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Vehicle Design and Manufacturing: Advanced Tire Technology (ATT)

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Abstract

A lot of new challenges are being posed in front of the automobile industry by the growing customer demands. Tire puncture is a common problem in Automotive Vehicles. We are thinking of a tire which is airless. It is made up of a combination of different types of rubber. As it is airless it has no chance of being punctured. Its surface contact is less than other tires so it increases fuel efficiency. Its grip is also not lost when the vehicle is moving at higher speeds. It is less dangerous in watery roads. It is more durable and leakproof. We have also done some research on tire sealants.

Keywords: Airless, fuel efficiency, watery roads, leakproof, longlasting.

1. Introduction

Most of the existing vehicles use pneumatic tires. These vehicles have a common problem and that is flat tires. Tread width of the air pressured pneumatic tires have surface contact equal to the tire width. Conventional tires have tread designs that spread water behind and on the side of the tire. When too much water separates the tire from the road the tire lifts off the road. Traction is reduced and this in turn can create safety problems. These problems are always encountered in case of conventional tires.

2. My Theory

- We can use a tire made up of unbreakable hard rubber spokes which is implemented on a base after rimcover to thread.This will make the tire airless as well as provide it with a cushioning effect like airpressure tire.It is slightly concave between two sides of the tread width so it has less surface contact at

normal speed then conventional tire.We named it ATT (Advanced Tire Technology) and call this tire ATT during description.

- As ATT is airless,the need to maintain the tyre pressure from time to time is eliminated.It has no chance of being punctured or becoming pressureless in its lifetime.
- ATT is concave on its tread width hence only both sides of the tread width are connected with the surface so here surface contact is less and as the surface contact is less friction with surface is less and less friction means less fuel consumption.So ATT has more fuel efficency then conventional tires.
- As ATT has less surface contact it can be a question that if the vehicle is on high speed it can loose its grip.But when ATT is at a high speed the concave part becomes flat due to centrifugal force and there is no question about loosing the grip on high speed.at that time it has same surface contact as conventional tire.
- At the time of watery road conventional tire tends to slip (loosing grip) as water makes a layer on its infront.But at ATT as its tread width is concave on normal speed water layer made by centrifugal force of tire is passed by the gap between the tread width.so it has less chance to slip than the conventional tire.
- We can use some jelly like viscous liquid in the tyre except air.This will work as a tyre sealant and at the time of penetration the viscous substance will come out and make the tyre totally leakproof

3. Conclusion

Even though my work is still in the conceptual phase.I am confident that one day if it is implemented, Tires will have no chances to be punctured or pressureless,the net fuel consumption will reduce and efficency will be increased,we can drive more safely on watery roads. Thus the project can help in solving some of the major problem plaguing the automobile industry today.

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