SAE BAJA-13 TEAM WRENCH WIELDER

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**REPORT:** I am very glad to present this report as a faculty advisor of our SAE Baja Team Wrench Wilders. It was that inner Moto of our team Captain Mr. Aniket Deo, our Vice-captain Mr. Aniruddha Mulgund and also Co-leader Mr. Swapnil Jain which led to the foundation of our team. Proceeding ahead and finding out the same passion as our founders led to an addition of six more members from the final year mechanical to the team and hence formed was a core, lead team of nine people.

These nine people came together with a reason, sharing the same Moto sharing the same passion to strive, thrive and attain truly amazing wish of participating in the country’s topmost hardcore mechanical competition The SAE Baja 2013. Simulating a CAD model and then actually building the vehicle which is to be tried and tested on the mighty test track of NATTRIP at Pithampur, Madhya Pradesh (MP).

In the coming months a complete team of 25 members was formed, 13 out of which were from the 3rd year and final 4 of them from the 2nd year. Division of authority and responsibilities were delegated according to each one’s area of interest. And thereafter started a wonderful journey of putting into reality the dream of 25 members of customized and wholly in-house made All Terrain Vehicle (hereafter referred to as ATV). Market survey and research results were jotted down and a CAD model was ready with lead designers Mr. Neel Patel, Mr. Tanuj Thorat and Mr. Vaibhav Khakkar. Endless efforts were put in analyzing and selecting the best suitable parts from OEM’s and the parts which were to be manufactured in-house. Suspension design and calculations done by Mr. Aniket, Steering calculations done by Mr. Swapnil Jain, braking calculations by Mr. Yashpal Baviskar and Mr. Parth Mullick were precisely evaluated and rough 2D sketches were drafted in CATIA. Not to mention under the constant guidance of our team leader Mr. Aniruddha Mulgund to keep us on track and to check on all the activities in and out of house.

On 5th August, 12 SAE Baja’s virtual rounds were declared at Bangalore. A team of 5 core members had to present the teams aim and the CAD model to be simulated in front of a panel of highly proficient technical industrial experts from various departments. The presentation was very well delivered and highly appreciated by the panel members being our debut year. The core committee members were very much sure that the results had to be positive and on 16th September so they were.
All members rejoiced and a new enthusiasm and zeal rushed through everyone and then begin the actual building of the vehicle.

First step ahead material acquisition, Kanda motors, Pirangut sponsored the roll cage material and the basic roll cage frame was constructed keeping in mind the detailed study of rule book and under the expertise of welding and bending professionals in their workshop with 5 Team WW members. By mid December the roll cage was ready and transported back to the college workshop. In the mean while all parts suitable parts from OEM’s were bought and stored in workshop. The steering rack and pinion of Tata Nano, suspension struts, knuckles and brake assembly from Maruti 800, gear knob and complete powertrain assembly from Mahindra Gio and Alpha trucks were best suited. And then shipped in early December was the heart of the vehicle A Briggs and Stratton 300cc 10hp engine which is coupled to Mahindra gear box.

Second step was the assembly which appeared to be very critical job, a lot of scrutinizing was required during this phase. All our engineering skills were put to test. Mid January our suspension arms, steering mounting brackets, engine and gearbox mountings were ready over the roll cage. Finally all the subassemblies with main assemblies were done by the end of the month. Final inspection dates were declared as 2nd-3rd of February. Our ready-to-race vehicle was tested by Mr.Aurijit and Mr.Aiyyar who finally gave us a green signal for the final event at Pithampur on the 14th of February. Final paintjob and few aesthetics and final touch-up were given to the vehicle.

On 12th the vehicle was loaded and transported to NATRAX, Pithampur. The final event was spread across duration of 4days. The vehicle was accompanied by 19 of the team members and faculty advisor Prof. B.S Rathod.

**Day-1**

The first day was an an introductory session to all the Baja rules and regulation and also an Oath-Taking ceremony. Rest of the half day spared for all final 11th hour works on the vehicle. The track had an estimated daily foot-fall of 3.5-4grand people from across the country. These included industry experts from major auto-manufacturers and various auto-ancillaries. Also on the same Baja Aptitude test was conducted.

**Day-2**

2nd day of the event was scheduled for static events and technical inspection. In static testing different panels of various dept. such as powertrain, innovations, roll-cage, etc evaluated the vehicle. During technical inspection the first test being the engine scrutiny as no modifications were allowed in the stock-engine. Followed by a Go-NoGo Gauge inspection. Then a tilt test of 45 degrees. Braking test evaluated braking efficiency. Figure-8 test evaluated the cornering and turning radius of the
vehicle. Final inspection evaluated all safety majors and whether or not the vehicle is in accordance to rule book. We cleared all tests without any glitch.

**Day-3**

It was scheduled for dynamic events. Maneuverability test and hill climb test followed by the main event of endurance test were planned. But because of limited entries on the main track and our cumulative score of all the tests being low were not permitted for main events.

**Day 4-5:**

Dedicated to HR meets with companies for which were eligible 3of the final year members which went for the final round of PI in ARAI,Pune and General Motors, Bangalore but couldn't make it through.

All in all the event has been a major success for the Team and a life-time experience which tested all our managerial as well as technical skills.