International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 11 Nov. 2022, pp: 332-334 www.ijaem.net ISSN: 2395-5252

Design and Fabrication of electric Vehicle with Bluetooth Smart Battery Indication

Mr.Manoj kumar, Mrs.shagar Banu,Mrs.Shajini G Inbakani
associate professor
Department of Electrical and Electronics Engineering, Dhaanish Ahmed College of Engineering, Chennai, Tamil Nadu, India-601301

Submitted: 01-11-2022 Accepted: 12-11-2022

ABSTRACT
This study considers design and development of low cost electric scooter. This project is proposed to show an infinite support to a development of electric vehicles which does not emit any harmful carbon. An inexpensive and light weight electric scooter has been
successfully developed which can carry a maximum payload of around 150kg.
Keywords— Electric scooter; low cost, BLDC Hub motor;Eco friendly; Lead acid battery.Controller

I. INTRODUCTION

The Navigant Research forecast that the worldwide sales of electric motorcycle and electric scooter will reach 6 million annually starting from 2015 to 2023, and this willtotal up the rapid increment of the sales is about 50 million. Driven by rising fuel prices and increasingly congested city streets, more consumers are starting to turn to two-wheel vehicles, including electric motorcycles (e-motorcycles) and electric scooters (e-scooters). Scooters are classified as subclass of motorcycle. Nowadays, there are variety type of scooters we will find on city streets and park. The main parts of electric scooters are main frame, wheel, tire, brake system, battery andcharger,motor, on/off switch, speed control, and one way bearing. This type of scooter is easy to operate and easy to carry anywhere since it is small and light. It can be use either for indoor or outdoor, but most people used it for outdoor / recreation activities.

Generally, there are several types of scooter operation. It isdepend on how people want to use it. It may be operated by engine power, electric power or foot power. Each type of them carry their own advantage and disadvantage. However, the electric scooters are the common choice since it islight, cheaper, and easy to manufacture. It captures many eyes out there and increasingly rising sales day by day. Over past few years, the creations and development of electric vehicles,including scooters, bicycles, motorcycles, and cars are gaining more attention and the sales is forecast to be increase year by year in the market. For this project, the scope is minimized tothe development of electric scooters. The use of electric scooter becomes a new mode of transportation in order to facilitate the people's movement especially in large or urban areas. Instead of that, it is such an alternative transport as a solutions for a low stamina person to move quickly and the most important thing is, it is environmental friendly.

II. PROJECT SCOPE & OBJECTIVE

The study has got manifold scope and objective. Some of the important objectives includes is to introduce a HC-05 Bluetooth module into an electric scooter, by using the Arduino UNO which is connected to the Bluetooth module, this will tell you the value of the battery and we monitor in the phone itself

III. SYSTEM DESCRIPTION

The electric scooter comprises of several electrical, mechanical and electronic components which areassembled together to construct a complete model of thesystem. The
different components used in this study are mentioned below.

i. Battery

Battery is a major supplier of electricity to the electrical system scooters. It is an electrical device that convertschemical energy into electricity. Without battery, electric
scooter will not work. Batteries are divided into two types which are rechargeable batteries and disposable batteries (which is cannot be charged). Electric scooters usually use `rechargeable batteries because these batteries more durable and economical. Its advantage is it can deliver high

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 11 Nov. 2022, pp: 332-334 www.ijaem.net ISSN: 2395-5252

electrical current for starting an engine. However, it runs down quickly and need to be charge about 1 hour. For this electric scooter, two batteries will be used and connected in series to produce larger input supply which is equal to 24V.
The battery used in this study is shown in figure 1.

Figure 1. SLA Rechargeable Battery (GPP1272)

ii. Motor driver

There are many ways on how to control the speed of the motor. For instance, we can use Arduino microcontroller or other else. Forthis electric scooter, 30A DC

Motor Driver has been used.MD30C is designed to drive medium to high power brushless DC Motor with current capacity up to 80A peak and 30A continuously. Besides that, MD30C also incorporates some user friendly features such as reverse polarity protection and onboard PWM generator which

iii. AC/DC Rectifier Adapter

It converts the AC source into DC to charge the battery. Adapter for battery power equipment may described as chargers as shown in figure 2.

Figure 2. AC/DC Adopter

iv. Indicating Unit

It includes speed output unit and plugged in charger. It basically contain a monitor type display where the condition of the vehicle shown on the display.

v. Driver controller

When we put input through throttle then amount of current is fixed to supply motor with the help of drive controller. 5V- 12V DC brushless motor driver board is shown in figure 3.

