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Review Paper on "Auto Clutch System in Automobile"

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Abstract- Our main focus in this project is to design a small auto-clutch for automobile system or for a car system.In this project we have to studied the automatic clutch mechanism in vehicles. The fabricationpart of it has been considered with almost case for its simplicity and economy, such that this can be accommodated as one of the essential tools on automobile garages. With automatic clutch system for car you can convert a manual car to semi-automatic at the touch of button. This automatically activates the clutch pedal movement in a completely controlled system. Then the car will be driven by using just the brake and accelerator.Features of using this type of system is changing gear without using your foot to operate the clutch and more fuel economical then an automatic.Auto-clutch comprises of two units first is elaborate electronic control and the second is electric motor.

Keywords- auto-clutch, automobile system, electric motor, electronic control etc.

I. INTRODUCTION

Auto wellbeing is the shirking of car crashes or the minimization of destructive impacts of mishaps, specifically as relating to human life and wellbeing. Unique wellbeing highlights have been incorporated with autos for a considerable length of time, some for the security of auto's inhabitants just, and some for the wellbeing of others.

II. NEED FOR AUTOMATION

Mechanization can be accomplished through PCs, water power, pneumatics, mechanical technology, and so on., of these sources, pneumatics shape an appealing medium for minimal effort computerization. Computerization assumes an imperative part in the car.

One of the main problem that one faces while using a manual transmission car in a city traffic condition is the constant use of clutch and brakes. This becomes irritating at times and gradually people started shifting towards automatic and AMT's so that they don't have to worry about the clutch anymore. But, everyone who has driven a manual and an automatic car knows that automatic is convenient but manual is more fun to drive.

So AutoMate, a Pune-based company came up with a solution that will allow any manual car to be driven without having to press the clutch pedal while shifting gears.They came up with a solution and developed Auto Clutch technology. It is a technology that converts any manual transmission car into an automatic transmission or a semi-automatic vehicle. This technology when installed to a manual transmission car will allow the driver to manually shift the gears but without pressing the clutch pedal. The very same thing is demonstrated visually in the video that is posted in the social media.

The system does not alter with the engine or gearbox of the car. It is just a parallel system that helps in making the driving in heavy traffic conditions less stressfull. In this system, the clutch pedal is connected to an actuator which is connected to a motor beneath the driver side seat. The motor is controlled by a seperate set of computer which senses engine RPMs and speed of the car and then decides on how much the clutch pedal should be released.

Unlike a completely automatic car, Auto Mate system is completely switchable, the gear knob has been replaced with a new unit and it gets a switch where in the driver can manually switch of the system and start using the car like a normal manual transmission car. There is also a touch sensor on the gear knob that senses when driver touches the gear knob to shift a gear and engages the clutch pedal accordingly.

The video even shows a proper demonstration of how the system works in a moving car and one can stop the car in any gear one wants and the clutch will automatically engage while coming to a halt. Kia's compact SUV which will be based on the Sonet concept will also get a similar type of transmission when launched; they call it IMT which stands for Intelligent Manual Transmission.

III. WORKING

Disclosed are a semi-auto clutch system of a manual transmission vehicle and an operating method thereof. Said semi-auto clutch system comprises: a first position

