

Overload And Overseat Prevention System In Vehicles

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ABSTRACT

In this modern world, vehicle is fundamental need for everyone. So both the rich and poor need a vehicle (at least a bike) for their transportation. Buying a bike is not a difficult thing today. But the increasing in price of fuels made him difficult to manage the expenses. Hence a bike with good mileage will be a better choice. Even though the bike gives good mileage, the handling decides its mileage Overloading in vehicles decreases the mileage, performance and also difficult to handle. When a bike is overloaded & over seat its mileage and performance will be decreased. Therefore an overload & over seat prevention will be helpful in indicating in case a vehicle is loaded over its limit. New technologies are being developed for more efficient overload screening and enforcement. Weigh-in-Motion is the new technologies which allow trucks to be weighed in the traffic flow, without any disruption to operations. In this project we are trying to resolve this problem of overloading in bike by allocating overload indicator system which will work based on suspension system of bike.

Keyword : - Weigh-in-Motion, over seat, safety, load, prevention, suspension system

1. INTRODUCTION

The phenomenon of vehicle overloading is not new and has been discussed in relation to the adverse effects on vehicle engine, road safety and environment problem. Commercial vehicle safety has been an important focus of commercial vehicle enforcement agencies for some time. Serious overloading can affect your safety by making the vehicle less stable, difficult to steer and take longer to stop when braking. As the fuel cannot be renewed and it is of high cost it becomes one of major problem in wasting them. Overloading & over seat in vehicles decreases the mileage, performance and also difficult to handle them.

When the vehicle is overloaded, the engine needs more power to pull the vehicle. So the fuel supply to the cylinder is increased than the normal loading case. Hence there will be a mileage drop in the vehicle thus decreasing the performance. Vehicles that are overloaded cause excessive wear and damage to roads, bridges, and pavements etc.

Overloading vehicles significantly increases fuel consumption. Tires are more prone to wear, steering becomes more difficult to control and vehicles take longer to react to braking. This can dramatically affect vehicle handling, increase daily wear and tear and increase the likelihood of a costly and potentially fatal

1.1. Problems due to overloading:

There were several adverse consequences that may occur when the vehicles exceed the maximum permitted limit i.e.

- 1) Vehicles that are overloaded cause excessive wear and damage to roads, bridges, and pavements etc.
- 2) Serious overloading can affect your safety by making the vehicle less stable, difficult to steer and take longer to stop when braking
- 3) Overloaded & over seat vehicles are in unfair competition with other haulers. In the long term, keeping within weight limits.
- 4) Overloaded & over seat vehicles are illegal - this may affect the insurance cover for the vehicle.
- 5) Overloading & over seat vehicles lead to decrease in mileage and performance.

1.2 Objectives:

There are some objectives behind to develop the overloaded & over seat prevention system in vehicles that may increase the safety of vehicles & did not exceed the maximum permitted limit on vehicle.

- 1) To make stability of the vehicle.
- 2) To reduce braking default because besides the system itself, it depends on the tire and suspension performance which is designed for the maximum allowable weight indicated on the vehicle documents.
- 3) To reduce overloading of tire and high risk of tire blowouts.
- 4) To make a system for reduce accident or loss control of the vehicles will result in higher risk due to overloaded & over.
- 5) The main aim of this project is to make the system on the vehicle by which it will stop the overloading on vehicles automatically so that overloaded vehicle damaging the roads is reduced or avoided, and accidents avoided.

