ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

A Unit of Alva's Education Foundation (R)
(Affiliated to Visvesvaraya Technological University, Belagavi
Approved by AICTE, New Delhi & Recognised by Government of Karnataka)
Shobhavana Campus, Mijar, Moodbidri - 574 225, Mangalore D.K., Karnataka State
Phone : 08258-262724 (O), 262725 (P), Telefax:08258-262726
Email : principalaiet08@gmail.com, Web:www.aiet.org.in

Ref No. AIET/FO/AUDIT/2021-22/003 Date : 25-02-2022

TO WHOM SO EVER IT MAY CONCERN

This is to Certify that Alva's Institute of Engineering and Technology has received the following contribution for the **DESIGN AND FABRICATION OF A FORMULA STYLED KART** research project.

DATE	NAME OF THE EVENT	AMOUNT
23/01/2020	M/s Dhanalakshmi Cashew Exports Pvt. Ltd	50,000/-

FINANCE OFFICER
ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
MIJAR

PRINCIPAL
ALVA'S INSTITUTE OF ENGINEERING & TECHNOLOGY
MIJAR

PRINCIPAL
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225, D.K

CA. UMESHA RAO M.
CHARTERED ACCOUNTANT
M.N:207835
UDIN: 22207835AFGJIX2461

Finance Officer
Alva's Education Foundation (R.)
Moodbidri - 574227

VISVESVARAYA TECHNOLOGICAL UNIVERSITY,

BELAGAVI 590018

A project report on

DESIGN AND FABRICATION OF A FORMULA STYLED KART.

Submitted in partial fulfillment of the requirements for the degree of

BACHELOR OF ENGINEERING

in

MECHANICAL ENGINEERING

By

RACHIT JAGANNATH NAYAK	4AL17ME410
MOHASEEN FAYAD KHAN	4AL17ME408
RAVI KANASOGI	4AL17ME416
BHARATH NAGARAJ	4AL17ME401

Under the Guidance of

Dr. Peter Fernandes
Principal, AIET

Prof. Kiran C.H
Assistant Professor

ALVA'S
Education Foundation

Department of Mechanical Engineering

ALVAS INSTITUTE OF ENGINEERING AND TECHNOLOGY

MOODBIDRI-574225, KARNATAKA

2019 – 2020

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mijar, Moodbidri D.K. -574225 – Karnataka

ALVA'S
Education Foundation

DEPARTMENT OF MECHANICAL ENGINEERING

CERTIFICATE

Certified that the project work entitled **DESIGN AND FABRICATION OF A FORMULA STYLED KART** is a bona fide work carried out by:

RACHIT JAGANNATH NAYAK	**4AL17ME410**
MOHASEEN FAYAD KHAN	**4AL17ME408**
RAVI KANASOGI	**4AL17ME416**
BHARATH NAGARAJ	**4AL17ME401**

are bonafide students of Mechanical Engineering of Alva's Institute of Engineering and Technology in partial fulfillment for the award of **BACHELOR** OF ENGINEERING in **MECHANICAL ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2019–2020. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

Prof. Kiran C.H
Co – Guide

Dr. Satyanarayan
Head of the Department
Dept. Of Mechanical Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

External Viva

Dr. Peter Fernandes
Principal
PRINCIPAL
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225, D.K.

ABSTRACT

Nowadays as we are moving towards the development, we must improve our technology. One of the big steps towards the technological improvement is in automotive sector. This is possible by creativity and innovation of young automobile enthusiasts. The National Go-Karting Championship is the one of the ways which provides the platform for doing innovations and showing creativity for students. The Go-kart, by definition, has no suspension and no differential. They are usually raced on scaled down tracks but are sometimes driven as entertainment or as a hobby by non-professionals. This report deals with the Design and Analysis of the Formula Styled Go Kart. In a Go Kart the roll cage is one of the main components. The design and calculations are thoroughly studied across various sectors and incorporated in the final blueprint of the Go Kart. The overall fabrication is also studied in this report. The final expenditure of the Kart is incorporated in the report. The report also highlights the contribution of such challenges on students and how they can improve their technical knowledge by being a part of this. This report documents the process and methodology to produce a low cost go-kart which is comfortable, vulnerable, durable and complete in all aspects by modeling it with CAD software The feasibility of the go-kart design was examined through DFMEA, DVP and Cost report. The team focuses on a technically sound vehicle which is backed by a profound design and good manufacturing practices. The report explains approach, reasons, selecting criteria and expected working of the vehicle parameters. The procedural way of explanation is used for different parts of the vehicle, which starts from approach with the help of known facts, then the design and calculation procedure has been explained. The best way known had been used to go on to the result of all parameters.

