DESIGN AND FABRICATION OF OBJECT LIFTING HOVER BOARD WITH FORK LIFT

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ABSTRACT:

The two Wheel Automatic Electric forklift is a small vehicle designed for industry warehouses & domestic purpose which can be driven by any person. The dynamics of the vehicle is simple to the control vehicle which means that it is stable. This kind of vehicle is interesting since it contains a to an environmentally friendly and energy efficient transportation industry. The rider controls are supposed to be natural movements; leaning forwards or backward and the direction of the vehicle is obtained by giving the DC motor. Additional DC motors provided for fork lifting to carry heavy weight objects.

I.INTRODUCTION

In general, defined as hundreds of kilograms of weight. A forklift is a vehicle similar to a small truck that has three metal forks on the front used to lift cargo. The forklift operator drives the forklift forward until the forks push under the cargo, and can then lift the cargo several feet in the air by operating the forks. The forks, also known as asblades or tines, are usually made out of steel and can lift up to a few tons. Forklifts are machines that use levers and/or pulleys to lift significant weights. connected witharrangement of a motor. This motor is used to run the vehicle. The battery is connected to the motor. The motor output shaft is connected to the worm gear to increase the torque and is directly coupled to the wheel by means of a bearing block which runs the vehicle.

II.LITERATURE REVIEW

Start of the project plan was tasks that could be divided among group members and to form a logical path and guideline which could be used and followed throughout the entire project. The project was divided into five phases: Feasibility Study, Design, Part Acquisition, Implementation, and Testing. These phases also served as milestones of the project. All phases and their purposes are listed below:

● The goal of phase one, the Feasibility Study, was to find out what is possible and what would be infeasible to implement. the study also explored different features for the device such as control, remote control and safety mechanisms.

● The objective of the second phase, called the Design phase, was to find out all the necessary components for all components and subsystems that were meant to be implemented.

● During third phase, called Part Acquisition phase, all the necessary parts were listed and it included finding retailers from whom the parts could be purchased from. ac turpis Segesta. Proinsemper, ante vitae sollicitudin posture

The two Wheel Automatic Electric forklift is a small electric vehicle designed for industry warehouses & domestic purpose which can be driven by any person. The dynamics of the vehicle is simple to the control vehicle which means that it is stable. of a vehicle is interesting since it contains a lot of technology relevant to an environmentally friendly and energy efficient transportation industry. The rider controls are supposed to be natural movements; leaning forward or backward and the direction of the vehicle is obtained by giving the DC motor. Additional DC motor is provided for fork lifting to carry heavy weight objects.

III.PROPOSED SYSTEM DESIGN

With a realistic goal, the group set out to optimize a hovering system as efficient hoverboard as possible with the given budget. Desired characteristics included high levitation height (5 to 10 cm) and high lift of around 8 to 10 kg of load. Because the hoverboard was intended to be battery operated so that it can be moved around, be designed. would include selecting components for H-bridge, circuitry for the H-bridge and programming microcontroller to produce signals for control circuitry.

Construction

Hoverboard construction: the body, the coils, and the inverter. The two sub-phases of construction phase were construction/manufacture and assembly. Coil construction included coil winding, creation of custom tool and connecting the coils as required by the design to enable 50 V operation. Inverter manufacturer included assembling H-bridge sink and creating a board by developing, etching, drilling, and soldering. Finally, the subsystems would be enclosed and installed inside the hoverboard body.

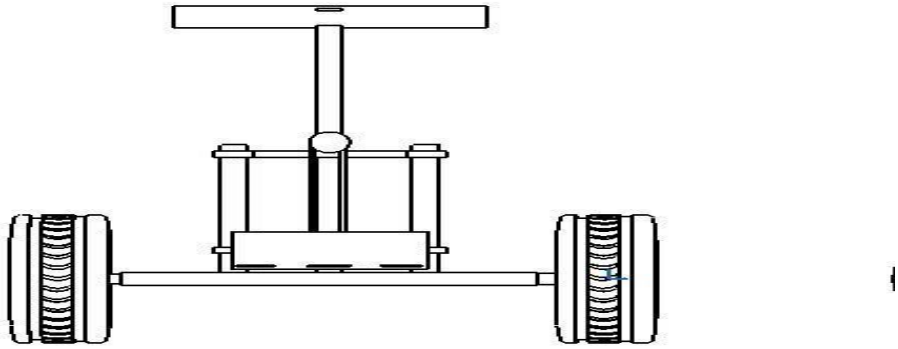

FIG.1 DESIGN OF HOVER BOAR

Testing and results

nearly every step confirm the functionality of components and subsystems. Turn-on tests were only meant to the functionality of the specific component itself but not its compatibility with other units. This section was also intended to be a point where iteration to improve and troubleshoot the hoverboard would begin. The project was expected to face problems and the goal was to leave as much time to testing as possible.

Risk analysis

Also, rules were set in place that project members were never allowed to work power tools and machinery or be in present and aware that students were working. Luckily, apart from minor cuts from sharp edges and hand tools, no personal risks were ever realized. This could partly be thanks to risk assessment. Material risks included a listing of potential hazards to university equipment and damages to project components. This risk assessment included a potential fire hazard. This was proven to be important the project, as LiPo batteries are prone to over discharge which can result in combustion during next recharge. Progress various risks regarding such as coil overheating, battery operation not being possible, timetable delays and lack of suitable power converter or supply. Almost all of these and as a result group worked issues as described in the plan. One major risk that was not adequately considered was the (now) obvious during testing. Although this was partially taken in to account during procurement phase when extra components were being ordered, the risk assessment did not target any specific part, such as IGBTs, but instead rule was to get extra of every component.

Quality management

There was no detailed quality management plan and The practical implementation and the level of quality of he work was high, especially quality of various parts throughout the project was expected to be highest possible with available tools, equipment, knowledge and experience considered. More attention paid to reviewing shopping lists for example could have averted a mistake during procurement.

IV.DESIGN CALCULATION

BOARD

An average human will occupy 1 feet x 1 feet while standing. Thus,Area covered by feet = 300 x 300 = 90000 mm2.

To provide a comfortable space for driving

Length of the board = 600 mm Width of the board = 360 mm

Area of the board= 621000 mm2

FORKLIFT

Length of the supporting shaft = 300mm (Maximum lifting height)

Width of the fork plate = 200mm (Depends of the width of the base board)(Too much height may cause unbalance in load carrying)

PULLEY

board = 00 mm Width of the board = 360 mmvArea of the board= 621000 mm2

mm2

o

V. Reference

p r o v i d e a c o m f o r t a b l e s p a c e f o r d r i v i n g L e n g t h o f t h e

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