

A Report on Participation in BAJA SAE INDIA 2021

About the Event

BAJA SAEINDIA is a national event organized by Society of Automotive Engineers India where student teams from various institutes compete with the objective of designing and developing an All-Terrain Vehicle (ATV). The event was held in online mode this year from 21st to 25th April, 2021 where the vehicles of participating teams were tested in several static and dynamic events. Online mode brought a new experience for the participating teams, as it eliminated the fabrication part and the dynamic events were conducted on *IPG CarMaker*. The event which in itself is a grand occasion provides great exposure and an opportunity to engineering students to apply their theoretical knowledge and gain practical experiences about design and development of entire sub-systems leading to successful completion of the vehicle while also following certain guidelines set forth by the organizing committee. All the participating teams must attend and successfully qualify in BAJA Virtual Round to claim a participation spot in the main event. A total of 200 teams from all over India qualified to participate in BAJA SAEINDIA this year.



Fig: Official Event Poster

Team Formation

A team of 23 members comprising students from Automobile, Mechatronics, IT and Mechanical Engineering was formed. The team formation was based on a test conducted by RPM, the official Automobile Engineering club of Manipal University Jaipur. The test was then followed by personal interviews where the students were evaluated based on their academics, technical knowledge and teamwork. Dr. Avanish Singh Chauhan and Dr. Ashu Yadav were the designated faculty advisors of the team.



The team composition was as follows:

Sl.	Name	Registration No.	Year	Branch	Department
1	Pronav Sarin (DH)	179402105	4th	Mechanical Eng.	Roll Cage
2	Avijeet Vigya	179401011	4th	Automobile Eng.	Roll Cage
3	Palash Tayal	199401014	2nd	Automobile Eng.	Roll Cage
4	Manas Varma	199302096	2nd	Information Technology	Roll Cage
5	Anjan K L	199402064	2nd	Mechanical Eng.	Roll Cage
6	Naga Venkata siddartha Gude	199402003	2nd	Mechanical Eng.	Roll Cage
7	Ayush Dubey	179401012	4th	Automobile Eng.	Brakes and Wheels
8	Girik Mittal	189402075	3rd	Mechanical Eng.	Brakes and Wheels
9	Nitai Shah	199402012	2nd	Mechanical Eng.	Brakes and Wheels
10	Atharva Pawar	199402052	2nd	Mechanical Eng.	Brakes and Wheels
11	Parth Chopra	189403009	3rd	Mechatronics	Brakes and Wheels
12	Niraj Kumar V	189402059	3rd	Mechanical Eng.	Engine and transmission
13	Anurag Das	189402093	3rd	Mechanical Eng.	Engine and transmission
14	Krishna joshi	189402072	3rd	Mechanical Eng.	Engine and transmission
15	Tomesh Sahu	199401002	2nd	Automobile Eng.	Engine and transmission
16	Aditya Mongia	199401001	2nd	Automobile Eng.	Engine and transmission
17	Anukarsh Chauhan	189402038	3rd	Mechanical Eng.	Suspension and Steering
18	Rajan Singh	189402060	3rd	Mechanical Eng.	Suspension and Steering
19	Nikhil tulsian	199402049	2nd	Mechanical Eng.	Suspension and Steering
20	Tushar Mehndiratta	199401005	2nd	Automobile Eng.	Suspension and Steering
21	Kshitij Sule	199402037	2nd	Mechanical Eng.	Suspension and Steering
22	Ranveer Sachin Powar	199402029	2nd	Mechanical Eng.	Suspension and Steering
23	Abhinav Chand	199401012	2nd	Automobile Eng.	Suspension and Steering

Mr. Rajan Singh and Mr. Ayush Dubey were elected as the Captain and Vice-Captain respectively by the faculty advisors. The team members were further distributed into different technical departments of their choice and expertise viz. Roll Cage, Engine and Transmission, Suspension and Steering Design and Brakes and Wheels. Regular team meetings were held on online platforms to monitor the progress and discuss roadblocks.



Fig.: Team meeting screenshot



BAJA Virtual Round (12-13 December, 2020)

The BAJA 2021 virtual round was conducted on the 12th and 13th of December, 2020. A maximum of 5 members representing one team were allowed to the virtual round where the teams were evaluated based on the design of their roll cage, sub-systems, the overall cost of the vehicle and the lessons learned by the team with their experience in the previous year's event (2020). The virtual team consisted of Rajan Singh, Pronav Sarin, Ayush Dubey, Anukash Chauhan, and Niraj Kumar V. The virtual round was attended by team's faculty advisor Dr. Avanish Singh Chauhan as an observer.

Apart from the presentation, an online test was also conducted in the event which included questions from the BAJA 2021 rulebook and general and concepts. The same 5 team members were allowed to attend the test. The virtual and quiz team members were selected based on the rulebook tests conducted within the team. Members were selected based on their knowledge of the rulebook and their work in their sub-systems and departments. The team was able to clear the virtual round comfortably and secure a place in the competition for the main event.

Main Event (21-25 April, 2021)

The vehicle was able to successfully compete in the main event by completing all the tasks. The static and the dynamic events were held side by side from 21st to 25th of April, 2021. Each team was provided with 5 licenses of *IPG CarMaker* by BAJA SAEINDIA and training sessions were held for the same. It was a knowledgeable experience for all the team members to get trained by the IPG professionals. All the Static Event Reports and Car model on IPG were submitted to BAJA organizing committee beforehand. The official tracks were provided two days before the main event. In those two days, teams were allowed to do the test run and submit their best performance which could be achieved with no change in the car specifications previously submitted.

The team performed well in the *Acceleration*, *Maneuverability*, *Braking* tests and secured 21st, 36th, 67th rank respectively contributing towards 67th rank in overall *Dynamic* events. The team also performed well during different static events like *Cost report*, *Sales presentation* and *Design evaluation* resulting in 106th rank in *Static* events. **The Overall Rank of the team after the main event was adjudged to be 89th.**



Fig.: Suspension and Traction test



Fig.: Maneuverability test



Fig: Group Photograph of Team Adroit Racing from Manipal University Jaipur
for BAJA SAEINDIA 2021

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