

A Review Paper on Fabrication of Go-kart

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Abstract:- The paper aims to review the fabrication of a Go-kart. This 21st Century is called as "THE ERA OF AUTOMOBILE". The various types of vehicle present in the universe are with their special purpose, may be for defence, security, traveling, racing, etc. Go-karting is the part of racing vehicle which showcase our technical as well as theoretical knowledge. In America kart is an on road car, but it is specially made by off roads. The competition is held all over the world. The various racing competitions are BAJA, Formula1, Go-kart, etc. It is most popular because of simplicity of rules and is professional as well as non-professional and the kart is made as per their requirements. Go-kart is same as formula 1 but with low specification and components. It's having very less ground clearance. The kart does not consist any kind of suspension system. It is also modified as per the comfort of driver & it is single seated. The all major components of automobile are used while fabricating. As a free time activity, it can be performed by almost anybody and permitting licences racing for anyone from the age of 8 onwards. The safety of driver is a major part while design as well as fabrication. The modelling and analysis is performed using 3-D software such as CREO 3.0 and ANSYS WORKBENCH, etc.

Index Terms – Go-kart fabrication, Assembly, Transmission System.

1. INTRODUCTION:-

Go-kart is a simple four-wheeled, single seated racing car used all over the country. Karting is safest, cheapest into motorsport for those with desire to compete. Karts may seem like little cars. The first kart was built in California in 1956. From then, it is popular all over America and also in Europe. A Go-kart has no suspension and no differential. The automobile component consists of Brake, Transmission system, Steering system (Ackerman), Tyre (Front and rear), driving seat, etc. It can be powered by four stroke engine or electric motors; only in rear case high power engine is used. In some countries licence is permitted to go-kart for being used on roads often referred to as street tracks. In some countries there are some restrictions like mandatory use of headlight, tail light, horn and indicators and there power must be in control value. It can use in amusement parks by addition of various electronics devices. There are basically three types of karts – Superkarts, Rotax karts and four strokes karts. Kart racing are categories as KF1, KF2, KF3, KZ2, Super kart.



FIGURE 1: ASSEMBLED KART

2. CHASSIS SPECIFICATION:-

The chassis specifications are as tabulated below:

DIMENSIONS	
Overall Vehicle Length	65 inches
Overall Vehicle Width	45 inches
Vehicle Front Track Width	32 inches
Vehicle Rear Track Width	41 inches
Ground Clearance	3 inches
Wheel Base	42 inches

TABLE 1: SPECIFICATION OF CHASSIS

3. DESIGN METHODOLOGY:-

The design methodology is as shown below:

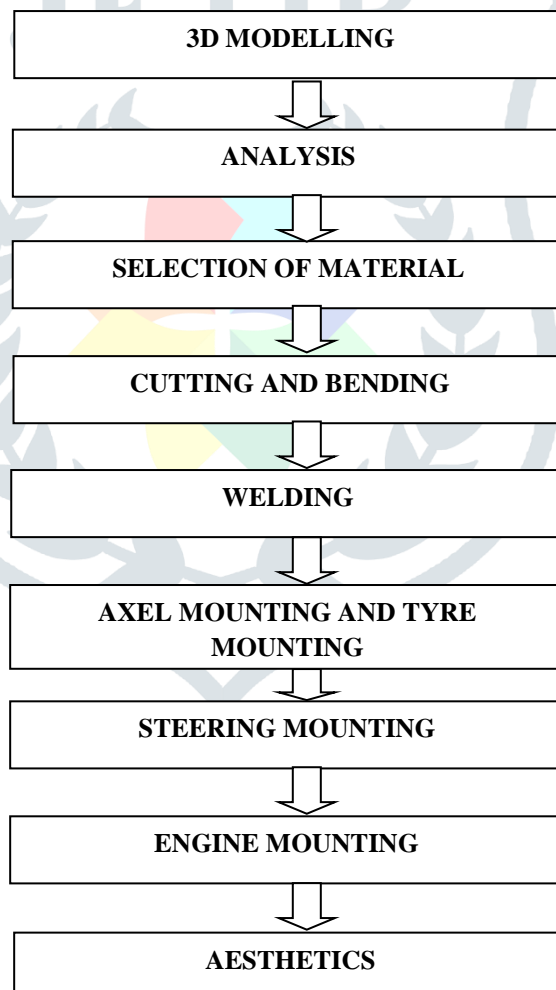


FIGURE 2: METHODOLOGY OF KART

4. FRAME DESIGN:

4.1. FRAME MATERIAL: The material used for a frame is AISI 4130; it has high strength and low deformation. The pipe has 1 inch diameter and 3mm thickness. The properties are shown below of AISI 4130 material:

