M.KUMARASAMY
COLLEGE OF ENGINEERING
NAAC Accredited Autonomous Institution
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ISO 9001:2015 Certified Institution
Thalavapalayam, Karur – 639 113.

A Minor Project Report on

BREAK FAILURE INDICATOR

Submitted by

SUGANTHI B **(927622BEE118)**

NALIN S **(927622BEE074)**

RUTHRA BOOPATHI M **(927622BEE088)**

YOGESHWARAN L **(927622BEE310)**

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

M.KUMARASAMY COLLEGE OF ENGINEERING

(An Autonomous Institution Affiliated to Anna University, Chennai)

THALAVAPALAYAM, KARUR-639113

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M.KUMARASAMY COLLEGE Of ENGINEERING

(Autonomous Institution, Affiliated to Anna University, Chennai)

BONAFIDE CERTIFICATE

Certified that this Report titled **"BREAK FAILURE INDICATOR"** is the bonafide work of **SUGANTHI B (927622BEE118), NALIN S(927622BEE074), RUTHRA BOOPATHI M (927622BEE088) ,YOGESHWARAN L (927622BEE310)**who carried out the work during the academic year (2023-2024) under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other project report

SIGNATURE

SUPERVISOR

Dr.B.RAJESH KUMAR M.E., Ph.D.,

Assistant Professor

SIGNATURE

HEAD OF THE DEPARTMENT

Dr.J.Uma M.E., Ph.D.,

Professor & Head

Department of Electrical and
Electronics Engineering

Department of Electrical and
ElectronicsEngineering

M.Kumarasamy College of Engineering, Karur

M.Kumarasamy College of Engineering, Karur

Submitted for Minor Project I (18EEP201L) viva-voce Examination held at M.Kumarasamy College of Engineering,Karur-639113 on ……..

DECLARATION

We affirm that the Minor Project report titled "**BREAK FAILURE INDICATOR "** being submitted in partial fulfillment for the award of **Bachelor of Engineering in Electrical and Electronics Engineering** is the original work carried out by us.

REG.NO	STUDENT NAME	SIGNATURE
927622BEE118	**SUGANTHI B**	----------
927622BEE074	**NALIN S**	----------
927622BEE088	**RUTHRABOOPATHI M**	----------
927622BEE310	**YOGESHWARAN L**	----------

VISION AND MISSION OF THE INSTITUTION

VISION

- ✓ To emerge as a leader among the top institutions in the field of technical education

MISSION

- ✓ Produce smart technocrats with empirical knowledge who can surmount the global Challenges.
- ✓ Create a diverse, fully-engaged, learner - centric campus environment toprovide Quality education to the students.
- ✓ Maintain mutually beneficial partnerships with our alumni, industry and Professional associations.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

VISION

To produce smart and dynamic professionals with profound theoretical and practical knowledge comparable with the best in the field.

MISSION

- ✓ Produce hi-tech professionals in the field of Electrical and Electronics Engineering by inculcating core knowledge.
- ✓ Produce highly competent professionals with thrust on research.
- ✓ Provide personalized training to the students for enriching their skills.

PROGRAMME EDUCATIONAL OBJECTIVES(PEOs)

- ✓ **PEO1:** Graduates will have flourishing career in the core areas of Electrical Engineering and also allied disciplines.
- ✓ **PEO2:** Graduates will pursue higher studies and succeed in academic/research careers
- ✓ **PEO3:** Graduates will be a successful entrepreneur in creating jobs related to Electrical and Electronics Engineering /allied disciplines.
- ✓ **PEO4:** Graduates will practice ethics and have habit of continuous learning for their success in the chosen career.

PROGRAMME OUTCOMES(POs)

After the successful completion of the B.E. Electrical and Electronics Engineering degree program, the students will be able to:

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of solutions:

Design solutions for Complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety,and the cultural, societal and environmental considerations.

PO4: Conduct Investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6:The Engineer and Society: Apply reasoning in formed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7:Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and Team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multi-disciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES(PSOs)

The following are the Program Specific Outcomes of Engineering Students:

- **PSO1:** Apply the basic concepts of mathematics and science to analyse and design circuits, controls, Electrical machines and drives to solve complex problems.
- **PSO2:** Apply relevant models, resources and emerging tools and techniques to provide solutions to power and energy related issues & challenges.
- **PSO3:** Design, Develop and implement methods and concepts to facilitate solutions forelectrical and electronics engineering related real world problem

Abstract (Key Words)	Mapping of Pos and PSOs
Always operate vehicles with proper grounding Important and necessary to attach the sensor with brake failure Always monitor the level fluid leakage and its condition	The braking machine was once designed and utilized auto to structure the riding technique protection the use of embedded machine design, set the alarm to indicate the brake fails.

