PHYSICS $\Rightarrow$ AERODYNAMICS

The Concept of a Wind Car with
a front Propeller.

Dattatraya Mukherjee
Medical Student-

* This is a hypothetical design. I am putting this in OSF Preprint, not peer reviewed. I request physicist, please make comments on this. As I am a medical student, I idea can be wrong. So feel free to criticize my thinking.

INTRODUCTIONS

This a part of Aerodynamics. I was studying different resources in Google and came to know about "Black Bird".

After reading, A structure came into my mind where I have put the propeller in the front part of the car and this design also provide less ground friction so I think the speed might be more than the back propeller one.

I really acknowledge "Veritasium" whose video helps me to think deeper.

As a MBBS student, I am unable to do the calculations which I have already mentioned at last.

If any physicist or Engineering student wants to take this project forward, he or she can do this.

Regards
Nallala Hithesh

Designing of a Wind car

10th Aug 21

Dattatraya Mukherjee

①

$W \Rightarrow$ Wind speed.

$$F_{IN} = \text{Force} \times \text{Velocity}$$

$$F_{IN} = F_{\text{wheel}} \times V_{\text{car}}$$

$$F_{out} = F_{\text{prop}} \times (V_{\text{car}} - W)$$

Let assume

$$F_{IN} = F_{out}$$

$$F_{\text{prop}} \times (V_{\text{car}} - W) = F_{\text{wheel}} \times V_{\text{car}}$$

$$F_{\text{prop}} = \left(\frac{V_{\text{car}}}{V_{\text{car}} - W} \right) \times F_{\text{wheel}}$$

So Propeller speed is more than Wind speed.

And if $W = 0$ & $V_{\text{car}} = 0$ Then $F_{\text{prop}} = \infty$.

F_{prop} is greater than F_{wheel} .

So as F_{Thrust} is greater than F_{wheel} .

Now, Torque = Force $\times$ Radius
Force = Mass $\times$ Acceleration

$$\text{So } \boxed{\text{Force} \propto \frac{\text{Mass}}{\text{Position}}}$$

Lubrication to reduce friction

(2)

This wheel will be high in Mass and larger in Radius to conserve the force

The Force will be transferred from Larger wheel to smaller wheel.

Larger wheel will move slow and will move clockwise.

The force will be transferred to smaller wheels & the smaller wheels will move fast & anti clockwise.

Friction $\propto \frac{1}{\text{radius}}$.

So the smaller wheel will have less ground friction & the car can move fast.

This is a Model (hypothetical) of a car whose propeller are present in the front part and it can still run at a speed more than a wind.

DATTATREYA MUKHERJEE
MBR & STUDENT

LIMITATIONS

This is a primary concept of a car whose propellers are present in the front part of the car.

I have mentioned the structures. Although I feel the ratio between propeller size and wheel radius is very important.

As I am a MBBs student, I don't know that calculation. Although, I would be very happy if someone takes this concept forward.

Dalalika Hukhyei
Thank you