Result of Smart Battery Fire Protection System For EV'S

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ABSTRACT:
Electric vehicles (EVs) have gained popularity as a sustainable and efficient mode of transportation. However, the safety of EV batteries remains a critical concern, particularly regarding the potential for thermal runaway and fire incidents. In response to this challenge, the Smart Battery Fire Problem System (SBFPS) has been developed. SBFPS is an advanced safety system equipped with real-time monitoring, detection, and mitigation capabilities. It leverages sophisticated sensors, thermal management, and fire suppression technologies to prevent and respond to battery-related fire risks. This abstract provides an overview of the SBFPS, highlighting its key features and benefits in enhancing the safety of EVs. The SBFPS aims to provide a proactive and effective solution to mitigate fire hazards associated with EV batteries, ensuring the continued growth of electric mobility while prioritizing safety.

KEYWORDS: Off Condition, Normal Condition, Heated Condition.

1. INTRODUCTION

Smart battery fire problem systems are designed to enhance safety by proactively monitoring and addressing potential fire hazards associated with batteries. These systems are employed in a wide range of applications, including electric vehicles, portable electronics, renewable energy storage, and more. The primary goal is to prevent battery fires, which can have catastrophic consequences, ranging from property damage to life-threatening situations.

Key features of a smart battery fire problem system include advanced battery management, temperature and thermal monitoring, voltage and current tracking, fault detection, fire detection sensors, safety shutdown mechanisms, and often, integration with sophisticated software for real-time monitoring and control.
performance and incidents, contributing to ongoing safety improvements.

2. OFF CONDITION

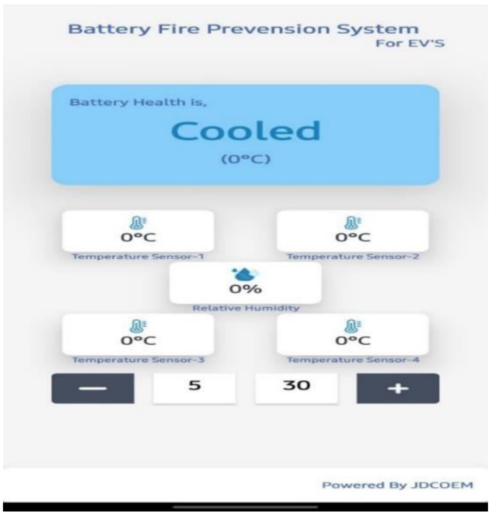

Fig 1 : OFF CONDITION

The battery fire prevention system app is in the off condition because the battery is cooled. The app shows that the battery temperature is 0°C, which is below the threshold temperature for the fire prevention system to activate. The app also shows that the battery health is good, and that the relative humidity is 0%, which are both good signs.

The battery fire prevention system is designed to activate if the battery temperature exceeds a certain threshold, or if the battery health degrades below a certain level. The system can then take steps to prevent a fire, such as shutting down the battery or activating a fire suppression system. In this case, the battery is cooled and the battery health is good, so the battery fire prevention system is off. This is a good thing, because it means that there is no risk of a battery fire.

3. NORMAL CONDITION

Fig2 : Normal Condition

The battery fire prevention system app output in the image shows that the battery is in normal condition. The battery temperature is 26.4°C, which is within the normal operating range. The relative humidity is 53%, which is also within the normal range.The app also shows that all four temperature sensors are reading thesame temperature, which indicates that the

battery is evenly cooled. This is a good thing, because it helps to prevent the battery

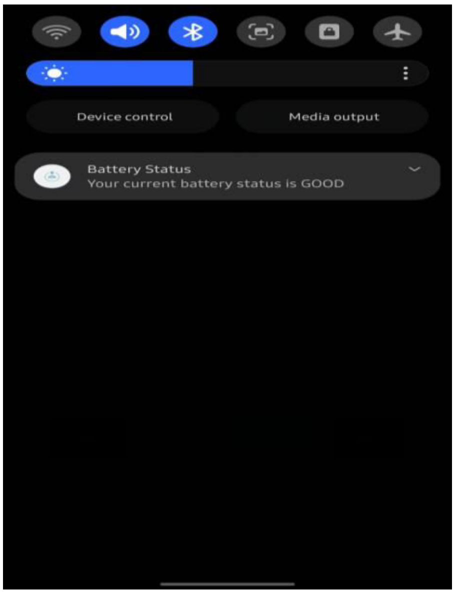

FIG 3 : Notification Send

from overheating.Overall, the app output is very positive. It shows that the battery is healthy and that the battery fire prevention system is working properly. Here is a more detailed explanation of the app output:

• Battery Health is, Good (26.4°C): This means that the battery is healthy and that the battery temperature is within the normal operating range.

