

DESIGN OF PORTABLE THREE WHEELER

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Abstract: In India, millions of cars are presently running on road. This might create several problems like traffic jams, parking problems etc. As population growth of India is tremendously large, the demand of individual person is also increased like they want their car cheap in cost and small in size. To overcome the problems of Traffic Jam, we developed the portable three wheeler. In this paper we discussed the design of the portable three wheeler. In this paper we discussed the design and analysis of the chassis and driving shaft.

Keywords: portable, suitcase

I INTRODUCTION

India is a developing country, now the population of India is increasing day by day. This causes an increase in the demand for cars, bikes. The use of cars, bikes, vehicles creates traffic problems, parking problems. The economic status of the public has increased so now a days around 60% of families have at least one car. So the demand of the current scenario is to develop the compact, size automobile. To minimize the traffic and mainly parking problem, a vital need to develop the compact automobile or foldable car.

To overcome the problem we designed and developed the portable three wheeler which is foldable. It is basically a portable vehicle which is enclosed in a suitcase.

II. SUITCASE CAR



The above is the picture of the portable three wheeler. It is the vehicle which is enclosed inside the suitcase. The portable three wheeler is formed by attaching the various parts present in the suitcase. The various parts like wheels, hand seat, fuel tank are detachable type. The total 5 to 6 minutes require converting the suitcase into a portable three wheeler.

It is a car in closed in a suitcase of dimension 780mmx560mmx320mm. It is powered by an 80cc two stroke engine, the vehicle holds enough fuel for around one hour of driving at speeds up to 25 km/hr. It is built around a small steel chassis and it is steered by handlebars. The weight of the current model is around 35 kg. The performance parameter is mileage of 50km/lit. The maximum speed obtained is 25km/h.

It consists of the following main parts

- Chassis

- .transmission system
- .engine
- Braking system
- Suitcase.

III.ADVANTAGES

- Problem of parking is eliminated.
- It can be used in remote villages, metro cities like Mumbai, Delhi where parking and traffic is a main problem.
- Handicapped person can also use it.

IV.LIMITATION

- Present model is little bit heavier.
- Less ground clearance.

V. CHASSIS

The important part of the portable three wheeler is chassis because it carries whole load of the vehicle and driver It consist two part rear chassis and front chassis the front chassis is made up of hollow square bar . front chassis carries the retractable handle which is mounted by providing the arrangement on it. The rear chassis is also made up of hollow square bar which is joined to the suitcase. The engine is mounted on one side of the chassis by nut bolt arrangement the driving shaft rest at bearing which is rest on bottom of the chassis .The modelling and FEA analysis of the chassis is shownas follows.

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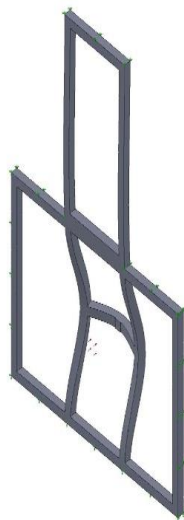
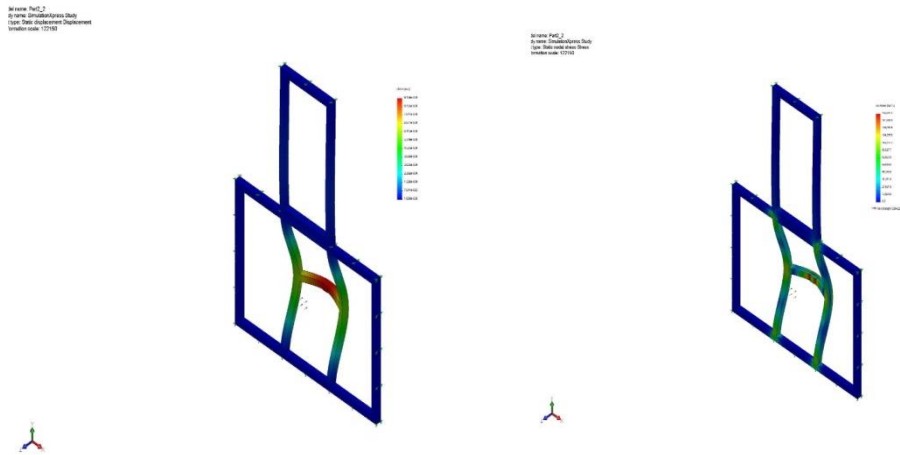


