



Shell
Eco-marathon®
ASIA



TeamBITS

Sponsorship Package 2019



BITS Pilani
Pilani Campus

VISION

Making ultra fuel-efficient vehicles with an aim to achieve zero emissions

MISSION

- © Increasing efficiency of the 100% Ethanol-fuelled car
- © Development of an energy-efficient Electric Vehicle

About Shell Eco-Marathon

Shell Eco-Marathon is one of the world's leading energy efficiency competition. Students are challenged to design, build and test energy-efficient cars, pushing the boundaries of what is technically possible.

For the Asian leg there are -

- 18 countries
- 1200+ students
- 120+ teams

The teams are provided with a plethora of energy sources to choose from broadly classified in Internal Combustion (IC) Engine and Electric Mobility Categories

IC Engine

Petrol
Diesel
Ethanol
CNG

Electric Mobility

Battery Electric
Hydrogen Fuel Cell

The teams can pick from two categories –

Prototype: Drivers squeeze into aerodynamic vehicles, lying on their backs to steer around the track.

Urban Concept: Cars look more familiar to modern-day vehicles. Built to roadworthy specifications, their extra weight may make them less fuel-efficient than Prototype cars, but they are still able to achieve impressive results to modern-day vehicles.



Shell Eco-Marathon Asia Website
<https://goo.gl/eNqkD7>



About the Team

BITS Pilani is one of the premier technical institutes of India and it has trained some of the brightest minds in the country in conquering the technological, social and corporate world in its 54-year-old history.

Team BITS has been a pioneer in the development of automobile engine efficiency since its inception in 2012. The team which started with a group of 10 excited students has now culminated to make it one of the torchbearers of the event from the subcontinent. The contemporary team thrives on the geniuses of its 35 talented members from various fields and stages of Engineering and Sciences studies and has grown into a structured organization with subsystems for powertrain, design and aerodynamics, vehicles dynamics and operations.

For the past 2 years the team has been working on making the **1st Indian Car to run on 100% Ethanol (E-100)** fuel and made history by successfully running it in Shell Eco-Marathon Asia, 2018.



The team has its workshop in the IC Engine Lab. The team used to work meticulously on the car irrespective of the time of the day.

Journey So Far



2012

Prototype Category

Gasoline – 70 km/l

Go-kart style steering Body-Wood

Chassis-Mild Steel

Eklavya

Prototype Category

Gasoline - 83 km/l

Weight of tires was reduced drastically

Aerodynamically more optimized

Urban Concept

Ethanol (E100)

Carbon Fiber Monocoque

Special Recognition Award (₹ 2 lakhs)

2016

Myriad

2015

Vortex

Urban Concept

Gasoline – 91 km/l

Carbon fiber fairing | 10

Persistence Award (\$2000)