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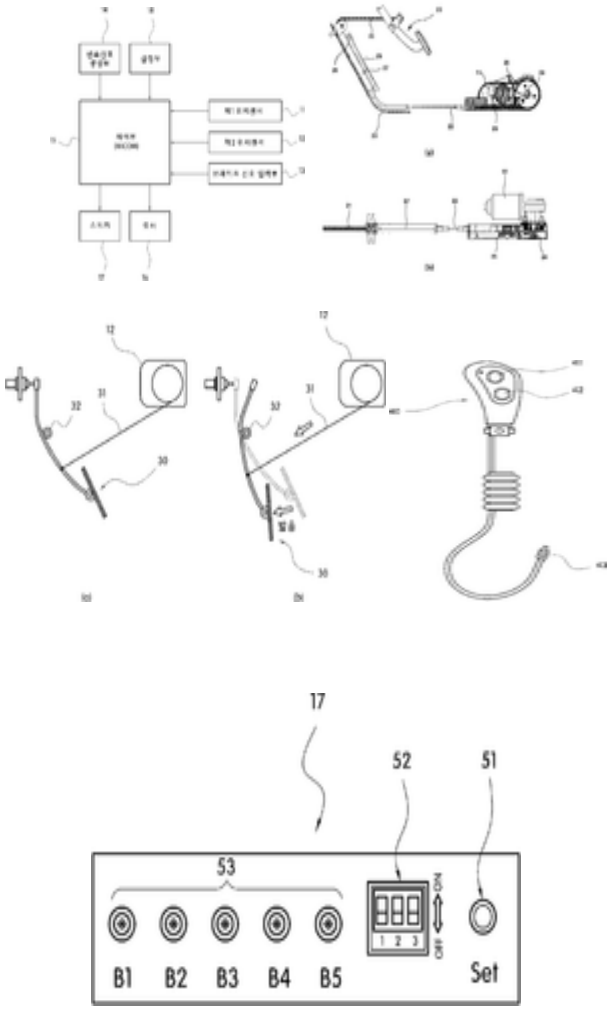
sensor which detects a position of a clutch pedal in a manual transmission vehicle; a second position sensor which detects a position of an acceleration pedal in said manual transmission vehicle; a brake signal input unit which inputs a brake signal indicating whether a brake of said manual transmission vehicle is operated; a transmission signal generation unit which generates a transmission signal by an input of a driver of said manual transmission vehicle; a control unit which generates a motor driving signal in accordance with an operation mode determined in advance, according to the position of the clutch pedal generated from said first position sensor, the position of the acceleration pedal generated from said second position sensor, information indicating whether the brake inputted by said brake signal input unit is operated, and the kind of said transmission signal, if said transmission signal is generated; and a motor which operates according to the motor driving signal generated from said control unit and is mechanically connected with said clutch pedal to determine the position of said clutch pedal.

1. Images (6)



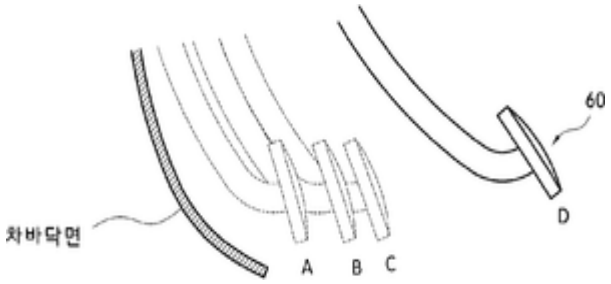


Fig 1. transmission signal is generated**.**

2. Classifications:

B60K23/02 Arrangement or mounting of control devices for vehicle transmissions, or parts thereof, not otherwise provided for for main transmission clutches

- A first position sensor detecting a position of a clutch pedal of a manual shift vehicle;
- A second position sensor detecting a position of an accelerator pedal of the manual shift vehicle;
- A brake signal input unit configured to receive a brake signal indicating whether the manual transmission vehicle brakes;
- A shift signal generator configured to generate a shift signal by an input of a driver of the manual shift vehicle;

When the shift signal is generated, the position of the clutch pedal generated by the first position sensor, the position of the accelerator pedal generated by the second position sensor, whether the brake is input by the brake signal input unit, and the type of the shift signal in advance A controller configured to generate a motor driving signal according to the determined operation mode; And

A motor which operates according to the motor driving signal generated by the control unit and is mechanically connected to the clutch pedal to determine the position of the clutch pedal.

- The aim is to design and develop a control system based on pneumatic breaking system of an intelligent electronically controlled automotive braking system. Based on this model, control strate, such as un 'antilock braking system' (ABS) and improved maneuverability via individual wheel braking are to be developed and evaluated.
- There have been considerable advances in modern vehicle braking systems in recent years. For example, electronically controlled ABS for emergency braking, electronically controlled hydraulically actuated individual brake-by-wire (BBW) systems for saloon cars and electronically controlled pneumatically actuated systems for heavy goods vehicles. The work of recent years shall for the basis of a system design. approach to be implemented. The novelty of the proposed research programmed shall lie in the design and evaluation of control systems for achieving individual wheel motion

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control facilitated by BBW. In the case of BBW the brake pedal is detached from the hydraulic system and replaced by a "brake pedal simulator. The simulator provides an electrical signal for the electronic control system.

