

# Team Sovereign Report 2019-20

Baja SAE is an international intercollegiate competition powered by Society of Automotive Engineers (SAE) where engineering students are encouraged to design, build and race off-road vehicles that can withstand rugged terrains.

The **ATVC 2020** was held from 15<sup>th</sup> Feb to 19<sup>th</sup> Feb 2020 & was organized in Vadodra, Gujarat. A whopping bulk of 200+ teams accounting from IITs, NITs, RECs and private engineering institutions, had registered for this, out of which 70 teams were participating in eBAJA category and out of which only 53 teams qualified to manufacture their proposed design.

**TEAM SOVEREIGN's** proud ATV- **PHOENIX**, ATV for **BAJA 2020** was an eye candy for the event, and it gained laurels in various errands of the competition. Not only did it manage to turn heads due to its sleek finished looks, but it also earned respectful pats from the jury events for its pure performance.



This was our third year participating in the event. We had rectified all our failures we faced last year and had a better, robust and sturdy buggy this time. Our focus was on facing every obstacle and provide best performance. The vehicle is powered by a 48 V DC battery and a BLDC motor of having 4.5 KW with a controller. The maximum output of the motor is 4500 RPM having 90A of nominal current. The battery has a capacity rating of 110Ah. The low voltage system runs at 12V which is obtained using a DC-DC converter having a 15A peak current.

## Dimensions of the vehicle

Dimensions	Front	Rear
Overall Length, Width, Height	76" x 53" x 61.4" (l*b*h)	
Wheelbase	53"	
Track width	46"	44.5"
Kerb weight	180 Kg	
Weight distribution with 70Kg driver seated	92.5 Kg (37%)	157.5 Kg (63%)

## Features

The main outlining feature of out this year's ATV was to accurate data display using **CANbus protocol system**. This would enable accurate data and will ease the messy connections. For enhanced safety an MCB was added having a rating of 200A that would trip as soon as the current went over limit. The main problem observed previous year was overheating of the motor controller, this year we have used fan for its cooling. We have also elevated the motor mounting points. This decreases the contact tendency of motor with any obstacle.



## Overall Performance

The team stood **overall AIR 1<sup>st</sup>** among the teams participated in the ATVC 2020 Vadodra, Gujarat in Design Evaluation.

