

Presenting Partner



**L&T Electrical & Automation**

**ENERGON**

Putting one's phone, tablet and other devices on charging has become such a common thing that it can perhaps be considered a part of anyone's daily routine now. We get up, put the device on charging and by the time we are ready to leave, it will have got sufficiently recharged to last the whole day. Or perhaps we put it on charging just before going to sleep so that it gets fully charged overnight.

However, we are always in need of an electrical outlet in order to do this. While travelling, this is something which is no longer available and one often ends up with a low battery and no means of charging available. Also, during a busy day, one might suddenly realize that he/she had forgotten to charge the mobile (or any other device).

Such a problem is no longer a trivial one, since devices like phone, tablet, etc are becoming increasingly important in day to day life, as well as during trips, for that matter.

**Aim:**

**To make a device which has the capacity to charge a mobile phone (and other devices like tablet) at any time of the day (24 hours) (for situation described below). To achieve this, the device should utilise an eco-friendly source (or multiple such sources) of energy.**

A host of portable solar chargers are available in the market today. However, by nature, they need sufficient sunlight, which isn't available always. This proves to be a serious disadvantage for solar chargers.

Now, the obvious fix: a power bank. It does solve a part of the issue. However, just like extending battery size, it doesn't solve the basic issue of not being able to charge without access to electricity, because it itself stores energy from electrical outlets. It will give a net longer time of discharge, but when it runs out of juice, one would be right back to square one, with no way to charge.

Besides, one is still indirectly using electrical outlets. We, on the other hand, are looking for a reliable and eco-friendly alternative to charging via electrical outlets which aren't always available when needed.

**Specifications:**

- 24 hours available sufficient power to charge an electronic device, like a mobile, tablet, etc. Device should be able to charge atleast a **2500mAh battery fully**, daily.
- Should be portable, and sturdy. (Weight and overall portability are in judging criteria)
- Generates and stores energy by itself.

**The source:**

- Using single or multiple sources of power

**Health and environment:**

- Not harmful to health as it is going to be with the user all the time.
- Use of eco friendly materials in design, especially because it makes disposal less of an issue.

**Note:** If the product made with the corresponding (ecofriendly) materials can't be presented (for round 2), a detailed description of the product with those materials, along with cost analysis, will be sufficient; with a working model made using whichever materials were available. However, if possible, a working model made of the proposed (eco friendly) materials is strongly encouraged.

- The device should be able to function in all weather conditions, like a sunny day, a cloudy day or a rainy day.

**Note:** Although the device has to harvest energy daily (irrespective of variables like weather, etc), a number of ways are still available to charge one's device. For example, various movements of the body (eg: while walking, exercise, etc) can be used for generating energy. Fuel cells, solar cells or some hand powered mechanical methods are just a few out of many possibilities, which can be used. Note, these sources are not the solution of the problem by themselves, but examples to demonstrate that there are many possibilities to achieve the aim.

**Rules:**

The competition will be held in 2 rounds, first for the submission of a complete design of the device, and the qualifying teams will be eligible for the second round, wherein they have to submit their final working models, as per the design and features already specified by the team.

**ROUND 1:**

Submission consisting of :

- Design as soft copy
- Detailed description of the means of charging and why it was chosen
- USP of the device
- Estimate of the charging parameters, including charging rate, output current and voltage.

**ROUND 2:**

- If the team clears round 1, they are required to submit a working model of their design.
- In case any modifications/corrections are there in the Round 1 submission, the corrected files have to be resubmitted.

**General Rules:**

- The teams must adhere to the spirit of healthy competition.
- If the authenticity of the design comes into question, the organizers' decision will be final and binding.
- Organizers reserve the right to disqualify any team indulging in misbehaviour or violating any rules.
- Any team that is not ready at the specified time will be disqualified from the competition automatically.
- In case of any disputes/discrepancies, the organizers' decision will be final and binding.
- The organizers reserve the rights to change any or all of the above rules as they deem fit. Change in rules, if any will be highlighted on the website and notified to the registered teams.
- Note that at any point of time, the latest information will be that which is on the website. The information provided in the pdf downloaded earlier may not be the latest. However, the registered participants will be informed through mail about any such changes.