Keywords: Go Kart, Design, Analysis, calculation, CAD, automobile

Brief Report Design and Fabrication of a Formula Styled Kart

Alva's Motorsports is an official Formula Student and Go kart team of Alva's Institute of Engineering and Technology, Mangalore. The team consists of very talented students having sound technical knowledge to build the race car through skills and experience got from their engineering education at AIET. This year, we are participating in National Go-karting Championship Season 1 to be held at Coimbatore.

A Go Kart is defined as a small, light, low slung, Four-wheeled vehicle usually powered by a Gasoline engine, used for racing. The Team's primary objective is to design a safe and functional Go kart vehicle based on a rigid and torsion-free frame, powered by a well mounted drive-train and to understand the finer aspects of vehicle design with the ultimate motive of fabricating a prototype vehicle that could be manufactured for consumer sale, while strictly adhering to the competition rule book. The kart should facilitate single seating without any roof and open cockpit. It should have 4 nonaligned wheels that are in contact with the ground; the front two wheels must control the direction.

The other two rear tires must be connected by a one-piece axle, which transmits the power. The secondary objective is to enhance driver's comfort and safety, and to increase the performance and maneuverability of the vehicle. To achieve our goal the team has been divided into different core groups, each responsible for the design and optimization of major sub-systems which are to be later integrated into the final blueprint.

Event : Student Formula Bharat 2019

Formula Bharat is an engineering design competition in which students from colleges and universities all over the country, compete with a life-size Formula-style vehicle in areas of engineering design, overall cost, marketability and dynamic performance. The series replicates the global student Formula series hosted in **around 11 countries per year**.

The purpose of this competition is to encourage students to gain hands-on practical experience, while applying engineering theories studied in the classroom. In addition, students learn the art of management and teamwork, which are essential skills required in the 'real-world'. These student

teams are required to build a new vehicle from scratch year-after-year and seek sponsorship and donations by their own means to fund the project.

Fig 1 Chassis and other parts during the development

Formula Bharat 2019 (FB 2019) is been hosted and managed by Mobility Engineering Consortium Pvt. Ltd., an organization dedicated towards hosting mobility-related competitions for students.

Fig 2 Driver Ergonomics and Position

The team Dhrutaha had participated in national level event student Formula Bharat 2019 competition that took place at the Kari Motor Speedway in Coimbatore during January 23 -27, 2019. The competition had focused on the combustion category and an adaptation of the Formula Student 2018 Rules document. **Our team backed 41st rank out of 100 team participated** in the event. The competitors for our team are from national and international level teams.

Fig : Team Dhrutaha with Formual 3 car

Fig: Shows the team Dhrutaha in Technical Inspection bay

Fig: Team visited Formula Bharat competition

Participation Certificate

This certificate is being presented to

Kiran C.H

Team Dhrutaha

Alva's Institute Of Engineering & Technology

Authorized by

Cathy D'Souza
Event Manager - Formula Bharat
Mobility Engineering Consortium Pvt Ltd

This certificate is being presented to

Shravan Kumar

Team Dhrutaha

Alva's Institute Of Engineering & Technology

BARCODE 2019-CS8-001

Authorized by

Cathy D'Souza
Event Manager - Formula Bharat
Mobility Engineering Consortium Pvt Ltd

This certificate is being presented to

Mohaseen Fayad Khan

Team Dhrutaha

Alva's Institute Of Engineering & Technology

BARCODE 2019-CS8-003

Authorized by

Cathy D'Souza
Event Manager - Formula Bharat
Mobility Engineering Consortium Pvt Ltd

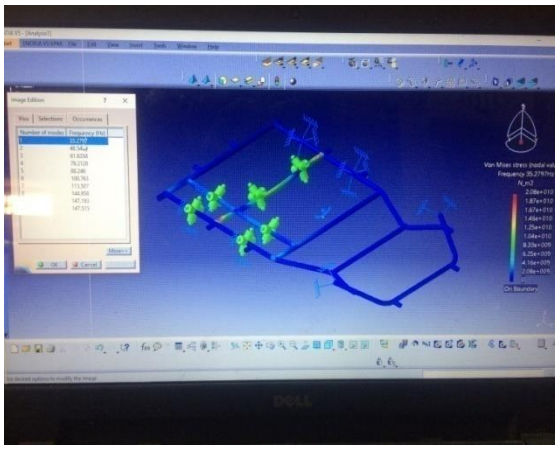
FKDC competitions

The team Alva's motorsports had participated in the FAME – FKDC competitions season 4 held in Kari Motor speedway, Coimbatore during 30th Aug 2019 to 4th Oct 2019. The competitions consist of pre qualify round, Static rounds and Dynamic rounds. In total 80 teams registered for the event from the different university.

