

Ashwa Mobility Foundation

Ashwa Mobility Foundation is a platform for transformational skill development in the field of Mobility Engineering for students having its association with RV College of Engineering and various industry partners. The team comprises of undergraduate engineers, which designs and builds formula-style race cars. Ashwa Mobility Foundation stepped into the Formula Student Combustion program on 23rd November, 2003 as **Ashwa** Racing and is India's most consistent Formula Student team. Ashwa Mobility Foundation has produced 15 prototype race cars including both the combustion and hybrid, which have participated annually in events held across America, Europe, Asia and Australia. Since 2014, Ashwa Mobility Foundation has branched into the Hybrid field and has had successful participations in Formula Student Hybrid. The team will branch into the final arm of FSAE which is FS-Driverless keeping in mind the need for effortless transportation solutions. Ashwa Mobility Foundation is the **Oldest Student Project** in RVCE.

Vision

Helping budding engineers to exhibit their talent in national and international events and exposing students to top technical and managerial practices employed in the industry whilst developing sustainable mobility solutions for the masses.

Our Mission

- To prepare students to be industry-ready by conceptualising, designing and delivering a vehicle of world-class standards
- To provide a platform for students to interact with and learn from the industry
- To exhibit India's engineering capabilities in the field of Mobility Engineering on a global platform
- To provide a platform for the industry to seek potential talent and to enable brand recognition and visibility for sponsors
- To conceive and develop inexpensive rapid sustainable transportation solutions for the masses

Social Cause

Our project aims to contribute to society through **quality engineering** and to empower the

Indian masses with **sustainable mobility solutions** and **green mobility technology**.

Achievements

Formula Hybrid 2017

- Annual Formula Hybrid event held at **New Hampshire Motor Speedway, New Hampshire, USA.**
- **2nd place Overall - Globally**
- **1** out of **3** teams to participate in Endurance
- **2nd place in Project Management.**
- **First team** in the **history of Formula Hybrid** to **clear the Mechanical Inspection in the first attempt.**
- **1st place in Acceleration.**

Formula Student Italy 2017

- **Lightest Indian FSAE car with a 4-cylinder engine** and **without the use of any carbon fibre components**, at the event.
- **Fastest Indian car in FS Italy.**

Formula Student Czech Republic 2016

- 2nd place in Cost Report
- Best acceleration time

Formula Hybrid 2016

- 2nd in Design
- 2nd in Project Management
- 4th Overall

Formula Design Challenge 2015

- First Official Formula Student event held in India at **Kari Motor Speedway, Coimbatore**
- 3rd in endurance and Fuel Economy
- 4th Overall

Formula Hybrid 2015

- 6th in Design
- 7th Overall out of 35 teams

2014 Race-Season

- First Indian team to make both Hybrid and Combustion Cars in a single race-season

Formula Student Italy 2012

- Best Asian Entry
- 2nd in Cost Event

Formula Student Italy 2011

- 8th in Business Presentation
- 14th in Cost Event

Formula Student Italy 2010

- Best Endeavour Award

Formula Student Italy 2009

- Best Endeavour Award

Formula Student Germany 2008

- Young Achiever award by Rotary International Bengaluru

Formula Student Germany 2007

- Young Achiever award by Rotary International Bengaluru

Formula Student Australasia 2005

- **First Indian entrant in a Formula Student event**
- 1st place in Cost Report
- Best Endeavour Award

Innovations and projects spawned:

- Design & Fabrication of Dry Sump System for Formula Student car
- Design & Fabrication of Muffler for FSAE Vehicle
- Design & Fabrication of 3-D printed Air Intake Manifold
- Numerical analysis & testing of external aerodynamic devices of FSAE car

Novel Methods and Systems:

- Regular and comprehensive documentation using cloud storage services
- Project Management with the use of online software solutions
- A policy of evolutionary changes rather than revolutionary ones – “5% *change every year*”
- Strong, experienced and dedicated alumni to guide the project

Our Latest Combustion Prototype - RZ-X7C

Design of the prototype started in August 2016 when the RZ-X7C was conceptualised. The team aimed to make it the best car, in terms of performance and costs, ever made in the history of Ashwa Mobility Foundation. The prototype surpassed the team's expectations and is now currently being used as a **testing platform for innovation and R&D.**



Specifications:

- Structure - Mild Steel Tubular Space Frame
- Weight -210kg
- Top Speed - 120 km/h
- 0-100 kmph in **4.2 s**
- Suzuki GSX-R 600 Engine with Custom 3-D printed Air Intake Manifold
- Pneumatically actuated 6-speed sequential Gearbox
- Drexler Limited Slip Differential
- ZF Sachs Dampers
- DEPARTMENTS INVOLVED- ME/ECE/EEE/IEM/EIE/CSE/CE

Notable features and improvements:

- **10% weight reduction through careful material selection and clever geometry**
- Engine Lubrication system changed from Wet Sump to Dry Sump

Our Latest Hybrid Prototype: RZ-X7H

In 2016, the Hybrid prototype RZ-X6H achieved 4th place. Naturally, the next step was to get a podium finish. The team worked hard to design at early stages, manufacture and procure quickly and get the X7H test-ready. A rigorous testing phase ensued and it paid dividends in the

competition, achieving **second place in Formula Hybrid in New Hampshire, USA**. The success meant that the car is now preserved for our driver training program.



Specifications:

- Structure - Mild Steel Tubular Space Frame
- Weight - 300 kg
- Top Speed: 80 kmph
- 0-60 kmph in **6.9 s**
- Pulsar 220cc Engine with Electronically controlled Throttle-body
- Agni - 95R Motor
- Kelly Motor Controller
- Liyuan Battery (Lithium Iron Phosphate Battery Chemistry) - 16 in series
- Torsen Differential with Compound Drive
- Pneumatically-Actuated Clutch
- ZF Sachs Dampers

Appendix – images

1) RZ-7H at Rollout 2017



2) RZ-X7C at Formula Student Italy 2017



3) RZ-X7C at Formula Bharat 2017



4) Formula Hybrid 2017 Awards Ceremony - 2nd Place Globally



5) Formula Hybrid 2016 Awards Ceremony - 4th Place Globally



6) Ashwa Racing Family at Formula Bharat 2017

