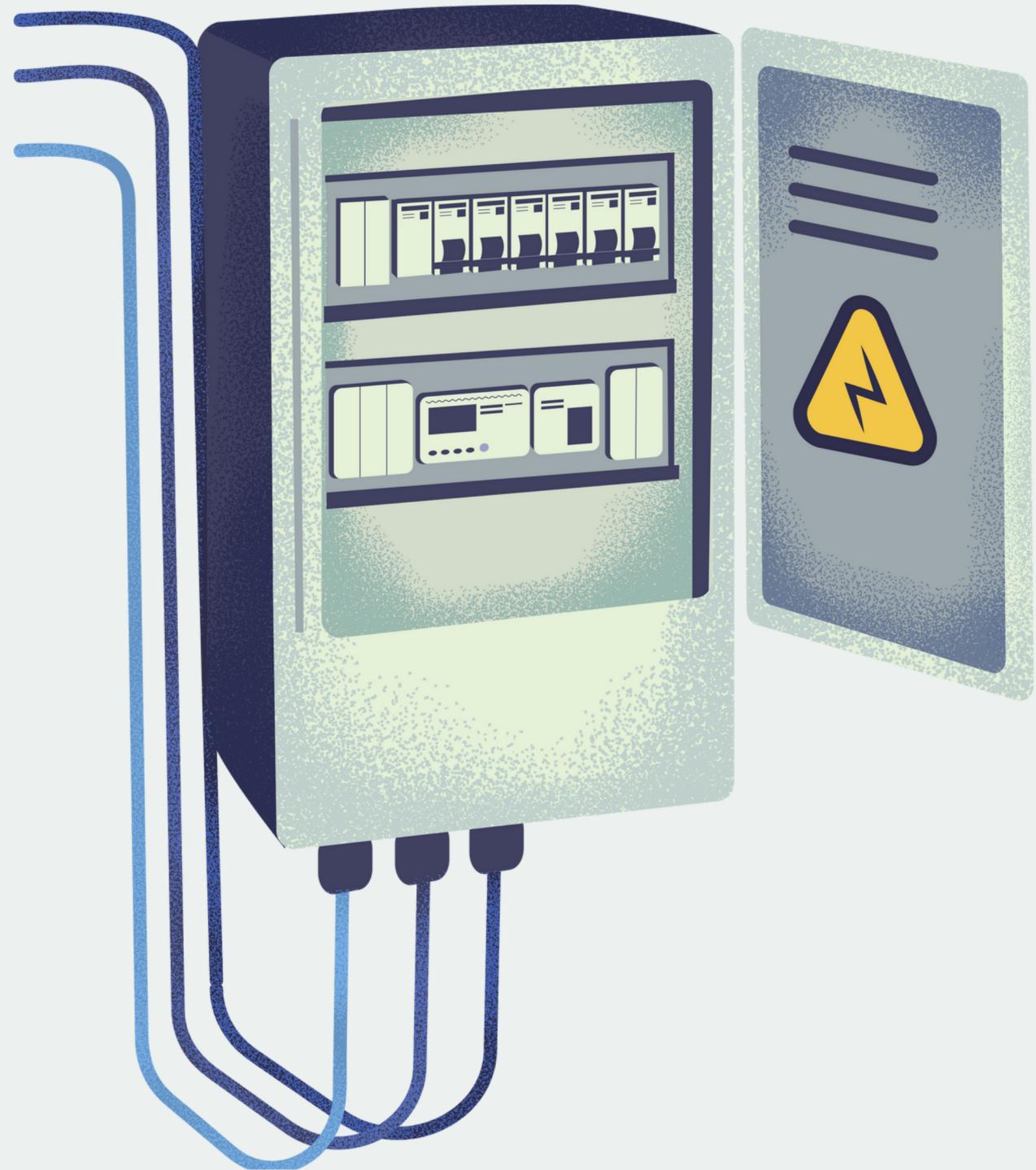
considering **200 washrooms**, the average washroom have **150-watt power** requirements and the lights are switched on for **24 hours**, out of which **18 hours** no one is using it.

which results in  **$200 * 18 * 0.15 = 540 \text{ kwh daily}$** .  
which adds up to ₹5400 daily expense for the college

our solution can easily be installed for under **₹500 per washroom**  
i.e total cost of  $500 * 200 = 1,00,000$   
which can be recovered in **20-30 days in the worst case**.

**Our target is not to make any fancy project  
and just limit it to a single room,  
but to implement it to real life**

- We will focus on the cost efficiency
- We will try out different sensors and choose the best for durability
- We will design it to be scalable for installation all across the campus.



# Working

we will detect in and out of objects (people) by PIR/IR sensor and calculating people inside the room,

by using a relay and a microcontroller we will switch on/off the main power supply

# Components

## Sensors & Controller

A variety of sensors can be used  
preferred

- IR - Active infrared sensor
- PIR - passive infrared sensor

A bit expensive

- Distance Measuring Sensors - IR
- laser trip-wire sensor
- ultra-sonic sensor

Controller

- we will be designing our PCB for this purpose.
- we will be using a relay for controlling the power supply.

**Thank you!**  
**let's save  together.....**