A snap of participation in FKDC competition at Kari motor Speedway, Coimbatore

Fig shows the team with Go-kart in Technical Inspection Bay

Student working for the development of Kart



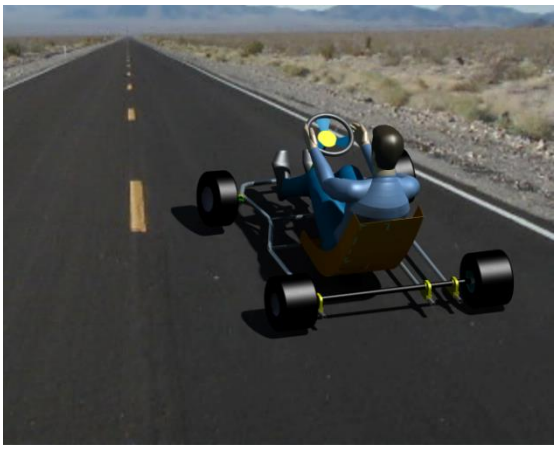


Fig : Shows the catia modeling and fabrications works by the team members

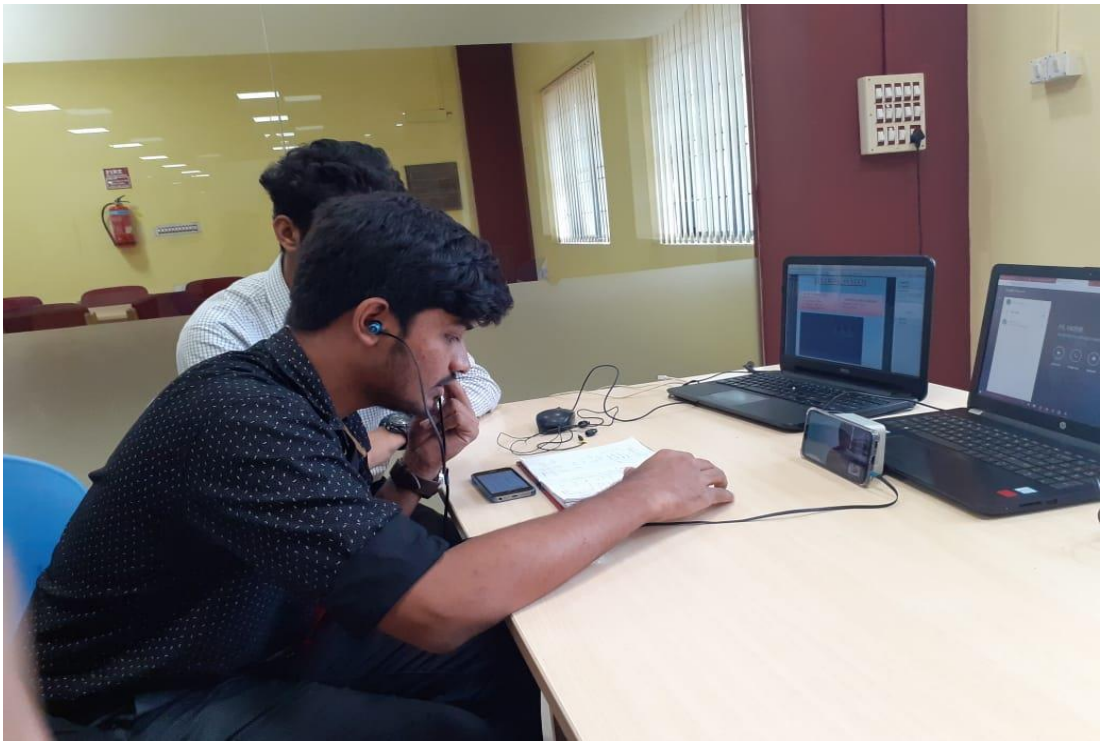


Fig :shows the virtual presentation of the team

Fig: Team lined up on track for dynamic events