2017

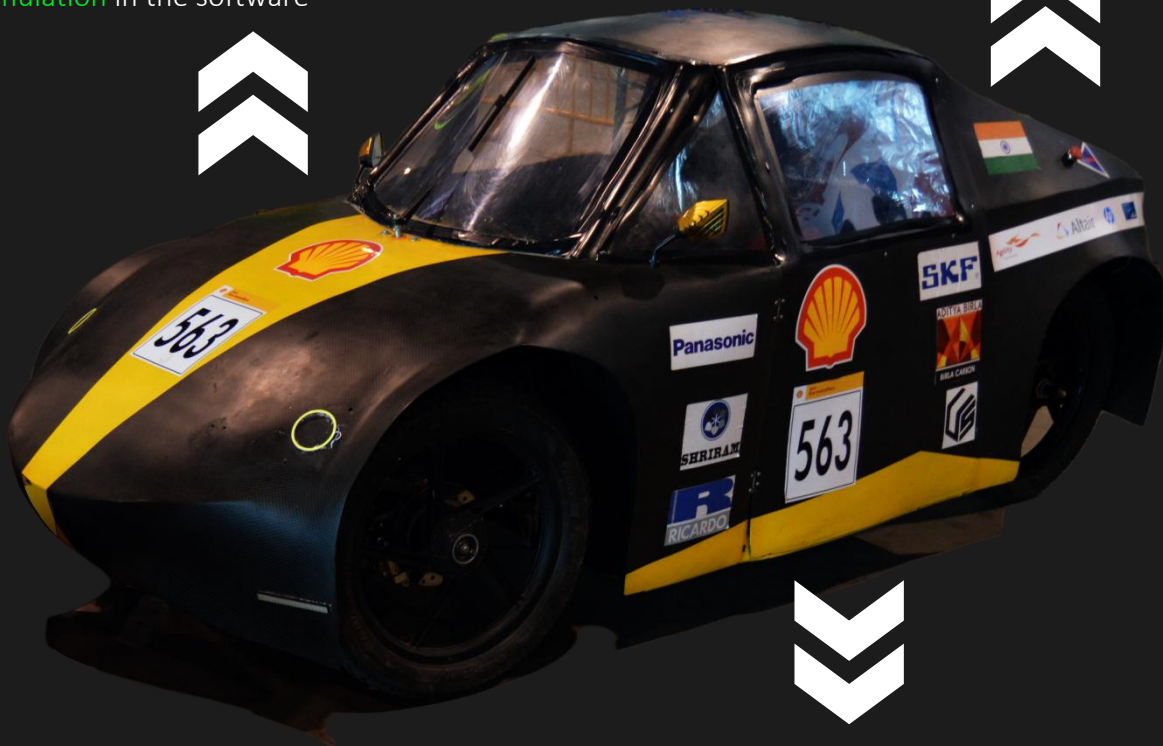


Daksh – 2018

1st Car in India to run on 100% Ethanol

The team procured Ricardo Wave software from Ricardo and did Intake and Exhaust length calculations using **1-D Simulation** in the software

Shriram Pistons fabricated **custom domed pistons** for our Bajaj Discover 100cc engine to increase the Compression Ratio from 10 to 13 and improved the efficiency with ethanol as a fuel.



The chassis is fabricated out of lightweight **Carbon-Fiber**. Mounting aluminium frames are used to mount different components like engine, steering rack, etc.

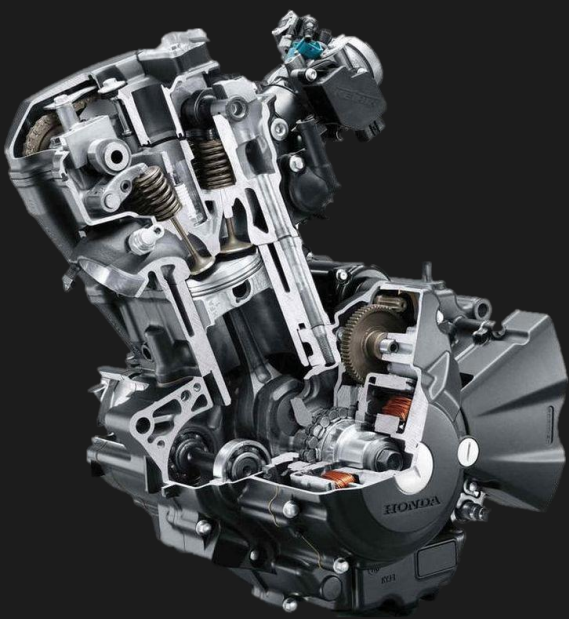
The team purchased **dynamometer for engine tuning** and used Ecotrons EFI kit with the engine. The team programmed ECU injector values and spark timings from scratch.



EFI TUNING USING ECOTRONS

Into th

Ethanol (E-100) Project



- **Ethanol Direct Injection** which allows to reduce fuel consumption of the engine as it increase the compression ratio and also lets the engine to run on ultra-lean mixtures.
- **Spark tuning** and calibration of engine.
- **Geometric tuning** of the intake and exhaust of the engine using 2-D simulation in Ricardo Wave.
- Design, **Simulation** and fabrication of engine parts

Future Possibilities

- **Removing the throttle** valve to reduce pumping losses in the engine using direct injection.
- **Camshaft modification** to for optimization of timing
- **Electronically actuated** valves to more precisely control the timing and lift which will aid in removing the throttle valve.
- Use of **hybrid systems** to increase efficiency and reduce emissions.

e Future

Battery Electric Project

- Lithium based battery with customized **Battery management system**.
- **Custom made motor controller**.

