

# TECHNOLOGY DAY

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IIT KANPUR  
Indian Institute of Technology, Kanpur



## Green Energy Recharging the World

Team Robocon IIT Kanpur

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### Theme

Propeller transportation using wind energy and its assembly using robots.

Green drive - Making general public aware of the possibilities and ways of achieving a cleaner planet.

### Industrial usage/ Target industry

Efficient consumption and utilisation of non-renewable energy (wind) from one robot to another.

Use of autonomous sensing and driving techniques.

Fabrication of lighter and energy efficient robots using materials like balsa and aluminium.

### Novelty of the technology

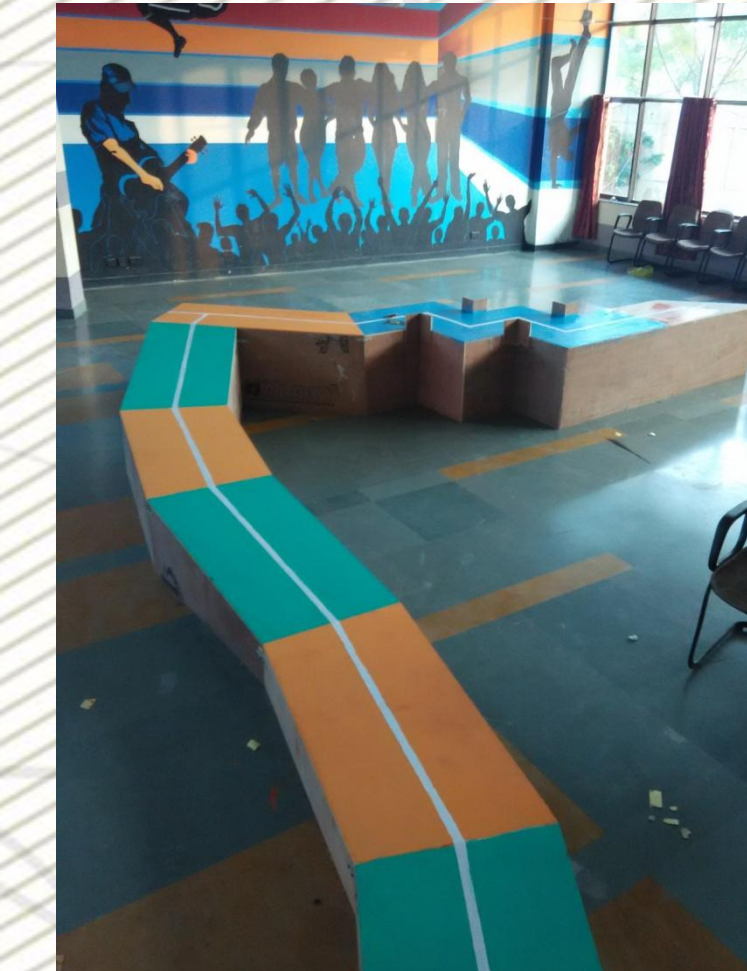
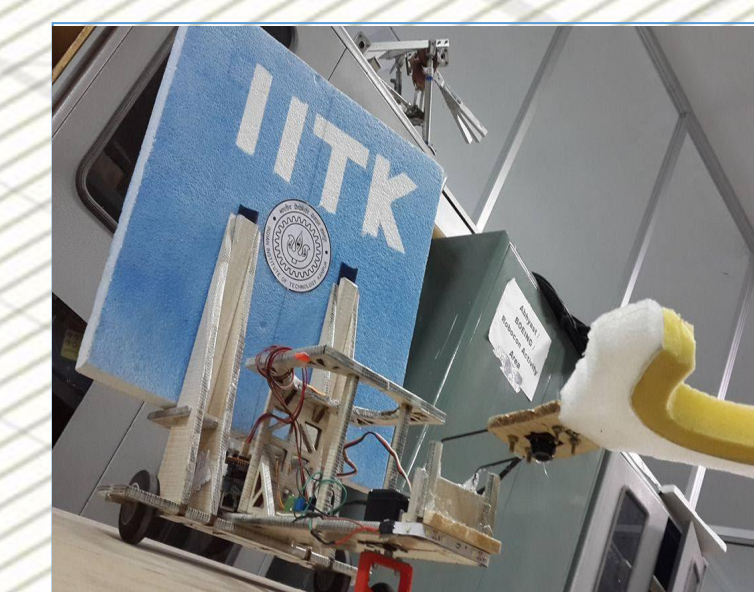
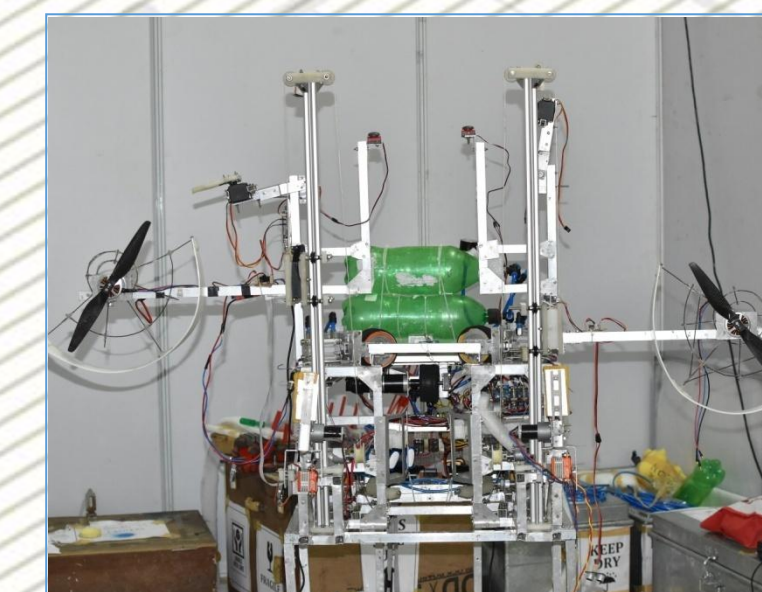
Use of balsa, glass fiber, styrofoam in eco bot.

Shape of sail to get the maximum change in momentum of air, so that force will be large enough to drive the eco bot uphill

Fast autonomous wall following using ultrasonic sensors.

Pneumatic pistons and curved wheels for pole gripping.

Line following by a normal camera using image processing algorithms.



### Description

#### Eco Bot:

1. Uses wind energy for moving.
2. One actuator for steering.
3. Carries the propeller to the turbine station/pole autonomously.

#### Hybrid Bot:

Generates wind(driving energy) required for moving the eco bot.  
Collects the propeller from ecobot at the turbine station.  
Autonomously climbs the pole and assembles the propeller.

### Summary/ Outlook/ Ongoing work

Fully autonomous control in progress. Work on motion planning techniques is being done and being implemented in form of a software library to generate efficient and safe trajectories for robots on game field. This work can further be used for educational purposes and teaching motion planning.