2. Methodology to solve the problem:

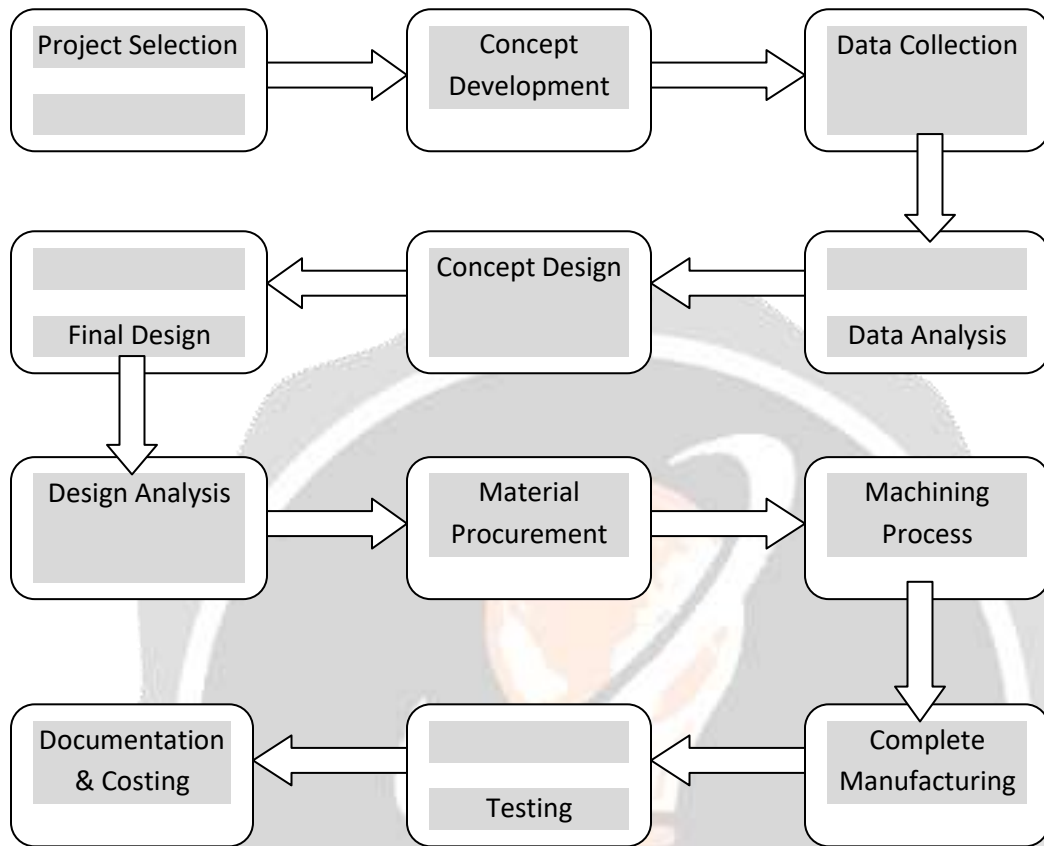
In this section, we provide a detail description about propose approaches to outline detection methodology & steps to solve the problem during project manufacturing process.

Task	1	2	3	4	5	6	7	8
Field observation	█							
problem identification	█							
Literature survey	█							
Objectives & Problem statement	█							
Conceptual Model Development		█						
Project Design			█					
Material Purchase				█				
Production Process sheets					█			
Manufacturing					█			
Model Testing							█	

Fig.2. Methodology & steps to solve the problem.

2.1 Process flow chart:

The below flow chart shows the sequential operation/steps that will be performed during the project process



3. CONSTRUCTION

Overloaded & over seat prevention system generally consists of following components can be given below,

Sr. No.	Material	Qty.
1	Pedestal Bearing	2
2	Gear Motor 50 Watt, 60 Rpm	1
3	Motor Pulley	1
4	Shaft Pulley	1
5	Belt	1
6	Coil Springs	2

7	12 Volt ,5 Amp Transformer	1
8	Nut & Bolt	10
9	Electronics control unit (Relay switch)	1
10	Supporting frame	1

4. ADVANTAGES

- 1) The safety of driver & passenger is ensured.
- 2) The operation of the new system is well controlled.
- 3) It minimizes misalignment & less floor space is required.
- 4) Only simple support structures are required Design & fabrication is easy.

5. APPLICATION

- 1) It is used for passenger safety which overcomes the problems of accidents due to over seat & overloads of commercial vehicles like two wheelers, Car, Buses & Trucks by using this automation system.



Fig. overlod & overseat privention

6. CONCLUSIONS

- By using overload detector we can detect overload in bikes easily. Also it improves the mileage and performance of the bikes .
- No extra space is needed as we can place this setup in the shock absorber itself .
- Also the cost of the setup is very cheap. So this is essential for safe loading of every vehicle .
- Simple circuit connections only.

7. REFERENCES

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