A

PROJECT REPORT

ON

" Design and Implementation of Safety features for Automotive "

SUBMITTED BY

Tejas Vilas Chaudhari	**(B190133012)**
Avirat Dipak Labhade	**(B190133041)**
Yash Sachin Sangale	**(B190133059)**

Under the Guidance of
Prof. Dr. S.A.Patil (Ugale)

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING,

K. K. WAGH INSTITUTE OF ENGINEERING EDUCATION & RESEARCH, NASHIK.

SAVITRIBAI PHULE PUNE UNIVERSITY
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Dissertation Approval Sheet

This is to certify that the project work titled " Design and Implementation of Safety features for Automotive ", has been submitted in partial fulfillment of the Bachelor's degree in Electronics and Telecommunication during the academic year of 2021-2022 by following students:

- Tejas Vilas Chaudhari (B190133012)
- Avirat Dipak Labhade (B190133041)
- Yash Sachin Sangale (B190133059)

This project confirms to the standards laid down by the Savirtibai Phule Pune University and has been completed in satisfactory manner as a partial fulfillment for the Bachelor's degree in Electronics and Telecommunication Engineering.

External Examiner **Internal Guide** **Head of Department**

(Prof. Dr. S.A.Patil (Ugale)) **(Prof. Dr. D. M. Chandwadkar)**

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Thank you All.

1. Tejas Vilas Chaudhari
2. Avirat Dipak Labhade
3. Yash Sachin Sangale

Name & Signature of the student

Plagiarism Certificate

This is to certify that the project work titled " Design and Implementation of Safety features for Automotive ", is a part of project work carried out by " Tejas Vilas Chaudhari (B190133012), Avirat Dipak Labhade (B190133041), Yash Sachin Sangale (B190133059) " under the guidance of Prof Prof. Dr. S.A.Patil (Ugale) at K. K. Wagh Institute of Engineering Education and Research, Nashik, in the partial fulfillment of the requirements for Bachelor's degree in Electronics and Telecommunication Engineering.

To the best of our knowledge, the work included in this report is an original work carried out by us independently. The percentage of plagiarism is **1%**. The results of the project work in part or whole have not been submitted to any other Institute/University for the award of any degree.

1. Tejas Vilas Chaudhari
2. Avirat Dipak Labhade
3. Yash Sachin Sangale

Name & Signature of the student

ABSTRACT

Electric vehicles represent a completely different technology compared with internal combustion machines. This means that new safety hazards, substantially related to the characteristics of high-power electric outfits, may be present. The electric vehicle system shall be designed to operate safely in all conditions; a number of specific problems will be treated, concentrating on aspects of vehicle geste that are typical for electric vehicles. At this moment the norms and sanctioned regulations concerning electric road vehicles aren't veritably easily defined. The documents and norms are far from harmonized, and they cover a vehicle in full technological elaboration. Another aspect is the cerebral mindfulness of these " new " pitfalls the presence of high voltages or of battery chemicals may use as an argument against electric vehicles; the fact that internal-combustion machine vehicles present significant pitfalls is frequently overlooked, with people having progeny used to the peril.

Safety advancements can be experimented with and enforced on EVs in a dependable way with advanced end control of the dynamics, stability, and optimized application of individual vehicle characteristics and motorist actions. recently, enterprises regarding fires in electric vehicles in enclosed spaces similar to road coverts and parking garages have been raised. There are suggestions that parking electric vehicles may be banned in some spaces. For the success of electro-mobility and the transition from reactionary to renewable energies, it's important to understand the pitfalls and consequences of fires in electric vehicles and to give specialized results if necessary, so as not to hamper the wide relinquishment of electric vehicles.

The most effective threat reduction measures on vehicle position, to drop the number of fires in EVs, couldn't be defined grounded on that applicable data on the root causes of fires in EVs are presently not intimately accessible. The most effective threat reduction measures, to limit fire spread, on structure position were the use of fire sprinkler systems, fire discovery systems(early discovery), and increased distance between situated vehicles. enterprises regarding new pitfalls of fires in electric vehicles(EVs) compared to internal combustion machine vehicles(ICEVs) have been raised recently. The enterprises primarily relate to fires in enclosed spaces similar to parking garages and road coverts. Accordingly, there are suggestions that some stakeholders want to enjoin EVs from underground parking garages.

For the success of electro mobility and the transition from reactionary- to renewable-energies, it's important to understand the pitfalls and consequences of fires in EVs and give specialized results if necessary, so as not to hamper the wide relinquishment. It's also vital that-fact-based discriminative treatment of EVs is averted. As the fashion ability of electric vehicles(EVs) continues to grow, safety systems in these vehicles are getting decreasingly important. EVs use high-voltage batteries and electric motors, which present unique safety challenges that must be addressed to ensure the safety of motorists and passengers. One of the crucial safety systems in EVs is the battery operation system(BMS).

The BMS monitors the state of charge, temperature, and voltage of the battery pack to insure safe operation. However, the BMS can shut down the battery or alert the motorist to take action, If any of these parameters fall within outdoor safe limits. Another important safety system in EVs is the thermal operation system. Because EVs induce heat during operation, it's important to have a system in place to regulate the temperature of the battery pack and help prevent overheating. This can be achieved through liquid or air cooling systems that circulate coolant around the battery pack.

In the event of a crash, EVs also have safety systems in place to cover inhabitants. These include airbags, seat belts, and structural mounts that are designed to absorb impact energy and cover passengers from injury. Eventually, EVs are equipped with electronic stability control(ESC) systems that help accidents by detecting and correcting pratfalls and slides. ESC systems use detectors to descry changes in vehicle stir and apply thickets widely to the individual buses to maintain stability.

Overall, safety systems in electric vehicles are pivotal for icing the safety of motorists and passengers. As EV technology continues to evolve, it's likely that new safety systems will be developed to address arising safety challenges.