• 26.4°C Temperature Sensor-1 to 26.4°C Temperature Sensor-4: These are the readings from the four temperature sensors that are monitoring the battery. All four sensors are reading the same temperature, which indicates that the battery is evenly cooled.

• 53% Relative Humidity: This means that the relative humidity is 53%. This is within the normal range, and it helps to prevent battery corrosion.

4. HEATED CONDITIN

The screenshot of the battery fire prevention system shows that the EV's battery is in a heated condition. This means that the battery temperature is above the normal operating range. The battery temperature is 27°C, which is only slightly above the normal range, but it is still a cause for concern. There are a number of possible reasons why the EV's battery might be

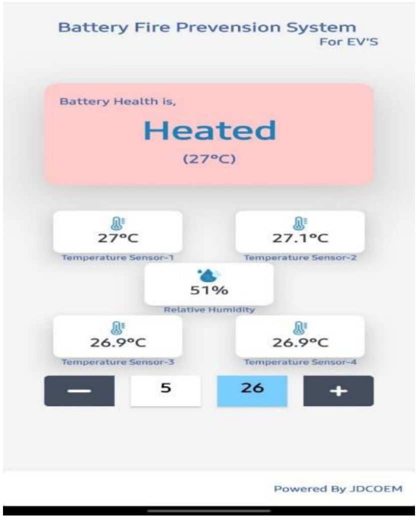

Fig 4 : Heated Condition

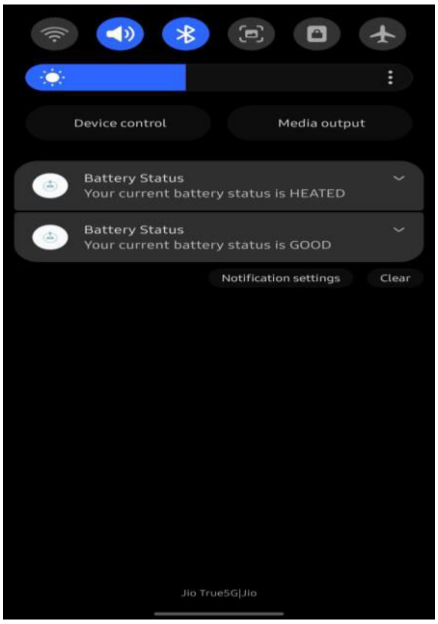

Fig 5 : Notification Send

heated. The most common reason is that the battery is being used at a high rate. This can happen when the EV is being driven aggressively, or when the EV is being charged or discharged at a high rate. Another possibility is that the battery is exposed to a high ambient temperature.

This can happen when the EV is parked in the sun or in a hot environment. Finally, it is also possible that there is a problem with the battery itself or with the battery management system.If the EV's battery is in a heated condition, it is important to take steps to cool it down as soon as possible. This can be done by moving the EV to a cooler location, turning off the EV, or using a fan to circulate air around the EV. If the battery temperature does not come down, it is important to contact a qualified professional for assistance

• Keep the EV's battery pack clean and free of debris.
• Avoid driving the EV aggressively.
• Avoid charging or discharging the EV's battery at a high rate.
• Park the EV in a shady spot or in a garage when possible.
• Have the EV's battery pack inspected and serviced regularly by a qualified professional.

Here are some additional tips for preventing battery fires:

• Keep batteries away from heat sources.
• Avoid overcharging or over-discharging batteries.
• Do not use damaged batteries.
• Check batteries often for indications of wear or damage.
• Dispose of batteries properly

5. CONCLUSION:

Lithium battery fires can be prevented in battery energy storage facilities by following a number of best practices, including:

- Installing a battery fire prevention system. This type of system can detect early signs of fire and take steps to extinguish it before it spreads.
- Monitoring battery temperature and health. Batteries should be regularly monitored for signs of overheating or degradation. If any problems are detected, the battery should be taken out of service immediately.
- Properly storing and handling batteries. Batteries should be stored in a cool, dry place and handled with care. Avoid damaging batteries by dropping them or

exposing them to extreme temperatures.

- Having a fire suppression system in place. In the event of a fire, a fire suppression system can help to extinguish the flames and prevent further damage.

6. **RESULT**:

The battery fire prevention system app is designed to activate if the battery temperature exceeds a certain threshold, or if the battery health degrades below a certain level. The system can then take steps to prevent a fire, such as shutting down the battery or activating a fire suppression system. In this case, the battery is cooled and the battery health is good, so the battery fire prevention system is off. This is a good thing, because it means that there is no risk of a battery fire.

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