PROPERTIES	AISI 4130
BRINELL HARDNESS (BHN)	200 TO 300
ELONGATION AT BREAK (%)	18 TO 26
SHEAR STRENGTH (MPA)	350 TO 640
TENSILE STRENGTH (MPA)	440 TO 980
RESILIENCE (MJ/M3)	120 TO 180
FATIGUE STRENGTH (MPA)	320 TO 660
THERMAL EXPANSION (MICROMETER/MK)	13
STRENGTH TO WEIGHT (BENDING POINTS)	19 TO 29
THERMAL SHOCK RESISTANCE POINTS	16 TO 31
CARBON (%)	0.28 TO 0.33
CHROMIUM (%)	0.8 TO 1.1

TABLE 2: PROPERTIES OF CHESSIS MATERIAL

4.2. DESIGN OF VEHICLE:

3-D views of complete vehicle are shown below



FIGURE 3: ISOMETRIC VIEW OF GO-KART

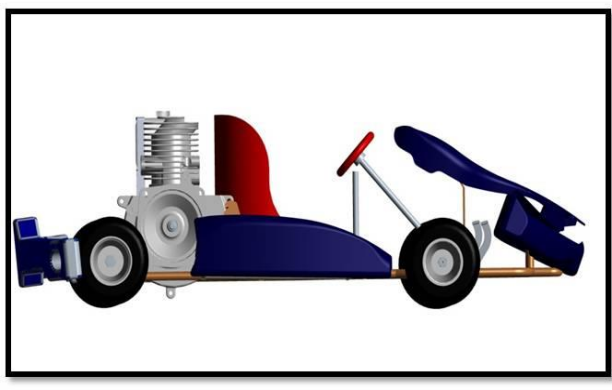


FIGURE 4: SIDE VIEW

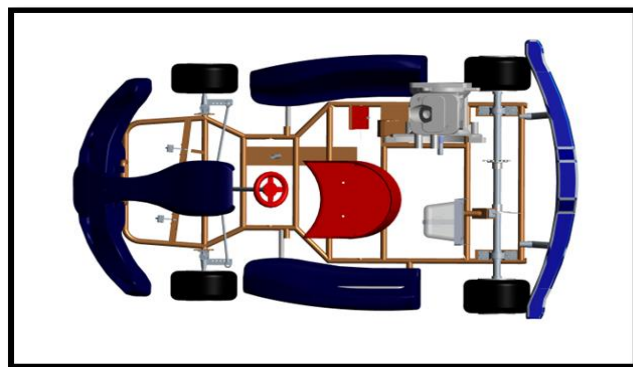


FIGURE 5: TOP VIEW

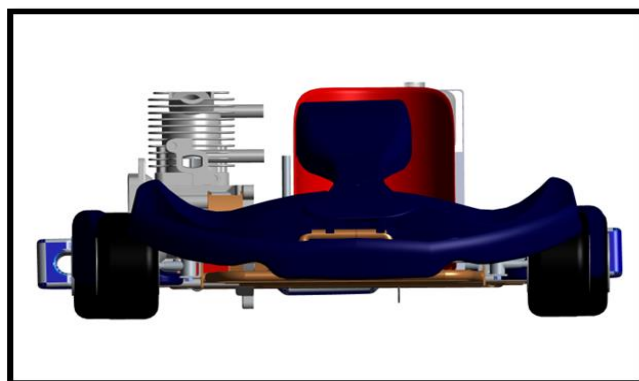


FIGURE 6: FRONT VIEW

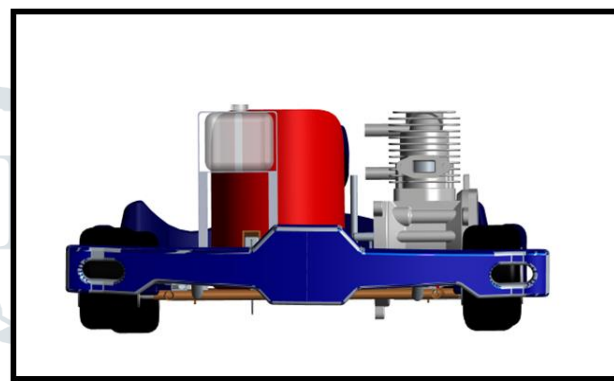


FIGURE 7: REAR VIEW

4.3. DEFORMATION OF CHASSIS

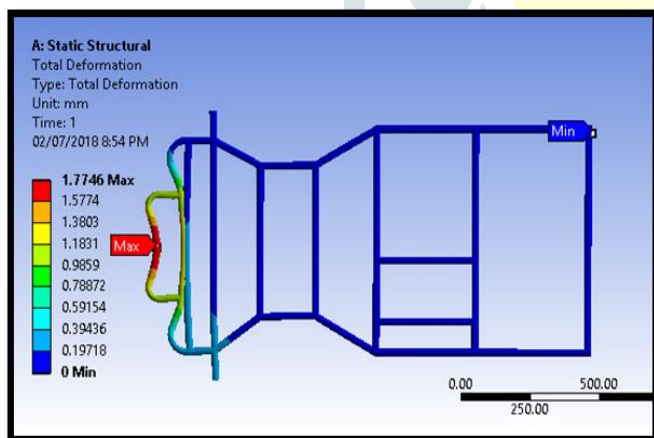


FIGURE 8: TOTAL DEFORMATION OF CHASSIS

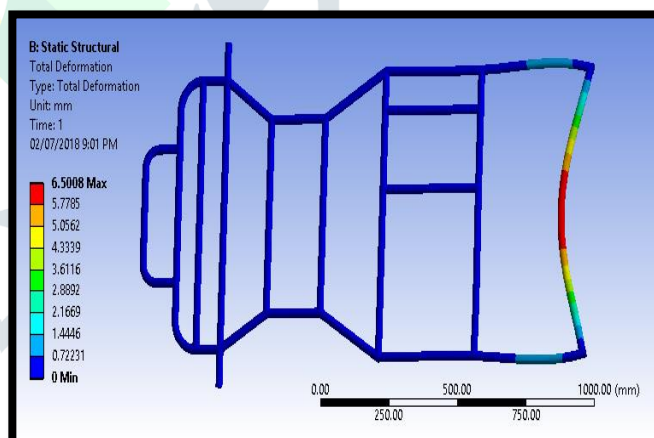


FIGURE 9: REAR IMPACT

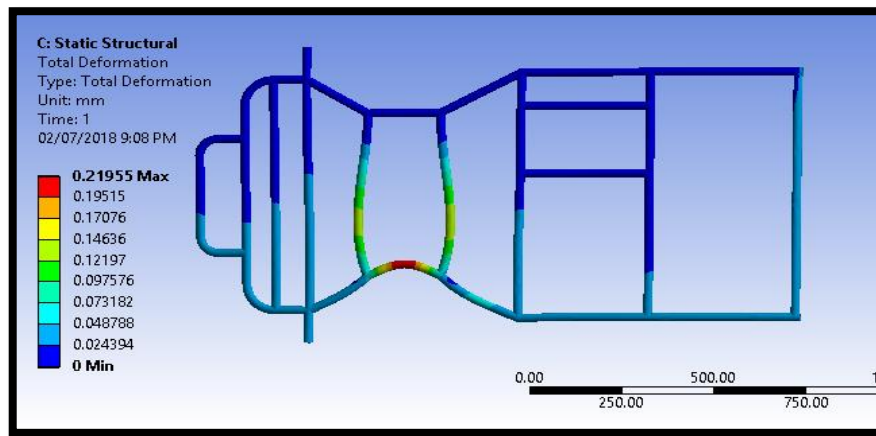


FIGURE10: SIDE IMPACT

5. COMPONENT OF KART:-

The basic component used while fabricating of Go-Kart are as follows:

- 5.1 Brake:** -Hydraulic disc break with break calliper is used in kart and hose pipe is use to supply brake fluid from TMC.
- 5.2 Chain sprocket:** -Chain sprocket is mounted on right side of kart transmit the power from engine to shaft.
- 5.3 Accelerator:** -The accelerator is placed on the right side of vehicle and connected to engine.
- 5.4 Engine:**-The major component in kart for driving the kart, we use Honda Strunner 125cc engine.

Engine Specification:-

- | | |
|--|--------------------------------|
| 1. 2 valve, Four stroke engine SI engine | 5. Cooling system: Air Cooled |
| 2. Displacement: 124.7 cc | 6. Ignition system: Electrical |
| 3. Power: 11 BHP @8000 rpm | 7. Clutch: Multi plate, Wet |
| 4. Compression ratio: 9.2:1 | |

- 5.5 Fuel Tank:-** A 4 litter capacity fuel tank mount at 18 inch height from chassis, which provide the fuel to engine for ignition.
- 5.6 Steering:-**Steering is connected to Ackermann mechanism through connecting road on front wheel.