ACKNOWLEDGEMENT

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We would like to express my deep gratitude to our Minor Project Guide **Mr.A.Udhaya kumar,Assistant Professor, Department of Electrical and Electronics Engineering,** for his constant encouragement, kind co-operation, valuable suggestions and support rendered in making our project a success.

We offer our wholehearted thanks to our Minor project coordinator **Dr.B.Rajesh kumar.ME..,ph.D..,Assistant Professor Department of Electrical and Electronics Engineering,** for his constant encouragement, kind co-operation and valuable suggestions for making our project a success.

We are glad to thank all the **Faculty Members** of **Department of Electrical and Electronics Engineering** for extending a warm helping hand and valuable suggestions throughout the project.

Words are boundless to thank **Our Parents and Friends** for their constant encouragement to complete this Minor project successfully.

ABSTRACT

When the driver presses the brake at the time of engine starting then this system shows the limit switch is pressed and his screen is shown LED light of limit switch. Second one is the limit switch is pressed and light is shown on screen the IR sensor is activated. In case the limit switch is not pressed and its signal goes to the IR sensor then the IR sensor sends the signals to IC mega 328 and it shows the brake failure at that station the buzzer will start beeping and Red LED light is ON at screen. At this point the brake oil level sensor is immersed oil, in case the brake oil is empty then this level sensor sends the signal on mega 328 IC and it is shown on screen to brake oil is empty, that point break is failed and LED light is blinking and buzzer start beeping. Automatic brake failure indicator is the one of the most specific ideas for minimizing the accidents. In this project we are finding out the brake failure problems. The main important part of this project is the mega 328P, which is a single chip microcontroller. It has a high power performance yet low power consumption. That is able to achieve the most single clock cycle execution of 131 powerful instructions. It supports 8- bit data processing. In this system the brake is pressed then that moment limit switch is also pressed, and it sends the signals to the IR sensor. Then next process the IR sensor sense the lever is fully pressed or not in this case the IR sensor works on that lever of the brake in system Now a days accidents might occur because of varied reasons, the foremost reason is equipment failure and is happened due to improper maintenance of the products. To prevent these abnormal situations and to protect one’s life from these accidents, there's a neccessity for watching of braking system in cars.vehicle safety is a special term means safeguarding the automobiles or reducing the hazardous effects caused by them, specially associated with human life and health. Special safety options are engineered into vehicles occupants solely, and a few for the security of others.the method used in this work is timer operation to check the condition of brake wire periodically.This paper deals with making a circuit model, which checks the condition of brake wire in any automobile.alerts the driver by sending a audio or visual signal.Then activates the braking system which acts as a emergency breaking as to avoid acciden

SURVEY FORM (SAMPLE)

1.Name and Address of the community?

Chellandiamman auto works, nammakal.

Phone number:9994154423

Arumaikkarananpudar

639006

2.Age Group

More than 50 years

3.Discussion

a) What?(Define the problem)

Accidents are the major problem in the transport

b) Why?(Reason for the problem occurrence)?

Most of the accidents occur due to failure of brake

c) When?(When the problem began or final noticed)

This problem has started to occur when the vehicles are put to use

d) Where?(Place of the problem's first occurrence or sighting)

All of the accidents occur on the road

e) Who?(The person or thing that the problem affects)

It affects everyone who travel

f) How?(The sequence of events that resulted in the problem)

This problem occurs mostly due to the failure to brake

Signature of the surveyor

g) Which?(People have attempted to solve the issue?

Yes some people already attempted to solve this issue

h) Does the problem appear to have only one possible solution?

No, there are other solutions.

4) Work plan of the project

We set the alarm to indicate the brake to stop the accident

5) Final solution

We are going to design a brake failure indicator circuit which constantly monitor. The condition of the brake and gives an audio visual indicator

CHAPTER 1

SURVEY FORM ANALYSIS

1.1 NAME AND ADDRESS OF THE COMMUNITY:

Balasumbiramanium,
Chellandiamman auto works, namakkal.
Phone number: 9994154423
Arumaikkaranpudar
639006.

1.2 PROBLEM IDENTIFICATION:

The absence of timely and accurate brake failure decision system in vehicles puts the lives of drivers,passengers and other road users at risk.Drivers may not alerted to brake issues until it'stoo late,leading to accidents and injuries. So we set the indicator alarm to stop the accidents while,the break fails,the alarm will be indicate to stop the vehicle.

CHAPTER 2

LITERATURE REVIEW

Paper 1:

Title: Detection and Emergency Braking System

Inference: Automatic emergency braking is an advanced safety technology that can slow or fully stop a vehicle without driver input .Dhanamjayulu C, Chalamalasetti Guna Sai, Bharath Srinivas G, Hussain Basha D, Arunkumar G, Venugopal P.

