

Hydraulic gear (hydraulic gear operative mechanism)

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Abstract: -- There are many methods taking place in automotive industries to help the people with disability to make the ride more easy and safe engineers are developing many designs and using many innovative ideas for making a vehicle that is more efficient and safe and can be handled easily without more effort. Normally vehicles that are used by the person with disability are scooter, moped that is attached with extra two wheels that can help him to support the vehicle while stopping. there are some people are there, they are shy to use these type of vehicle because they don't want to display and some persons are there who me with some accident or got any diseases because of that they may lose their leg part but they can stand on their feet and walk but can't able to do their daily base work same that they was doing before their respective situation and an average person who don't want to use all his vital organ while like legs while driving these all person who want to experience the joy of enjoying a bike with gear or and experience the joy of ride in bike rather than scooter .

In these system the vehicles with the gear can be actuated with the help of the hydraulic gear actuation mechanism and can be controlled by the with the help of combination breaking and can be supported by automatic and manually for safe stopping side wheels in the gear operated vehicle

The vehicle these system will help those people with certain disability will help to enjoy the ride with safety. Using each and every controls used by hands. In these system the driver can actuate the gears by his finger and can apply the break to stop the vehicle with single brake actuation that will help that people who wants to enjoy the ride of bike without using legs and can drive a vehicle with shifting the gear and applying the brake with his hands.

Working:

Figure above shows the block diagram the hydraulic gear actuation system, hear the gear that can be actuated by the control mechanism where the driver can engage and disengage the gear with the gear controls that is allocated on the handlebar of the vehicle which is used for shifting is like a small lever that is fixed above or below the handlebar that you can work with your thumb. These is connected to the hydraulic system that will further actuate the gear.

Procedure: Working:

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A small lever that is located at the handlebar of the vehicle which is used to shift the gear by the help of the hydraulic system I which the fluid that is used as the prime object. the fluid is carried out with suitable pipe lines and regulated mechanically by the finger the fluid that is present in the reservoir is pumped out by the mechanical action and pumps the fluid outside the tank at require pressure. The fluid circulates in the cylinder and the cylinder movement is controlled by the help of the control valve one side the valve is connected to the pressurized. Science the hydraulics system is a closed loop system, the fluid transverse can be retrieve back and for breaking system that can be done by combination. That is applying the brake by one lever that will actuate both wheels by certain ratio the will make sure the the brake applied to rare wheel is 70% and 30% to the front. By certain braking mechanism that yet has to prepare and research is being done

Principle:

- 1.Pascal's law is the basis of hydraulic drive systems.
- 2.As the pressure in the system is the same, the force that the fluid gives to the surroundings is therefore equal to pressure X area.
- 3.In such a way that small piston feels a small force and a large piston feels a large force.

4. Hydraulic actuators: They are mechanical actuators that are used to give a linear force through a linear stroke.

5. Hydraulic cylinders are able to give pushing and pulling forces of many metric tons

some can say that the car will take more horse power then 15-28 when they require for more acceleration for example when you are in a traffic or you are driving I a unsteady road you may require an extra horse power say 30-60 and it is true

But in some cases you may need every bit of the horse power lets say that you are driving up a extreme cliff that's of 60-70" degree inclined and you have to need that horse power of 140" in these condition these may acquire In rare cases etc say about 10sec per month but every road is having ups and down and when it comes down it won't require Hp because it is in the idling state

RESULTS

Now if a vehicle can produce more power and has better mileage " in these case hybrid car comes in action hear the hybrid car does have a conventional engine that produce power to run a vehicle but it is provided with another power plant that can be electric motor that is connected to a motor and can be generate power by braking system (RBS) . these two can be drive by the help of a drive motor that sense the power require for the different engine speed when these to two power plants fuse together then the result is that they make a perfect complementary pair and produce a better output

WORKING

An hybrid bike having a small capacity engine and an electric motor that runs on a battery now when the engine is kick start then the engine will start and accelerator it will run on an electric motor and then and maintain a steady speed and for a instant it has to travel and then the changes the gear accordingly takes place on a inclined hear the vehicle will take both the power of engine and the motor to produce more power for the torque that has applied by the driver o hear the combination of both the power helps to reach run on an inclined road with an optimum speed now when the battery will drain out due to the utilization of the power that can be added up in the steady road and during idling and breaking hear the momentum or the front wheels helps to charge the battery

DESIGN CONSIDERATIONS

Motor - Motors generally used in HEV systems are DC motors, AC induction motors, or Permanent Magnet Synchronous Motors (PMSM). Each motor has advantages and disadvantages that determine its suitability for a particular application. In this list, the PMSM has the highest power density and the DC motor has the lowest. [3].

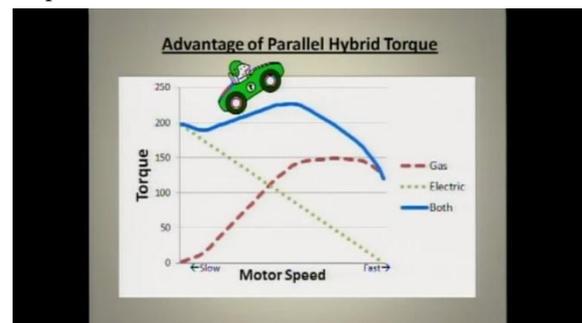
Power Splitter - A planetary gear is an effective power splitter that allows power flows from the two power sources to the driveshaft. The engine is typically connected to the sun gear while the motor is connected to the ring gear.

Vehicle dynamics - The focus is on friction and aerodynamic drag interactions with weight and gradability factors accounted for in the equations.

Overall System Design - The first step in the design process of the hybrid powertrain is to study the maximum torque demand of the vehicle as a function of the vehicle speed. A typical graph is shown in Figure 2. Ratings of the motor and the engine are determined iteratively to satisfy performance criteria and constraints. The acceleration capabilities are determined by the peak power output of the motor while the engine delivers the power for cruising at rated velocity, assuming that the battery energy is limited. Power sources are coupled to supply power by the power-splitter, and the gear ratio of the power-splitter is determined in tandem. The next steps include developing efficient management strategies for these power sources to optimize fuel economy and designing the controllers. The final steps focus on optimizing the performance of this system under a variety of operating conditions

ADVANTAGES:

Less cost low economy □ Easy maintenance □ Less pollution □ Less Wear on Engine Components □ Reduce Dependence on Fossil Fuels



DISADVANTAGES:

High initial cost. □ Overall weight of the bike increases.
□ Different Driving Experience. □ New parts and servicing can be inconvenient and expensive. □ There may be a short circuit problem in the electric components.

CONCLUSION:

The technology of hybrid petro electric bikes is an emerging field in now a days and the total turn one on these types of vehicles very profitable for the future and also solves the issue of natural resources scarcity and is an eco friendly bike. This type of vehicle is very cost effective for middle-class families. The mileage of the bike is increased from 60 to 90 km for 1 litre of gasoline.

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