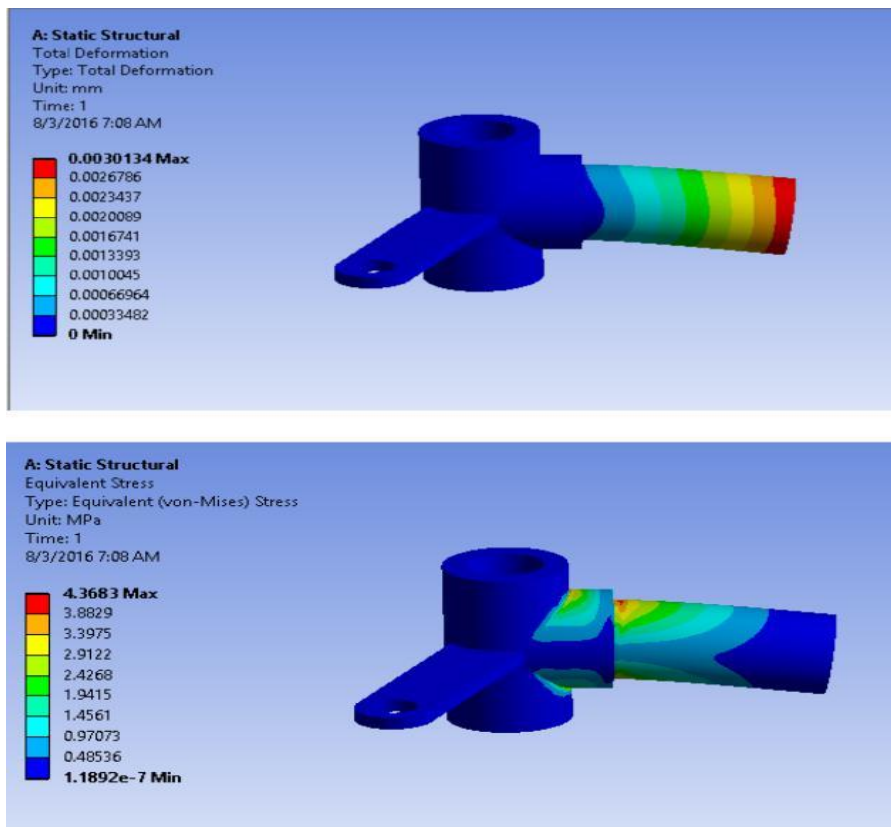


FIGURE 11: DEFORMATION ON STURAXLE

- 5.7 **Seat:** -The seat is mounted on chassis with the help of seat stand and nut , bolts as comfort according to the driver.
- 5.8 **Firewall:** - fire wall mounted between seat and engine to protect driver from engine heat.
- 5.9 **Kill switch:** - Two kill switches is use in kart for emergency power off. The safety mechanism is mounted near the steering wheel and on the left side if seat foe driver as well as Marshal.
- 5.10 **Aesthetics:-**Aesthetic is mainly depends on chassis welding, proper arrangements of wire and painting job on the bumpers.

6. MODELLING :-

The 3-D assembled model of chassis is created on PTC CREO Parametric 3.0 :-

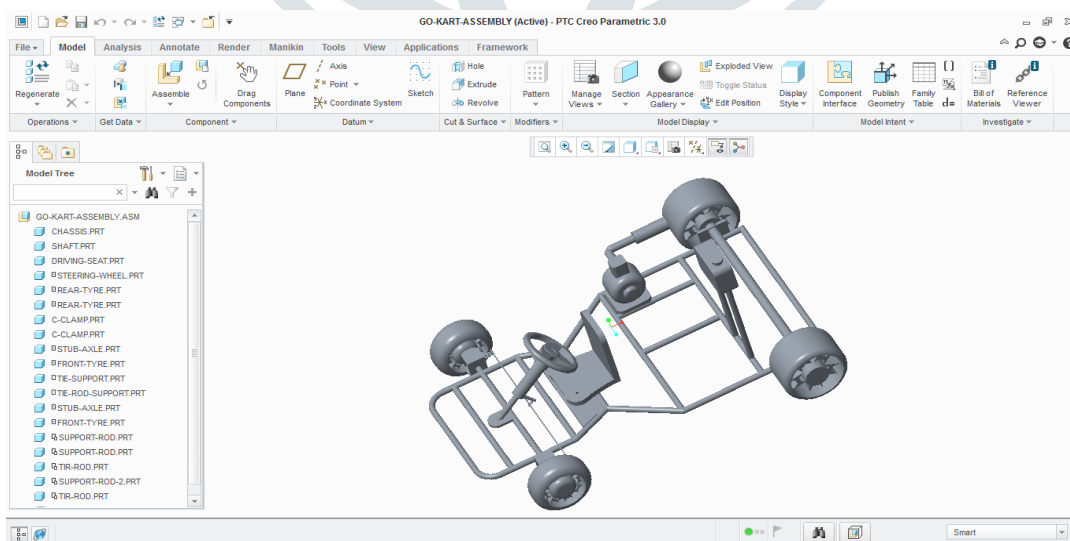


FIGURE 12: FINAL ASSEMBLY MODEL

7. CONCLUSION:-

The fabrication of go-kart can develop many skills. In this review paper, some researchers and their research methodology with remarks is included. We fabricate our go kart according to the design given by different rulebooks. We got better result comparing to other kart recently our team participated in BFKTC Tamil nadu in august 2018. The go-kart designed and fabricated is recommended for a speed of 60-70 km/hr. FEA analysis of chassis is perform to evaluate the maximum stress on the member that can bear.

8. REFERENCES:-

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