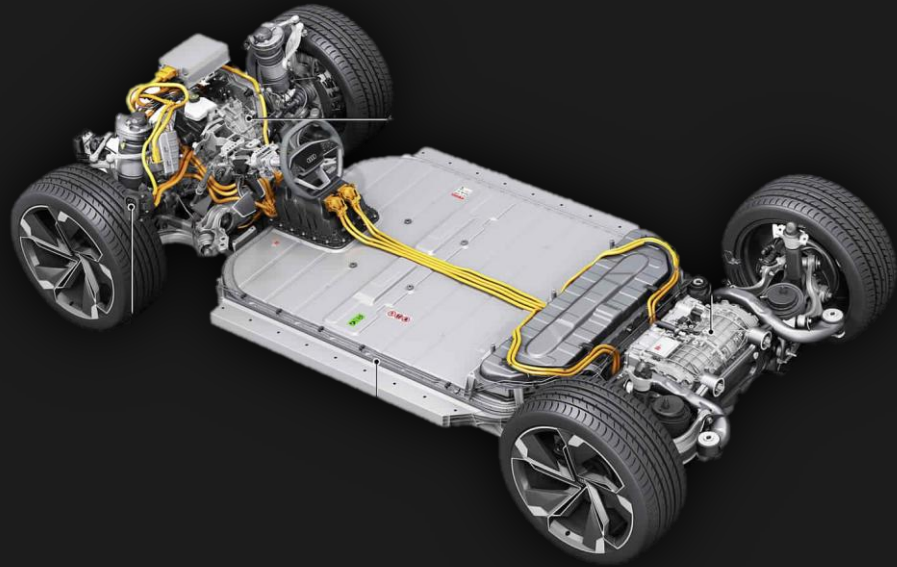
- Regenerative braking system.

- Near autonomous electronic

cruise control system to

accelerate to a given speed most

efficiently.



Future Possibilities

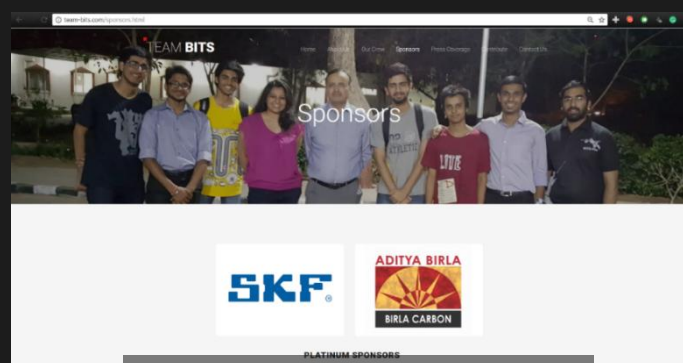
- Front wheel suspension with **regenerative suspension** system.
- Use of **Battery analyser** to calibrate and stimulate charge and discharge rates.
- Research on **battery chemistry** to increase its energy density.

Publicity Avenues

On the Web



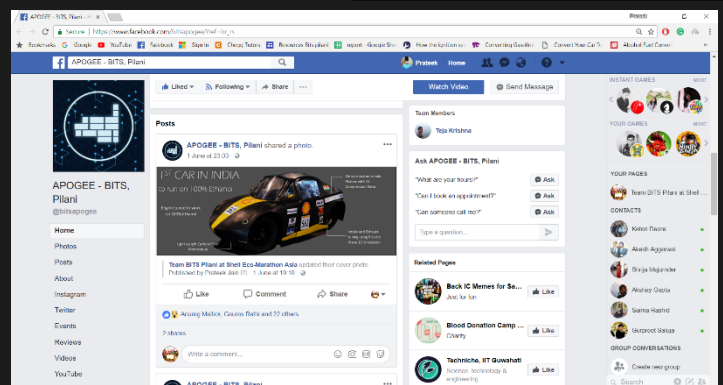
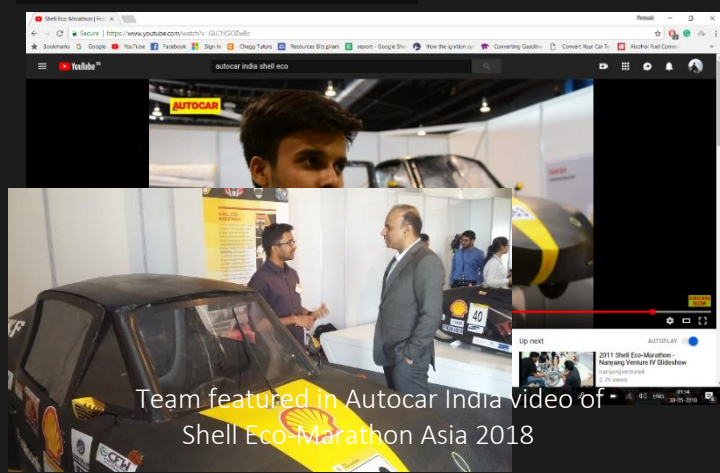
Facebook post thanking the sponsor