Paper 2:

Title:Brake Failure Indicator

Inference: Here is a break failure indicator that constantly that

monitors the condition of the brake**.**

Paper 3:

Title:Detection of Brake Failure by Automatic Indicator Using Sensors and Microcontroller

Inference: When the brake is applied the green LED blows and buzzer beeps for around one second if the brake system is intact**.** B. Nimal Mal Santhanakrishnan department of mechanical engineering ,SRM university,kattankulathur**.**

Paper 4:

Title:**Aneumatic pneumatic clutch and braking system**

Inference: It is used to block of power engine**.**

Paper 5:

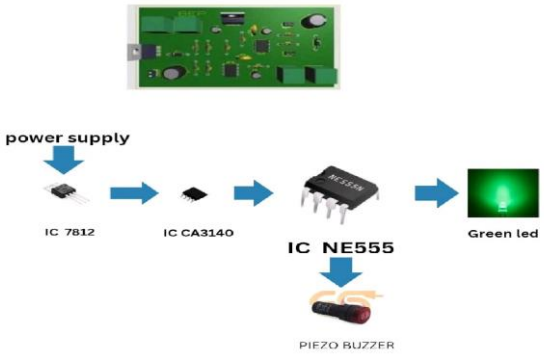
Title:Design of Automatic EmergencyBraking

Inference: Designing of the automaric brake and indicate the brake fails.

CHAPTER 3

PROPOSED METHODOLOGY

3.1 BLOCK DIAGRAM



3.2 DESCRIPTION

The Brake Failure Indicator project is a crucial automotive safety system designed to enhance the safety and security of vehicles on the road by providing timely and accurate alerts to drivers in the event of brake system malfunctions or failures.

This project leverages modern technology and sensors to monitor the condition of a vehicle's braking system and promptly notify the driver of any potential issues, thereby reducing the risk of accidents.

3.3 COST ESTIMATION

S.NO	COMPONENT DESCRIPTION	QUANTITY	COST
1	PNP TRANSISTOR	1	150
2	BATTERY	1	200
3	555 TIMER	1	100
4	OP AMP	1	150
5	OTHER COMPONENTS		300
		TOTAL	1000

CHAPTER 4

FUTURE SCOPE & ITS IMPLEMENTATION PLAN

First of all, regardless of the architecture of vehicles and future brake systems, bremain the single most important element of active driving safety. Reliability is the name of the game here, and compromises are one thing brake manufacturers do not make. This mindset among the experts and the know-how that has grown over decades will become even more important in the future when it comes to equipping brakes for future requirements and maintaining absolute trust in them: The importance and appreciation of braking as a function remain untouched. Yet, just about everything else is beginning to change. Brake systems are becoming increasingly intelligent so they can meet the future needs and requirements of automated driving and electrification; and this in newly conceived vehicles designed with modified architecture.Vehicles are currently being reconceived. Global megatrends are driving these efforts: Vehicle architecture is changing with the electrification of the powertrain and the growing capabilities of automated driving (AD). Digitalization and connectivity are fundamentally realigning the electrical and electronic architecture (E/E architecture) of vehicles, which is increasingly based on software – because it's the software which, in future, will define the character of cars and the driving experience! Bits take the place of horsepower. Apps and services are expanding the car into an immersive experience that's steadily becoming safer and more comfortable.What does this all mean for brakes? Changes – and, in part, radical changes in the long term! Looking back helps us understand that brake systems to date have primarily been mechanical systems with vacuum brake boosters and hydraulic power transmission from the brake pedal to the wheel brake (entailing pressure generation, valves, lines, brake calipers and drum brakes). Electronic safety systems such as ABS and ESC ensure that brakes proactively contribute to driving safety in borderline situations even without driver intervention. At the same time, brakes must now also contribute to vehicle efficiency – in other words, help prevent CO2 emissions – and, in future, reduce particulate emissions during friction braking.With digitalization and connectivity, electric drives and AD capabilities, brake systems must therefore fulfill a broad number of additional tasks. To this end, Continental, as a long-standing, globally-proven brake system specialist, is developing future brake system technologies: Future Brake Systems (FBS). A journey into the future of brakes.

REFERENCES:

Break Failure Indicator Circuit Using IC555 :

It is the basic circuit for indication of break Failure in automobiles using 555 timer.

It is used for mini project in college so it s not so hard to build**.**

https://www.youtube

Brake Wire Failure Indication Circuit

Demonstration video for 555 timer IC based brake failure indicator circuit.
https://circuitdigest.com/electronic-circuits/brake-failure- indicator-project
For more 555 timer based circuits, visit: https://circuitdigest.com/555-timer-circuit

Brake Failure Indicator Mini Project

PCB Prototype for $5 Only (Any Color): https://www.pcbway.com

Brake parking works

https://www.techtrixinfo.com/

This video, **with** the help of an animation explains about how parking **brake** works and the components in its circuit

Fabrication of automobile indicator system

To identify and verify the break is working in the automobile industries

www.nitsc.in