

SAE NIS EFFI-CYCLE 2018

Future Efficycle Challenge

Introduction:

Efficycle event is intended for the development of eco-friendly mobility solutions in India. Now a day, automotive industry is noticing the development of new technologies every day. While efficycle has grown up in past 9 years witnessing all these innovative changes, it is felt that the efficycle must also adopt the technologies suitable to establish it as a more user-friendly and environment-friendly mobility product in market. The sustainability of the concept of efficycle can be ensured only when its design and performance are compatible with the latest trends of automotive industry.

Challenge to Participating Teams:

What do you think about a future efficycle? If your team is asked to conceptualize, design and build an efficycle which should have the attributes of a futuristic efficycle, what would come to your imagination?

A presentation based challenge is being given to participating teams to conceptualize a futuristic efficycle which can have the combination of one or more different ideas/technologies implemented in the design. These technologies may belong to the fields listed below:

1. Use of alternate/ light-weight materials in frame as well as components (e.g. seats, battery etc.)
2. Use of alternate energy sources for powertrain (solar and other renewable energy sources)
3. Energy Efficient and Energy Regeneration Mechanisms
4. Semi-Autonomous and Autonomous Vehicle Technologies
5. Human-machine interface, advanced driver assistance systems (ADAS)
6. Internet of things (IoT) and V2X/V2V/V2G Technologies
7. Smart charging systems
8. Technologies enhancing passenger comfort and safety (including frame design)
9. Any other technologies enhancing vehicle's efficiency, dynamic performance, durability and serviceability.

Eligibility & Participation Procedure:

All teams participating in Efficycle 2018 (Season-9) are eligible to participate in the “**Future Efficycle Challenge**”. The interested teams can send their nominations to Efficycle Technical Committee on or before 25th September, 2018 through email to efficycle.technical@saenis.org with the subject as below:

“Team ID_Team Name_Nomination for Future Efficycle Challenge”

- Nominated teams will be asked to prepare the presentation in a standard format.
- Teams will present before a panel of judges during the main event.
- A group of 2-5 students can participate in presentation.

Restrictions:

This challenge is intended for the implementation of the advance technologies in automotive industry in the upcoming future; however the following constraints are applied to the challenge:

- Vehicle configuration must be similar to efficycle.
- Vehicle must run on human and electric drive trains both.
- Vehicle should have the capacity to carry 2 riders and at least 20 kg payload.
- Vehicle should be safe and ergonomic for the riders.
- The ideas being presented by the teams must be feasible for building a prototype by the teams within the campus.

Presentation Format:

Teams will be asked to submit a presentation as per below format:

- 5-7 slides presentation.
- Concept, technology being implemented and their objective.
- Presentation should include complete layout with vehicle sketch (hand-drawn sketches are permitted), algorithms, installation position, implementation process.
- Intended impact on the actual vehicle performance as compared to efficycles at present.
- Estimated cost of manufacturing along with cost of critical parts to be procured.
- Estimated time for building a prototype.
- Resources required from market and their availability (material, hardware, electronic gadgets, special manufacturing facilities etc.)
- Resources available in institute for building the intended prototype (workshop facilities, laboratories, machinery & equipment, expert professors for guidance).

Evaluation Procedure:

Team's presentations will be evaluated by the panel of judges on following parameters:

- Novelty of idea in the Indian Automotive Industry
- Feasibility of implementation of idea in future at mass production level
- Feasibility of manufacturing of single prototype
- Correctness of Technical Content

The winners will be selected on the basis of highest marks given by the evaluation panel. However, the score of this event will not be added to main event score of the presenting team.

Awards:

A prize of worth INR 10,000/- will be presented to 2 teams scoring highest marks.

Efficycle Technical Committee