Sponsor's mention on the website



Continuous mention by Shell India Twitter with 27k+ followers





Team BITS presented the car at Shell Technology Centre and won Special Recognition Award of ₹ 2 lakhs

Team video features in OASIS (Cultural festival) and APOGEE (Technical festival). Team Stall is put up. Custom publicity and product marketing options are available

NOTE - New Challenger Event named Shell Eco-Marathon India will be held in December 2018 and Team BITS is pumped up to participate in it.

Media Outreach



Financial Express covered our story just before 2018 event.
























Team BITS received mention in various newspapers for being the 1st 100% Ethanol Car in India

Team BITS received mention in various newspapers for the Spirit and Perseverance Award

Sponsorship Packages

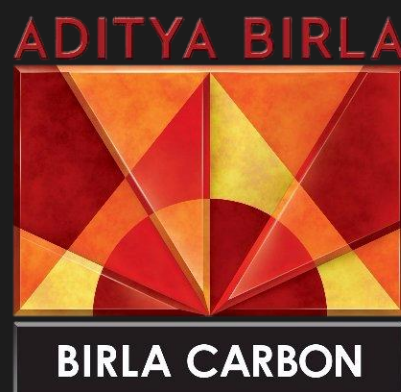
Our sponsorship packages are flexible and are presented as a starting point for discussion. Upon request, a **bespoke package can be tailored** to better suit you and your company

Package	Title	Platinum	Gold	Silver	Partner
GENERAL					
Contribution Guidelines (₹ in lakhs)	8	4	2	1	<1 / Tech. Support
Limit (No. of organisations)	1	3	7	10	-
Car naming rights of any one car					
Company Logo on team letterhead					
Company's name and logo receive special mention when Team BITS is mentioned					
Company's logo on all advertisements, apparel and merchandise					
Mention in all press release					
PRE-EVENT					
Number of Invitations for launch event, where sponsors can interact with Team BITS and drive the car	15	10	7	5	3
Publicity during OASIS (Asia's 2 nd largest cultural festival) and APOGEE BITS Pilani					
Custom product marketing upon request during OASIS and APOGEE.					
Special mention on website and Facebook page					
Company logo on the car (Size in cm ²)	400	300	250	200	150
Monthly newsletter with progress update of team					
Mention in Team BITS 2019 work report.					
Publicity at Shell Eco-Marathon Challenger Event, India					
DURING EVENT					
Distribution of the brochure sent by the company					
Sponsor's logo on pinup poster					
Sponsor's logo on standee					

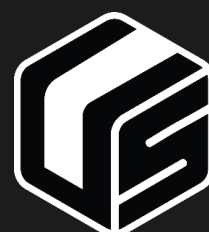
Custom product marketing upon request.					
POST EVENT					
A detailed branding report highlighting your effective brand presence at the event					
Framed picture of the team with vehicles as a token of gratitude					
TEAM BITS website, Facebook and twitter page remains active for subsequent seasons, ensuring continuous publicity for a year					
Sponsor's logo on standee if the team goes to any event just after the competition.					

Past Sponsors

SKF®



Panasonic





BITS Pilani
Pilani Campus



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