

Annual Report

Orion Racing India (2017-2018)

K. J. Somaiya College of Engineering, Mumbai-77

(Autonomous College Affiliated to University of Mumbai)

Name of the organization/chapter/project: Orion Racing India**List of Members/Details of Committee- 2017-2018**

Sr. No.	Name of the Faculty advisor/ in-charge	Department	Portfolio
1	Dr. Manoj Janardan Pawar	Mechanical Engineering	Adviser

Sr. No.	Name of Student	Department/Year	Portfolio
1	Abhishek Rawat (Technical Coordinator)	Mechanical	Member
2	Allankrit Patel	Mechanical	Member
3	Bhautik Kothari	Mechanical	Member
4	Dhaval Desai	Electronics	Member
5	Dhruv Gorasia	Mechanical	Member
6	Husain Mithaiwala	Mechanical	Member
7	Jeet Trivedi	Mechanical	Member
8	Linmay Pimparkar	Mechanical	Member
9	Neel Shah	Mechanical	Member
10	Nikhil Mahimkar	Mechanical	Member
11	Parth Mehta (Team Captain)	Mechanical	Member
12	Parth Panchal	Mechanical	Member
13	Piyush Kadkol	Electronics	Member
14	Piyush Prajapati	Mechanical	Member
15	Pratik Darda	Mechanical	Member
16	Preyas Pradhan	Mechanical	Member
17	Priyansh Jain	Mechanical	Member
18	Rishabh Rao	Mechanical	Member
19	Ronak Patel	Mechanical	Member
20	Ronak Patil	Mechanical	Member
21	Siddharth Jagetia	Electronics	Member
22	Sumeet Patel	Mechanical	Member
23	Umang Shah	Mechanical	Member
24	Vaibhav Gaikwad	Mechanical	Member
25	Varun Kotian	Mechanical	Member
26	Vivek Mehta	Mechanical	Member
27	Yash Shah	Mechanical	Member
28	Akash Kokate	Mechanical	Member
29	Ankit Jain	Mechanical	Member
30	Atharva Kulkarni	Mechanical	Member
31	Basraj Kattimani	Mechanical	Member
32	Bhavik Shah	Mechanical	Member
33	Chaitanya Rathod	Mechanical	Member
34	Sumeet Phadtare	Mechanical	Member
35	Hitanshu Trivedi	Computer Science	Member
36	Jay Kapadia	Mechanical	Member
37	Jitun Mishra	Electronics	Member
38	Kartik Gandhi	Mechanical	Member
39	Kaushal Mahuvarkar	Electronics	Member
40	Ketki Sanghai	Mechanical	Member
41	Lalatendu Bal	Mechanical	Member
42	Manabendra Das	Mechanical	Member
43	Milind Haria	Mechanical	Member

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44	Nikit Bid	Mechanical	Member
45	Parth Gohil	Mechanical	Member
46	Parth Kothari	Mechanical	Member
47	Ponlingam Ponratham	Electronics	Member
48	Ronak Panchal	Mechanical	Member
49	Rushabh Oswal	Electronics	Member
50	Sanjana Dhulla	Electronics	Member
51	Saumil Kamdar	Mechanical	Member
52	Shreya Rajmane	Mechanical	Member
53	Shubham Raorane	Mechanical	Member
54	Vedansh More	Mechanical	Member
55	Yagnesh Chothani	Mechanical	Member
56	Ravi Satasia	Mechanical	Member
57	Ravi Mody	Mechanical	Member
58	Arushi Doctor	Mechanical	Member
59	Jay Veera	Mechanical	Member
60	Keval Gada	Mechanical	Member
61	Mandar Sadvelkar	Mechanical	Member
62	Neel Patel	Mechanical	Member
63	Gautam Patel	Mechanical	Member
64	Tanmay Patel	Mechanical	Member
65	Harshil Parikh	EXTC	Member
66	Nayan Chauhan	EXTC	Member
67	Shanay Shah	Mechanical	Member
68	Tanmay Patil	EXTC	Member
69	Neil Kulkarni	Mechanical	Member

Photo of members/committee – 2017-2018



Orion Racing India Team - 2017-18

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Details of events/activities held during academic year 2017-2018

Sr. No. of Event / Activity	Day/Date	Year	Month	Time	Venue	Description of Activity
1.	25-28 January	2018	January	--	Coimbatore	Competition: FORMULA BHARAT 2018 Participation in Formula Bharat 2018. The competition was held at Coimbatore.
2.	16 th July to 23 rd July	2018	July	--	Hungary	Formula Student East 2018. The competition was held at Zalaegerszeg, Hungary

Reports of event/activity

Sr. No. of Event / Activity	Day/Date	Year	Month	Time	Venue	Description of Activity
1.	25-28 January	2018	January	--	Coimbatore	Competition: FORMULA BHARAT 2018 Participation in Formula Bharat 2018. The competition was held at Coimbatore.

