SRI VENKATESWARA
COLLEGE OF ENGINEERING AND TECHNOLOGY
Thirupachur-631203, Tiruvallur TK & DT
Approved by AICTE New Delhi & Affiliated to Anna University, Chennai
(A Telugu Minority Institution)

List of Students Under taking Project / Mini Project/ Internship for the Academic Year 2022-2023

Program Name: MECHANICAL ENGINEERING

PROJECT BATCH LIST 2022-2023

BATCH NUMBER	REGISTER NUMBER	STUDENTS NAME	PROJECT TITLE	NAME OF THE GUIDE
1	112419114002	k. Agan raj	Multi –wheel Drive Hybrid vehicle	Mr. M. VinothkumarMech/AP
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	112419114012	R. Hariharan		
	112419114016	B. Manishankar		
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	112419114324	P. Rajmani		

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MULTI-WHEEL DRIVE HYBRID VEHICLE

A PROJECT REPORT

Submitted by

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in partially fulfillment for the award of the degree

Of

BACHELOR OF ENGINEERING

IN

MECHANICAL ENGINEERING

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

ANNA UNIVERSITY: CHENNAI-6000025

APR/MAY 2023

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BONAFIDE CERTIFICATE

Certified that this project titled "MULTI-WHEEL DRIVE HYBRID VEHICLE" is the Bonafide work of ANGARAJA K (112419114011), GAYATHRI V (112419114011), HARIHARAN R (112419114012), MANI SHANKAR B (112419114017)who have carried out the project.

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Submitted for the Anna University ~~Design and Fabrication~~ Project Viva-voce held on 18-5-23 **during the year 2022-2023**

18/5/23

INTERNAL EXAMINER

18/5/23

EXTERNAL EXAMINIER

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ACKNOWLEDGEMENT

Every Orientation work has an impact on many people, and we hereby take this excellent opportunity to gain all the help, guidance and support that we have received for the completion of these projects.

We are highly indebted to our beloved Chairman **Dr. S.K. PURUSHOTHAMAN Ph.D.** for providing good infrastructure regarding our project and giving enthusiasm in pursing the studies.

We would like to thank the principal **Dr. S.Palani M.E.., Ph.D..,** for allowing us to take on the project and for inspiration throughout our source.

We would like to thank our HOD **Mr. M. JaisinghDurai M.E..,** for allowing us to take on the project and for these timely suggestions.

We extend our sincere thanks to **Mr. M. Vinoth M.E..,** Internal Project Guide, who made a significant contribution to the preparation and the vision of the project.

Above all, we would like to thank our beloved parents for their direct and indirect help, moral support and blessings, without which this would not have been possible. We also express our thanks to our college and friends for their support with our project.

We finally thank our beloved faculty members in the department of mechanical engineering and to our entire non-technical staff for their extended support towards the project.

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ABSTRACT

A Hybrid vehicle is a combination of Gasoline-Electric Hybrid Engine Vehicle is a vehicle which works on electrical power as well as fuel like petrol. The studies for hybrid electrical vehicle (HEV) have attracted considerable attention because of the necessity of developing alternative methods to generate energy for vehicles due to limited fuel-based energy, global warming and exhaust emission limits in the last century. The vehicle is designed for both battery and power system. Also, there is a provision for recharging the battery using a generator which is run using a turbine, which runs on the exhaust of the IC engine. In HEV, the battery single handedly provides power for driving at low speeds where the efficiency of IC engine is least. In cruising and high load conditions like moving up the hill, the electric power assists the engine by providing additional power. Thus, the HEV is the best alternative in areas with high traffic like urban metropolitan cities.

Hybrid Electric Vehicles (HEV's) are a current research focus due to their reduced amount of fuel usage. The ability to simultaneously deliver power to the wheels from the motor/engine made HEVs have greater over the traditional vehicles. It also outlined and discusses the various HEV's architectural configurations, energy source/storage and the motor control strategies.

The internal combustion engine in hybrid-electric is much smaller and lighter and more efficient than the engine in a conventional vehicle. In fact, most automobile manufacturers have announced plans to manufacture their own hybrid versions. Hybrid electric vehicles are all around us. Submarines are also hybrid vehicles — some are nuclear-electric, and some are diesel-electric. Any vehicle that combines two or more sources of power that can directly or indirectly provide propulsion power is a hybrid.

