

HackAP Hackathon
Theme: Renewable Energy
29, 30 July 2023

[Alcove Partners](#), AU Incubation Center ([a hub](#)), TiE Andhra Pradesh are happy to announce the fifth in the hackathon series. The theme of the hackathon will be 'Renewable Energy'. We encourage participants to pick one of the following real-world problems and come up with a solution. You should be able to show a working prototype of your solution. Some of these problems have been provided by Laya, a non-profit organization, working for the welfare of tribals primarily in the Paderu region.

1. Create a mobile app to help people track their energy consumption and find ways to reduce it.
2. Develop a new type of battery that can store renewable energy – potential energy, kinetic energy, etc.
3. Develop a way to use renewable energy to power desalination plants in coastal areas of India.
4. Design a system that can use solar energy to power drones that can deliver supplies to remote areas.
5. Power System and Design (your team may pick one or more of the following)
 - a. Renewable energy system integration in the grid
 - b. Forecasting Solutions
 - c. Demand response & distributed energy resource management systems
 - d. Energy trading and marketplaces
 - e. Internet of Things (IOT) for renewables including off-grid applications for optimizing energy and its utilisation
6. Biomass and waste-to-energy supply chain for power & thermal generation
 - a. Biomass/agri-residue/municipality waste collection, processing, palletisation – complete value chain including biomass storage solutions
7. Towards water security:
 - a. A farming community in a remote tribal hamlet living on a hill is facing a water crisis due to the depletion of ground water. This has affected their access to water for drinking, sanitation, as well as for irrigation. There is a perennial stream that is 500 metres away at the foot of the hill. The solution is to make the water from the perennial stream accessible at the doorstep of the houses using renewable energy as the community still does not have access to conventional energy.
8. Towards sustainable livelihoods:
 - a. The fishing villages on the coast of Andhra Pradesh have been looking to explore value added services to their catch which is already declining. Their need is to supplement their income through these value-added products while reducing their input costs. The solution is to use renewable energy along with social innovation to develop value added products for the fishing community to add to their income.
9. Our school physics taught us, in a vague way, that when there is a temperature difference between 2 different bodies in contact a voltage difference is produced, hence electricity is generated. (Seebeck principle anyone?)

During summers, the exterior surface of our walls and roofs has a higher temperature compared to the inner surface. With so much surface area readily available, let's make our buildings generate electricity.

Develop a prototype that generates electricity, however small the magnitude, using temperature difference. Points will be based on the magnitude of current generated, type of pocket and environmentally friendly materials used.
10. Develop a dance floor that generates electricity when people dance on it. The evaluation will be based on the magnitude of electricity generated per sq. ft. and cost of the project per sq. ft.