Details of participation in the event/activity
(Fill wherever is applicable or information is available. At least total need to fill)

No of students / faculty	COMP	ETRX	EXTC	IT	MECH	Total no of participants
FY						69
SY			3		11	
TY	1	5			22	
LY		3			24	
No of Faculty						

Report of event/activity

Competition: FORMULA BHARAT 2018

Overview

Orion Racing India participated in the recently concluded Formula Bharat 2018. The competition was held in Coimbatore from 25-28th of January 2018. The competition had an Electric Design challenge along with the combustion vehicle category. Orion Racing India registered and competed for both the categories. A total of seventy plus students contributed to the preparations for the competition, while fifty-five students went for the competition. The competition concluded with Orion Racing India being the National Champions with several awards in combustion and electric categories.

Preparations

We started scrutinising ORI17 for Formula Bharat once it returned from Germany after Formula Student Germany in October. There were some technical issues, part failures and design updates that had to be made for Formula Bharat. We had faced an issue with the powertrain, chassis and suspension at the Germany. Hence these systems needed to be made more reliable. The side pods were remade as a replacement. We took a major decision of updating the design of the vehicle and drop out the Aerodynamic wings from the competition. We took into consideration several aspects for this major decision. The wings weighed around 12 kilograms and the performance was only 40% of the expected values. We also considered that the track at Formula Bharat is a slow speed track where we could manage without the extra downforce that the wings would provide. Hence, we took a major decision of updating the design. We made the necessary changes and put the car on wheels in the first week of November.

As we were connecting the electric harness with the MoTec ECU, we faced a major setback, the failure of MoTec. We had to send the ECU to Australia for repair. It took more than one and half month to reach us. Once the ECU returned we put the car on wheels and began testing. Due to the part failure we

lost on 1 and a half month of vehicle testing and driver training. We began testing on 22nd of December at the parking lot of CIDCO, Vashi. We did a total of 240km of testing with 5 drivers. Other team members started preparing for the static events for Formula Bharat combustion category and designed the Electric Vehicle that we presented at the competition. All necessary documents were prepared and packing for the competition was done. The car departed for the competition on 20 th of January and the students left on 22nd of January.

Competition

Day 0 of the competition was mainly to unload the car from the respective lorries and the pits were set up. We had taken the car from Mumbai in ready to run condition hence no additional work except basic set up had to be done. After set up of the pit the team headed to the accommodation facility.

Day 1 of the competition began with the line up for the Technical Inspection. The team reached on time and we were among the first teams to be ready for the inspection. We faced a rule issue in the first attempt which had to be rectified in the hot pits. Later we cleared the inspection and moved forward for the other tests. We cleared the tilt test, engine kill test and noise test in the first attempt itself. The remaining student attended the guest lectures delivered by Claude Rouelle, Siddhart mandal, Mira Erda and Pat Clarkes. The team attempted to clear the brake test in the evening but failed due to mechanical issue in the left front brakes. After the closure of the campsite team members spent the night preparing for the Static events for the next day. By the end of the day we were the second team to complete the technical inspection from only 3 teams.

Day 2 began with the static events. We submitted the Business Plan Presentation in the morning followed by the Cost Report. In the afternoon we made attempts to clear the brake test. In the evening we submitted the Design Report. We got very few attempts at the brake test as the car had to be present during the static events. After site closure we headed to our rooms to prepare for the electric design challenge for the next day.

Day 3 was very crucial as the Brake Test had to be cleared before the dynamics events started. At the same time team members had to prepare for the electric design challenge. We were also selected for the Design and Business Plan finals which were to be held in the evening. We made the necessary changes and cleared the brake test in the first attempt itself. We made two attempts at the Acceleration event and moved on for the skid pad event. We could make only one attempt at the skid pad due to time constraints. In the acceleration event, our first lady driver, Sanjana Dhulla drove the car to get the 3rd best timing among all other male drivers. Along with the dynamic events, the respected team members presented the Design Report, Cost Report and Business Plan Presentation for the Electric Vehicle. In the afternoon our other two drivers made their runs on the autocross track. The eventful day ended with the team members participating in the Design Finals and Business Plan Finals.

Day 4 began with the results of the Electric Design Challenge Results We were in the Design and Cost Finals along with IIT Delhi and IIT Bombay. The Endurance event line up is decided as per the car's performance in the autocross track. Being one of the fastest cars, our car was placed last on the list. We spent the morning setting up the car and making a few test runs. Our endurance lap timings were exceptionally good. Our slow driver had a lap time equal to the fastest of all the drivers present there. Our second driver was able to push the car to a greater level and had a lap timing of 5 seconds lesser than our first driver. After the team welcomed the drivers and the car after this amazing achievement, the car was taken to the post endurance scrutineering. The team members had the opportunity to interact with several judges who came to our pit. Later the team started packing. Then was the most important and awaited Award Ceremony. One after the other we went on the podium 8 times to collect the following awards. After the award ceremony we were visited by Claude Rouelle who appreciated our efforts and wrote a comment of appreciation on the nose of our car. The car was later packed and loaded in the truck along with the other boxes.

Conclusion

The competition was a very good learning experience. It allowed the team members to interact with industrial experts and members of the other teams. We got several design suggestions and the team is now confident and prepared to present at the next competition – Formula Student East.