fig.3

3d name: Pkg2_2
3d name: Simulation/Static Study
1)type: Factor of Safety Factor of Safety
2)color: Blue to Red (200)
1)1: FSO=1 - Blue



fig.4



VI DRIVING SHAFT

the driving shaft is made up hollow circular shaft of steel material. Hollow shaft leads to high torque transmitting capacity and weight optimization. The shaft carries driven sprocket and brake. The design of shaft is done as per ASME CODE AND FEA analysis is also done.

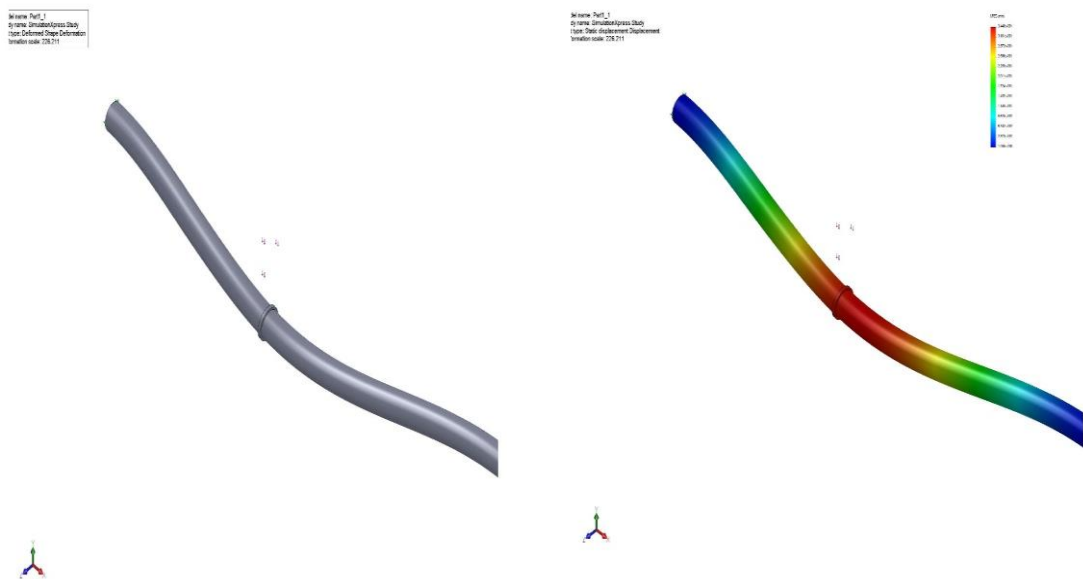


Fig.8

Fig, 7

Model: Part_1
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Min: 0.00000000000000
Max: 11502.1111111111
F1: F02-1 - 10000



Fig.9

Model: Part_1
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Type: Stress (Effective) (MPa)
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Max: 11502.1111111111
F1: F02-1 - 10000

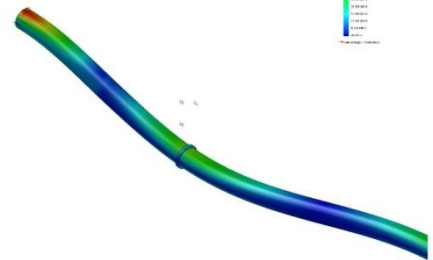


fig.10

VII CONCLUSION

The purpose behind the suitcase automobile is to reduce space required for a conventional automobile and to overcome the problem of traffic jams and parking problems. In this paper we discussed the design and finite element analysis of the chassis and driving shaft of portable three wheeler. The mileage of the three wheeler is around 50km/lit and maximum speed of 25kmh.the total time required to assemble the three wheeler is around 5 to 6 min.

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