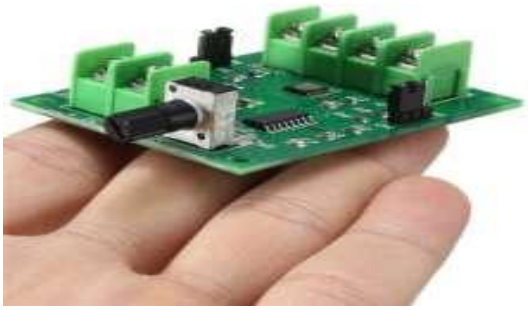

Figure 3. 5V-48V DC Brushless Motor Driver Board Controller For Hard Drive Motor

IV. PROPOSED WORK

The cost associated with developing the proposed system is mentioned in table I.

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 11 Nov. 2022, pp: 332-334 www.ijaem.net ISSN: 2395-5252

TABLE I. Cost associated with electric scooter

Component	Cost (in rupees)
Motor & wheels	5000/-
Battery	4000/-
Brake wire	500/- (Rear and front)
Electrode rod	300/-
Horn	250/-
Head light	450//
Spray Paint/Brush paint	500/-
Other miscellaneous expenses	2000/-
Total cost	13,000/-

The overall cost of the project is low and if we go for mass production the overall cost will even reduce by 25to 30% and the cost will be approximate Rs.6806 to Rs.6352 which is more beneficial for public.

The different operations which are conducted to manufacture the complete system are shown with the some figure 4.

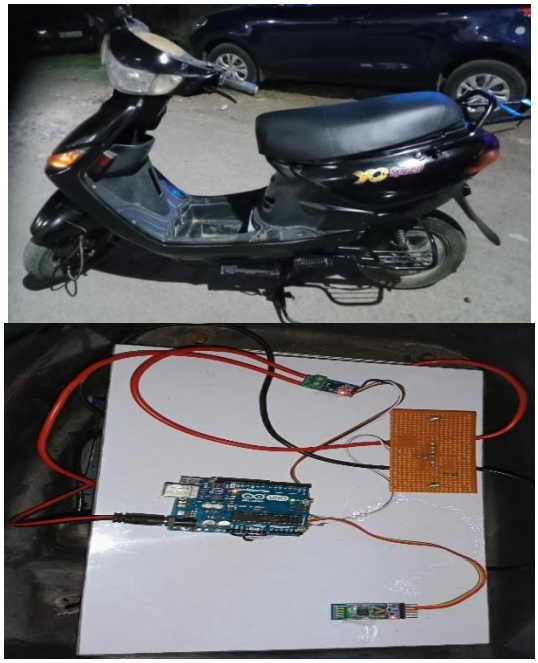

Figure 4. Development process of electric scooter

V. CONCLUSION

The project has been developed effectively and it can bear the load of two persons perfectly. The project is cost effective and eco friendly. With the extent of more research and by mass production the total cost of the electric scoter can even be decrease. The main key point in our project is cost effective if we go to market to buy a new scooty then it will cost around 84,000 to 90,000 which is to expensive but by this method by using scrap material we can made it in below 25000.

ACKNOWLEDGMENT

We would like to thank Department of Electrical and Electronics, Dhaanish Ahmed College of Engineering,us in conducting proper research and completing our work. We are also thankful to our supervisor Mrs.Shagar Banu who has helped us in successful completing of the project.

REFERENCES

[1]. P.L. Chavan, G.G. Akram, V. Jaysing, V. Patil, P. Pradip, and S. Kamble, "Design and Development of Solar Two wheeler," International Journal of Innovations in Research and Technology, 2(4): 1-15, 2015.

[2]. M.R. Sankar, T. Pushpaveni, and B.P. Reddy, "Design and development [3] S.G. Bali, A. Kushwaha, P. Dhote, C. Nandanwar, and S. Ughade, "Fabrication of Solar powered tricycle for handicapped person," International Journal of Innovative Research in Science & Technology, 1(10): 169-173, 2015

[3]. S.N. Nataraju, P. Singh, R. Prasad, G. Somashekar, and N. Manoj, "Fabrication and Development of Hybrid vehicle (scooter)," In Proceedings of National Conference on Advances in Mechanical Engineering Science (NCAMES-2016). pp. 219-222, 2016.

[4]. F. Khan, S. Kumar, B.R. Nikhil, P. Salimatt, and B. Vikas, "Design and development of light weight multi-utility electric scooter using hub motor transmission," International Journal of Engineering Research & Technology, 5(7):21-24, 2014.

[5]. A.K. Saw, P. Dhote, M. Gaidhani, P. Pande, and S.G. Ughade, "Literature review on solar powered tricycle for handicapped person," International Journal for Innovative Research in Science and Technology, 1(10): 174-179, 2015.

[6]. S. Prasad and K.R. Nataraj, "Design and development of hybrid electric two wheeler with solar charging methodology," International Journal of Scientific & Engineering Research, 5(11): 1515-1521, 2014. of Solar assisted bicycle," International Journal of Scientific and Research Publications, 3(3): 1-6, 2013.