Details of prizes (wherever applicable fill all the entries)

Sr. No.	Name of the student	Department	Details of prize won	Remarks
1	Orion Racing India Team - 2017-18	COMP ETRX EXTC MECH	1. 1st place over all 2. 2nd place engineering design report – combustion vehicle 3. 3rd place Acceleration 4. 3rd place Autocross 5. 2nd place Cost and sustainability report – electric vehicle 6. 3rd place engineering design report – electric vehicle 7. 4th place Business Plan Presentation - combustion vehicle 8. 4th place Business Plan Presentation - electric vehicle 9. Cleanest pit 10. Most Diligent Team 11. Best Driver – Parth Mehta	

Sample Photographs of the Event/Activity



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Sr. No. of Event / Activity	Day/Date	Year	Month	Time	Venue	Description of Activity
2	16 th July to 23 rd July	2018	July	--	Hungary	Formula Student East 2018. The competition was held at Zalaegerszeg, Hungary

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No of students / faculty	COMP	ETRX	EXTC	IT	MECH	Total no of participants
FY						69
SY			3		11	
TY	1	5			22	
LY		3			24	
No of Faculty						

Report of event/activity

competition – FORMULA STUDENT EAST 2018

Overview

Orion Racing India participated in the recently concluded Formula Student East 2018. The competition was held at Zalaegerszeg automotive proving ground, Hungary. Total of seventy plus students contributed to the preparations for the competition, while Thirty-Nine students went for the competition. The competition concluded with Orion Racing India being the 4th overall in Statics, which is their all-time high.

Competition (16th July to 23rd July 2018)

Day -1 of the competition began with early morning registration and setting of the pit area. After setting the pit, the team checked in at the campsite and started pitching the tents. The evening was spent in interacting with the International teams and at night the team members prepared for the Static events.

Day 0 morning began with getting the car ready for the events. As the car was in a partially disassembled state, the day began with suspension assembly, brake bleeding, Aero mounting and getting the car ready for Technical Inspection.

Day 1 of the competition began with the line-up for the Technical Inspection. At the technical Inspection the team faced an issue with the Front Wing mounting, but the rest of the inspection went smoothly. To rectify the issue the team went back to the pits, but unfortunately the issue couldn't be solved on Day 1. The team went back to the campsite and prepared for the Design Event, Cost Event and the Business Plan Presentation.

Day 2 The team went to the pit early morning and tried to resolve the problem, but nothing worked. As the TI queue was long the team couldn't get sufficient time in the Technical Scrutineering area. The rest of the team members prepared for the Static Events scheduled on the next day.

Day 3 was very crucial as the Technical Inspection had to be cleared along with the static events scheduled along the day, hence, in the end a big decision was taken and the wings were removed from the car. After the Mechanical Scrutineering was cleared the team cleared the tilt, noise and the brake test in the first attempt. The car was taken on the test track to check reliability while the other students

waited for the Statics Events to begin. The Cost Event was the first event for the day and we had a very good response from the judges. The Design Report followed it and the team was congratulated by the judges on their knowledge and impressive work. The Business Plan Presentation was postponed to the next day.

All the judges gave great reviews about the team and the car was set for the Dynamics Events on Day 4. The day ended with the students interacting with other teams on the campsite.

Day 4 started with a few test runs on the test track and then the car was moved forward for the Skidpad event. The driver clocked a good timing of 5.2 seconds in both runs, but unfortunately took a few cones. We then made two attempts at the Acceleration event. The Business Plan Presentation was carried out during the meantime.

It was announced in the afternoon that the team was selected in the Business Plan Presentation Finals for the first time. While our drivers were at the Autocross track, our Business plan presentation was going on. The team was applauded and given great reviews during the presentation. The results of Design Report and Cost Report were also out and the team secured an all time high score of 110/150 in the Design Event and won a 7th place in the Cost Report.

Day 5 We spent the morning setting up the car and went to the engine test area. It started raining and the track turned wet. With the wet tires on the car, the car was ready at the starting line. During the initial laps of the endurance, an issue with shifting was spotted. The car stalled a few times on the track. After the 7th lap the car wasn't able to start and a DNF was given.

The award ceremony was conducted at night and the team won 5th place at the Business Plan Presentation which is a first time for any Indian team.

Day 6 The car was packed in the truck with the other boxes and the team cleared out the campsite.

Conclusion

The competition was a very good learning experience. It allowed the team members to interact with industrial experts like Audi, Schaffler, AVL and members of the other international teams. We got several design suggestions for our Electric car and learnt a lot of things regarding the same.

Details of prizes (wherever applicable fill all the entries)

Sr. No.	Name of the student	Department	Details of prize won	Remarks
1	Orion Racing India Team - 2017-18	COMP ETRX EXTC MECH	1. 21st place over all 2. 7 th place Cost Report 3. 5 th place Business Plan Presentation 4. 110/150 – Design Report 5. 4 th place Overall Statics	

Sample Photographs of the Event/Activity

