

SOLAR OPERATED AIR CUSHION VEHICLE: A PROTOTYPE

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Abstract—The aim of our project is to construct a remote control solar powered hovercraft. The Bluetooth module communication was done mistreatment programmed Arduinos, that turned a mobile into remote. Because hovercrafts float over a cushion of air, they'll travel over water and ground. For this reason, they're wont to navigate troublesome piece of land and may serve a mess of functions. they're useto perform rescue missions in shallow, muddy waters wherever boats with propellers and keels will become simply grounded. A craft additionally typically known as Associate in Nursing air cushion vehicle as a result of it will give way or across land or water surfaces whereas being command removed from the surfaces by a cushion of air. craft will travel hover all kinds of surfaces craft like flat surface though they're capable of rising incline surfaces up to twenty, relying upon surface smoothness. . Introduction the task of Associate in Nursing engineer is to just accept the challenges of transferral new concepts and ideas to life.

I. INTRODUCTION

The job of associate degree engineer is to simply accept the challenges of conveyance new concepts and ideas to life. Therefore, a lot of correct machines and fashionable techniques got to be oftentimes developed and implement them for economical producing of product. Also we must always not compromise with the standard of the product.. Iso we must always not compromise with the standard of the product. Air cushion vehicle includes a sizable amount of applications within the field of transportation. they're wont to transport materials from one place to a different.

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should always not compromise with the standard of the merchandise. Air cushion vehicle encompasses a sizable amount of applications within the field of transportation. they're wont to transport materials from one place to a different. semiconducting material wafers area unit used for the producing of ordinary monocrystalline electrical device. The electrical device is slightly thicker than an individual's hair.. victimization these ultra-thin semiconducting material wafers provides star panels several properties that area unit flexible for some models. They are used for transportation of materials from one place to another. A hovercraft, also known as an air-cushion vehicle or ACV, is a craft capable of travelling over land, water, mud or ice and other surfaces both at speed and when stationary, the air is continuously forced under the vehicle by a fan, generating the cushion that greatly reduces friction between the moving vehicle and surface . hovercraft encompasses a various applications within the fields of recent transportation. they're used for transportation of materials from one place to a different. A ground-effect machine, additionally observed as Associate in Nursing air-cushion vehicle or ACV, might be a craft capable of traveling over land, water, mud or ice and completely different surfaces every at speed and once stationary, the air is endlessly forced at a lower place the vehicle by a disciple, generating the cushion that greatly reduces friction between the moving vehicle and surface reduces friction between the moving vehicle and surface . In 1955, The principle of ground-effect machine was initial planned by Sir Christopher rooster. Sir rooster coined the term "hovercraft." however the thought of hovercraft initial introduce in 1700s.

II. LITERATURE REVIEW

Air cushion vehicle use blowers to blow giant volume of air that is simply higher than the gas pressure .Thers

is higher than the hull and low air below it that produces the raise. This causes the hull to float higher than any surface. The air cushion vehicle is given a rounded-rectangular form for stability reasons. The air is blown through the slots or holes within the skirt and this skirt permits the vehicle to maneuver higher than tiny obstructions while not injury. Air cushion vehicle may be ruled by one or a lot of engines. One engine is employed for driving the fan that is liable for the raise higher than the surface. This fan fills the skirt beneath the platform, which ends to rise it higher than the surface. alternative engine produces thrust to drive the craft. Some air cushion vehicles use only 1 engine to perform each the functions by deflecting some air to the skirt and also the rest is employed to drive the fan to push the craft forward.

III. EXPERIMENTAL DETAILS AND MEASUREMENT

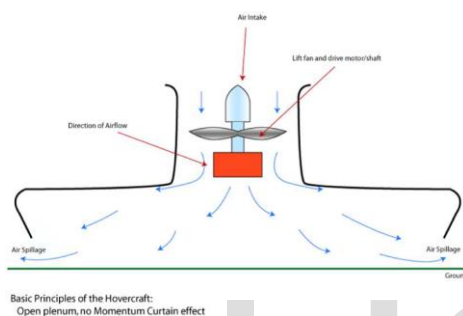


Fig.1 Development of Pressure in Skirt

TABLE I. MATERIAL USED

SR NO	PART NAME	MATERIAL	QTY
1	Skirt	POLYPROPELENE	1
2	Platform	BALSA WOOD	1
3	Propeller	PVC	2
4	Motor	STD	3
5	Controlling arduino	STD	1
6	Battery	STD	1
7	Bluetooth module	STD	1
8	Charger	STD	1
9	Light Weight Flexible Solar Panel	POLYCRYSTALLINE	1

Density of Balsa wood = 160 kg/m^3

Table .2 weight of the material

Sr.no	Material	Weight
1	Motors	150g
2	Battery	500g
3	Platform (balsawood)	800g
4	Solar panel	200g
5	Others	200g

Total Weight = 1.8kg

Length = 95cm

Breadth = 46cm

Area of Base, $A = 4370 \text{ cm}^2$

Cushion Pressure,

$$P_c = \text{Weight} / \text{Area of base} = 17.7 / 0.437 = 40.5 \text{ N/m}^2$$

Escape Velocity,

$$V_e = (2 \times P_c \rho / \rho)^{1/2} = (2 \times 40.5 / 1.16)^{1/2} = 8.36 \text{ m/s}$$

IV. RESULT

The elevation is created by the pressure distinction between the air mass air below the hull and air mass air on top of it. to make the hovecraft work additional effectively, the cushion air must be restricted for escaping through the craft skirt. conclusion once the air is blow within the skirt with pressure, then the air is circulated within the skirt once the air is circulated the air is get the tiny hole outlet that produce the pressurize the planet surface the that impact the planet surface and make the elevate and conjointly scale back the friction between the planet surface and therefore the unit.

V. CONCLUSION

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