**Judging Criteria:**

- Design (Innovation, aesthetics)
- Portability (weight and volume)
- Eco friendly nature
- Reliability
- Cost
- Efficiency
- Rate of charging
- Quality of the output current(presence of fluctuations, etc)
- Sturdy and robust design

Categories for prize:

- Best overall

- Fastest charger
- Lightest charger
- Compact charger

The charger has to qualify the general requirements, in order to be eligible for the latter 3 prizes.

**Eligibility:**

All students with a valid identity card of their respective educational institutions are eligible to participate.

**Team Specifications:**

- One team can have a maximum of 4 members.
- Students from different institutes can be in the same team.

**Certificate Policy:**

- Certificate of Excellence will be awarded to the overall winners and the winners in the 3 categories.
- Certificates of Participation will be given to all the teams who qualify first round of the competition.
- The teams which get disqualified for disobeying any of the competition rules will not be considered for any certificate.

**Timeline:**

1. Last date for registration: 14th October
2. Last date for submission of abstract: 15th October
3. Final submission of project report (for top 20 teams): 5th December
4. Presentation of the working model: 16-18 December (exact runthrough will be given at a later stage)

The timeline is the same for international participants as well.

**Submissions, Prototype and Final Presentation:**

After declaration of top 20, the participants can work on their design, improve it and then make the working model. However, any changes are going to be scrutinized and if they are found to be too drastic, the team can be disqualified. (Organizers reserve the right to decide whether any such changes have been made to the abstract. In that case, the decision made will be final and absolute.) They will also have to make a presentation covering the technical and financial

aspects of their product in a detailed manner. Participants are expected to submit the final presentation and abstract they are going to present during the fest, on 5th dec. The final submission will have to be submitted at [energon@techfest.org](mailto:energon@techfest.org). However, they can still do minor modifications after that as well, till 15th December. The teams will have to bring their prototypes to be judged and showcased at Techfest 2016-17 during 16th to 18th December 2016. The working prototype should be as close as possible to the product that the team intends to present to the end user. This would also help in deciding a better estimate of the cost of the prototype, reflecting closely the actual cost of the product.

## **STRUCTURE:**

### **Project Report Format**

1. i. Title
2. ii. Abstract
  - 2.1. Objectives
  - 2.2. Main basic source (or sources)
  - 2.3. Unique specification
3. iii. Background
4. iv. Statement of Problem
  - 4.1. Precise definition of problem (follows from material in the background section)
5. v. Research
  - 5.1. Presently available methods of tackling the problem (if any)
  - 5.2. Possible solutions/approaches
  - 5.3. Proposed solution
  - 5.4. Why this?
6. vi. Technical Report
  - 6.1. Details of concepts, theories or approach involved in the proposed solution.
  - 6.2. Technical aspect of the proposed solution.
  - 6.3. Detailed technical specifications and pictorial representations (block diagrams/ flow chart, etc)
  - 6.4. Description of the flow of operations demonstrating key features and functionality.
  - 6.5. Detailed design of the charger, electrical circuits, structural design, overall design using appropriate 2D and 3D illustrations .
  - 6.6. Performance estimate of the solution. Include proper calculations.
  - 6.7. Experimentation done to establish the workability of the above. Actual experimental data required.
7. vii. Results
  - 7.1. Actual findings, significant output of tests and analysis (Must be readable-analysis must be done along with the data)

- 7.2. Include problems encountered, credibility of results, accuracy estimates
- 7.3. Pros and cons of your solution
- 7.4. Utility of results
8. viii. Application
  - 8.1. Your idea as a solution to the problem
  - 8.2. Unique Selling Point
9. ix. Any other specific details
10. Closing statement
11. References and acknowledgment

**Project Report submission:**

The project report should be **emailed to [energon@techfest.org](mailto:energon@techfest.org)** with the subject Energon Project Report: Team Id (For example competition: Energon Project Report: SK1234). Teams must follow the following details for the submission:

1. The abstract must be submitted in pdf format only
2. Font: Verdana
3. Size: 11
4. Spacing between two lines: 6 pts
5. Spacing between two paragraphs: 10 pts
6. Bottom margin: 1 inch