Hardware Summary 1

18F27

PORTABLE CARRIER B

ME 486C - 003

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Summary Hardware

Now the project is in implementation phase and some of the implementation has done as well. As all the parts have purchased and it has decided to make the base of structure with the aluminum. So the structure has connected till now and all the controllers have tested as well to test their working. The structure has formed like a tank and the side bars have made with three steps. As the first step was to place controllers over the bars and there were solid holes made under the bars to pass the motors, and connect with the wheels. The bottom length is 26in and it's made from a piece of angle aluminum it's cut and then the side pieces are 10 in. The angle on either side is 125 degrees. From Top wheel to top wheel it will be about 42 inches from the outer portion of the wheel to the outer portion of the wheel. On the bottom Wheels it will be about 26 inches. There is a gap for holding the wheel controllers, this gap has made for around 3.5 inches so that controllers can easily fit into it.

Figure 1: Base structure

And the controller space of 3.5 inches have shown below

Figure 2: Motor controller

All the controllers have decided to fix using the tape, and the wheel motors will be going to fix using the screws and therefore for each motors, smalls holes have drilled under the base. These holes will use to fix the screws. For making the base of tank a carrier, a small sheet has placed in it to make the base a plane surface. There will be 18 motors that are installing under the bar.

Figure 3: Motor holes

The RC controller receiver has placed on the top of the tank and wrapped with the tape. One side of the tank has developed till now and placed all the wheel's controllers over it. During the implementation phase, firstly controllers have tested, so setup has developed to connect the RC controller with the receiver and then connected through the relays to the wheels and tested the movements of wheels by rotating the wheels. There is a light button on the RC controller to blink the LED light and there is a button to turn on and off the sound. This has tested the controllers working and communication.

As one side has prepared with the controllers and test the motors with the RC, and cable tie has used to tie the wires. The RC controller receiver has connected with the battery and then connected the main controller with the receiver. Main controller has tied through power and then connected to the motor controllers and speed controllers. One complete side has shown below

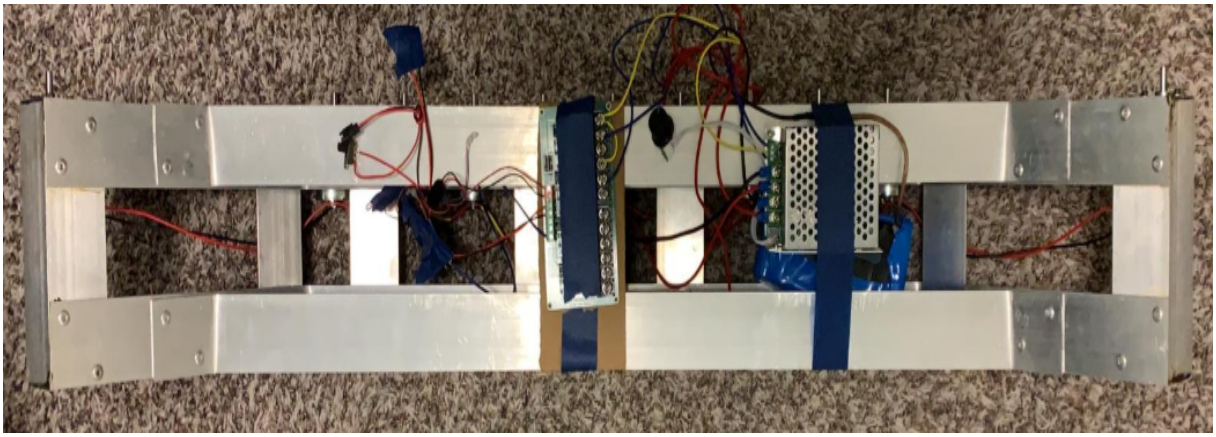

Figure 4: One side

We are going to use 3D printed wheels and we have done with the printing and obtained following shaped 3D wheels.

Figure 5: 3D Wheels

Now we will do the implementation of second part will attach the upper portion of tank with the sides, and also will put the thin aluminum sheet under the tank to cover the motors that will save them from any risk, and can remove easily for maintenance.

Work division

Following operations have performed by each team member in the manufacturing of device.

Saleh:

- Performed the wiring of the parts.
- Attach the electronic parts.
- Taping the electronic devices.
- Connect the RC controllers.
- Prepared motor controllers.

Ahamd:

- Drill the holes in the aluminum bar.
- Connect the structure parts.
- Made the bend shape structure.

Abdullah:

- The CAD modeling has performed for 3D wheels according to the design of tank tread.
- Printed the 3D wheel model.
- Fitted the motors in the specified location.

Abdalaziz:

- Cut down the aluminum sheets to make the structure.
- Measured the dimensions of sheet and cut it down.

Following are the future tasks that will perform by each member to finish the project.

Saleh:

- Will prepare the second side of the device.
- Will connect the remaining controllers.
- Will fix the receivers and wireless remote.
- Pack up all the electronics and wires properly.

Ahamd:

- Will do the drilling of holes for the second side of structure.
- Will join the joints if needed to make the structure balance.

Abdullah:

- Will install the wheels on the motors.
- Will install the tread over the wheels.
- Will make the wheels and tread working together correctly.

Abdalaziz:

- Will make the thick sheet to cover the electronics from bottom.
- Will make it removable with the screws.