In this paper, an overview of HEVs is presented. In fact, we aim to introduce the HEVs and present their history, advantages, disadvantages, classification, vehicle types, energy management strategies and some other related information

vehicles, this study examines the promise of hybrid electric passenger vehicles in the five major vehicle classes: compact cars, mid-size "family" cars, minivans, full-size pickups, and mid-size SUVs. This chapter provides a summary of the findings to show the potential of technologies that could be implemented over the next 10 to 15 years to transform the fuel economy and environmental performance of conventional vehicles, mild hybrids, and full hybrids. It also determines the cost of achieving that performance. The broader set of detailed results for each of the five car and truck types considered is provided in Appendix B.2 his fact, showing that well designed cars can be safer for their drivers than many of the trucks on the road

today are for theirs. For example, the model year 1995– 1999 Toyota Camry, Honda Civic, and Volkswagen Jetta are all safer for the driver and passengers than the larger Chevrolet Blazer SUV, Dodge Ram pickup, and Toyota 4Runner SUV from the same years (Ross and Wenzel 2002). Automakers that incorporate good safety design will be able to produce safe hybrids that also get higher fuel economy.

CONCLUSION

A Cooler, Cleaner and More Secure Future The technology exists to build a future with a significantly lower dependence on oil and a cleaner, cooler atmosphere. With sufficient political will and automaker participation, this future can arrive in time to address these significant and growing problems. Hybrids can play an important role in realizing this future, filling the gap between immediate improvements through conventional technology and the long-term promise of hydrogen fuel cells and alternative fuels. Building on a 40-mpg fleet that relies on existing conventional technology, hybrids can help drive passenger vehicle fuel consumption and global warming emissions from cars and trucks down to 1990 levels.

Zero Friction Electromagnetic Braking System

A PROJECT REPORT

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Certified that this project titled "**Zero Friction Electromagnetic Braking System**"is the bonafide work of "

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We fi nk our be oved faculty member in the department of mech nical engineering and to our entire non-technical staff for their extended supp t toward the project.

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ABSTRACT

Majority of braking systems work on the principle of dissipation of kinetic energy to heat energy.

This method has its own drawbacks and must be replaced with a more reliable braking system that is quick in response, doesn't heat up and is maintenance free. In this project the design of an electro-magnetic braking system and optimization for various operational parameters has been done and the advantage of using the electromagnetic braking system in automobile is studied. These parameters have been previously iterated in cited projects and papers and also in the simulation models and are to be cross-checked with the experimental setup.

An Electromagnetic Braking system uses Magnetic force to engage the brake, but the power required for braking is transmitted manually. The wheel is connected to a shaft and the electromagnet braking unit is attached to one side of the wheel. Here the braking unit consists of a hollow circular steel plate and a stator which has 3 spokes made of iron wounded with copper wire (or) magnetic wire. Here the round steel plate which is attached to the wheel rotates when wheel rotates with the help of motor. when current is supplied to the stator the spokes gets magnetized and creates an magnetic field which tries to attract or oppose the motion of rotating circular plate with the help of magnetic field created. In this brakes there is no contact between the electro-magnetic coils and rotating circular plate (i.e 2mm gap between coil and circular plate)

so this is also called as contactless braking system which is a main advantage in using this brakes. In this these brakes can be incorporated in heavy vehicles as an auxiliary brake. The electromagnetic brakes can be used in commercial vehicles by controlling the current supplied to produce the magnetic flux. Making some improvements in the brakes it can be used in automobiles in future.

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CHAPTER-VII
CONCLUSION AND FUTURE SCOPE

7.1 CONCLUSION

Electromagnetic brakes are important supplementary retardation equipment in addition to the regular friction brakes. They have been used in heavy vehicles such as coaches, buses, trucks under conditions such as reducing speed in motorways and trunk roads and braking for prolonged periods during down slope operations. New types of electromagnetic brakes have been under development for lighter vehicles as well. Regular friction brakes have an outstanding and vital load absorbing capability if kept cool. Electromagnetic brakes help friction brakes to retain this capability under all conditions by absorbing energy at a separate location based on a totally different working principle.

This report presents the performance of an electromagnetic braking system which includes various components with its cost effectiveness and efficient methodologies to utilize the supplied energy. With the application of the effective and strong electromagnet we can have greater efficient braking system.

The concept designed by us is just a prototype and needs to be developed more because of the above mentioned disadvantages. These electromagnetic brakes can be used as an auxiliary braking system along with the friction braking system to avoid overheating and brake failure. ABS usage can be neglected by simply using a micro controlled electromagnetic disk brake system .These find vast applications in heavy vehicles where high heat dissipation is required. In rail coaches it can used in combination of disc brake to bring the trains moving in high speed. When these brakes are combined it increases the life of brake and act like fully

7.2 FUTURE SCOPE

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