Preliminary modeling and simulation work considers a quarter cars initially followed by a natural progression to the half car and full four wheel station cases. The model is to be constructed in modular form thus allowing the replacement / interchange of the various blocks and their associated technologies. Upon completion of the full vehicle braking model, sensitivity analyses will be carried out. Once the preliminary simulation model has been thoroughly benchmarked and existing control system strategies evaluated, an audit of the technology used is to take place and this will provide a basis for comparison of iterative technologies / techniques.

The final phase of the new modern vehicle shall include:

- Development of improved ABS control systems.
- Development and assessment of an electro-hydraulic-BBW (EH-BBW) system
- Individual wheel braking combined with traction control
- Assessing sensor failure and fault tolerant control system design
- Preliminary studies into an electrically actuated system
- Re-engineering using simplified models.

IV. PNEUMATICS

The word pneuma' comes from Greek and means breather wind. The word pneumatics is the study of air movement and its phenomena is derived from the word pneuma. Today pneumatics is mainly understood to means the application of air as a working medium in industry especially the driving and controlling of machines and equipment.

Pneumatics has for some considerable time between used for carrying out the simplest mechanical tasks in more recent times has played a more important role in the development of pneumatic technology for automation. Pneumatic systems operate on a supply of compressed air which must be made available in sufficient quantity and at a pressure to suit the capacity of the system. When the pneumatic system is being adopted for the first time, however it wills indeed the necessary to deal with the question of compressed air supply.

The key part of any facility for supply of compressed air is by means using reciprocating compressor. A compressor is a machine that takes in air, gas at a certain pressure and deliversed air at a high pressure.

V. CONCLUSION

This project work has provided us an excellentopportunity and experience, to use our limited knowledge. We gained a lot of practical knowledgeregarding, planning, purchasing, and assembling andmachining while doing this project work. We feel that the project work is a good solution to bridge the gatesbetween institution and industries.

The “FABRICATION OF AUTOCLUTCH” is working with satisfactory conditions. We are able to understand the difficulties in maintaining thetolerances and also quality. We have done to our abilityand skill making maximum use of available facilities.

In conclusion remarks of our project work, let us add a few more lines about our impression project work.Thus we have developed a “FABRICATION OFAUTO CLUTCH” which helps toknow how to achieve low cost automation. The operating procedure of this system is very simple, so any personcan operate. By using more techniques, they can bemodified and developed according to the applications

REFERENCES

[1] Arun Kumar N., Srinivasan V., Krishna Kumar P., Analysing the strength of unidirectional fibre orientations under transverse static load, International Journal of Applied Engineering Research, v-9, i-22, pp- 7749-7754, 2014.
[2] Srinivasan V., Analysis of static and dynamicload on hydrostatic bearing with variable viscosity and pressure, Indian Journal of Science and Technology, v-6, i-SUPPL.6, pp-4777-4782, 2013.
[3] Srinivasan V., Optimizing air traffic conflict and congestion using genetic algorithm, Middle - East Journal of Scientific Research, v-20, i-4, pp-456-461, 2014.
[4] Praveen R., Achudhan M., Optimization of jute composite as a noise retardant material, International Journal of Applied Engineering Research, v-9, i-22, pp- 7627-7632, 2014.
[5] Raja Kumar G., Achudhan M., SrinivasaRao G., Studies on corrosion behaviour of borated stainless steel(304B) welds, International Journal of Applied Engineering Research, v-9, i-22, pp-7767-7772, 2014.
[6] Ganeshram V., Achudhan M., Design and moldflow analysis of piston cooling nozzle in automobiles, Indian Journal of Science and Technology, v-6, i-SUPPL.6, pp-4808-4813, 2013.
[7] Ganeshram V., Achudhan M., Synthesis and characterization of phenol formaldehyde resin as a binder used for coated abrasives, Indian Journal of Science and Technology, v-6, i-SUPPL.6, pp-4814-4823, and 2013.

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[8] Achudhan M., PremJayakumar M., Mathematical modeling and control of an electricallyheated catalyst, International Journal of Applied Engineering Research, v-9, i-23, pp-23013-, 2014.
[9] Anbazhagan R., Satheesh B., Gopalakrishnan K., Mathematical modeling and simulation of modern cars in the role of stability analysis, Indian Journal of Science and Technology, v-6, i-SUPPL5, pp-4633-4641, 2013.
[10] Udayakumar R., Kaliyamurthie K.P., Khanaa, Thooyamani K.P., Data mining a boon: Predictive system for university topper women in academia, World Applied Sciences Journal, s v-29, i-14, pp-86-90, 2014.

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