

DESIGN CONCEPT OF A PERSONAL TRANSPORTER

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Abstract— Personal Transporters have gained an important place in the society and also in some industries in the last few years. Majority of Personal Transporters came into existence to give ease of locomotion and usability as they were being aided by various actuators, sensors and gyroscopes, to decrease human effort. But this came with an expensive price tag and several injuries to their first time riders. Personal Transporters even today are only purchased by wealthy people or organizations and are not so famous amongst the working class. Most of the Personal Transporters in the segment maybe versatile but aren't as practical and hence remain as a source of recreation only for the people who like to live an extravagant life.

Key Words—*Personal Transporter, Cross Platform, Inexpensive*

1 INTRODUCTION

To introduce a concept that would allow a person to move smoothly without performing walking movements with their legs/feet. This concept of Personal transporter consist of a hub motor attached to the rear rim of the wheel, inclusive of a microcontroller. The absence of sensors, actuators and gyroscopes would make this concept inexpensive and very easy to live with everyday.

2 LITERATURE REVIEW

The first Personal Transporter was introduced by the company Segway and increasing interest in them has caused a lot of design and manufacturing companies around the globe to catch up and take a share of their market. The other companies and their products are namely Jcool by Jcev, Zuumer by Zuumertronics and electric hoverboard by Mkboo. Some of these are manually aided while others are actuator, sensor & gyroscope aided. The ones that are actuator, sensor & gyroscope

aided have caused many injuries in the recent past because of their unsuited ergonomics or lack of riders operational skills.

3 PROBLEM DEFINITION

The most important consideration for the concept is balance. It is important that the rider will not fall off from the transporter. The impact of such blunder during the ride would not only harm the scene in which the angle is present. The entire shows integrity would be compromised and harshly received by the audience, potentially as a comedic act, which would seriously damage the reputation of the rider.

4 NEW APPROACH

We are modifying a bicycle frame to develop our concept of personal transporter & aim to create a frame that is simple in design. A skeleton frame which is robust and other parts which are simply time tested,

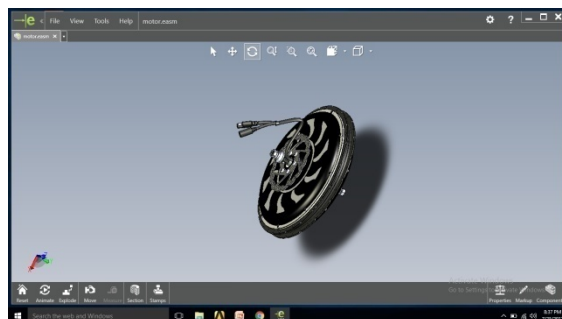
which when combined would help us to attain an ultimate off road machine. We are making use of telescopic fork suspension at the front and monoshock at the rear to give the best ride quality on the worst of tarmac. The high raised handlebars would accommodate riders of all heights and this concept would be capable of carrying a payload of 100 kilograms. The hub motor we are using would range from 500-1000W and with additional features of cruise control, smartphone bluetooth connectivity, regenerative braking & smartphone charging, this concept we anticipate would be the most practical given our country roads. The 26" rims and high ground clearance would allow this concept to roll over pretty much everything. The safety net of disc brakes on both wheels will allow hard braking and cornering easy on most kinds of surfaces it would be ridden on.



5 OBJECTIVES

This concept of personal transporter should be intuitive and engaging to ride, time saving, fairly portable and most of all eco-friendly. The battery pack should be completely portable and shouldn't take more than four hours for a full charge.

6 WORKING METHODOLOGY



This concept aims at developing a working model of Personal Transporter that works on an electric hub motor incorporated into the rim of the wheel with an integrated microcontroller which converts throttle feed input into electrical impulses to drive the motor incorporated in the rim of the wheels for locomotion, thus converting electric energy to mechanical work done. We have proposed a system which can work with good accuracy, clarity, reduce the wastage of time and consume less power. The rider simply controls his/her balance by grabbing the handlebars as they gradually gain speed. The integrated space saving microcontroller facilitates hassle free movement of the rider making it suitable for spirited riding.

7 CONCLUSION

From this we intend to step into the future of personal transportation by optimizing manufacturing cost and set a bar for good quality products in the market. We anticipate that the number of injuries caused by other gyroscope aided personal transporters can be reduced, if those riders were to ever ride on our concept.

8 FUTURE SCOPE

This stand-go concept can easily be converted to a sit-go concept by proper design development of a seat/saddle arrangement. The batteries too can be changed to give optimum performance at a much affordable price point as

and when the portable battery technology advances in the near future.

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