

SLEEP ALERT SYSTEM

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Abstract - In modern times, owing to hectic schedules it becomes very difficult to remain active all the time. Imagine a situation where a person is driving home from work, dead tired after facing all the challenges of the day. His/Her hands are on the wheel and foot on the pedal but suddenly he/she starts feeling drowsy, his/her eyes start shutting and his vision blurs and before he/she knows it. Falling asleep on the wheel can lead to serious consequences, there may be accidents and people may even lose their lives. This situation is much more common than we notice and hence, it is very important to counter this problem. So to address this issue, we have come up with a Driver Anti-Sleep device.

Keywords: Accidents, lives, Anti - Sleep device.,

1. INTRODUCTION

An embedded system combines mechanical, electrical, and chemical components along with a computer, hidden inside, to perform a single dedicated purpose. There are more computers on this planet than there are people, and most of these computers are single-chip microcontrollers that are the brains of an embedded system. Embedded systems are a ubiquitous component of our everyday lives. We interact with hundreds of tiny computers every day that are embedded into our houses, our cars, our bridges, our toys, and our work. As our world has become more complex, so have the capabilities of the microcontrollers embedded into our devices. Therefore the world needs a trained workforce to develop and manage products based on embedded microcontrollers.

2. DRIVER FATIGUE:

The New Zealand government is seeking to reduce the number of road crashes that arise from driver fatigue in this country. To this end, Land Transport New Zealand commissioned a review of international driver fatigue literature (2000–2007) to assess measures against driver fatigue that would be effective for general public drivers. The review first notes that a number of disciplines study driver fatigue, each using its own definitions and so emphasizing different measures. This constrains the development of measures and longer-term programmes for the general public. The review thus notes the need for evidence-based theory specific to general-public driver fatigue. This would enable clearer understanding and facilitate the design, management and evaluation of programmes. This review distinguishes between fatigue from weariness through driving (acute fatigue) and fatigue from prior sleep deprivation (chronic fatigue). It also distinguishes between interventions (measures used prior to driving) and countermeasures (measures used during driving). It then links specific fatigue problems (acute or chronic), as experienced by specific driver groups, to the most effective measures against them (interventions or countermeasures) for that driver group. Finally, it suggests a guideline for best practice in the design of measures and programmes to counter driver fatigue within the general public.

3. COMPONENTS

- 555 Timer IC
- Tilt sensor
- Resistors
- Capacitors
- Buzzer
- Cables & Connectors
- Diodes
- PCB
- LED's
- Switch

- Relay

4. BATTERY

An electrical battery is a combination of one or more electrochemical cells, used to convert stored chemical energy into electrical energy. The battery has become a common power source for many household and industrial applications.

Batteries may be used once and discarded, or recharged for years as in standby power applications. Miniature cells are used to power devices such as hearing aids and wristwatches; larger batteries provide standby power for telephone exchanges or computer data centers.

5. WORKING OF BATTERY

A battery is a device that converts chemical energy directly to electrical energy. It consists of a number of voltaic cells; each voltaic cell consists of two half cells connected in series by a conductive electrolyte containing anions and cations. One half-cell includes electrolyte and the electrode to which anions (negatively-charged ions) migrate, i.e. the anode or negative electrode; the other half-cell includes electrolyte and the electrode to which cations (positively-charged ions) migrate, i.e. the cathode or positive electrode. In the redox reaction that powers the battery, reduction (addition of electrons) occurs to cations at the cathode, while oxidation (removal of electrons) occurs to anions at the anode. The electrodes do not touch each other but are electrically connected by the electrolyte. Many cells use two half-cells with different electrolytes. In that case each half-cell is enclosed in a container, and a separator that is porous to ions but not the bulk of the electrolytes prevents mixing.

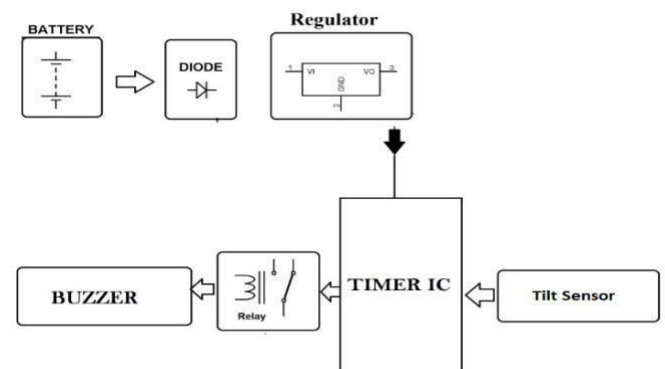
Each half cell has an electromotive force (or emf), determined by its ability to drive electric current from the interior to the exterior of the cell. The net emf of the cell is the difference between the emfs of its half-cells. Therefore, if the electrodes have emfs and, in other words, the net emf is the difference between the reduction potentials of the half-reactions.

The electrical driving force or across the terminals of a cell is known as the terminal voltage (difference) and is measured in volts. The terminal voltage of a cell that is neither charging nor discharging is called the open-circuit voltage and equals the emf of the cell. Because of internal

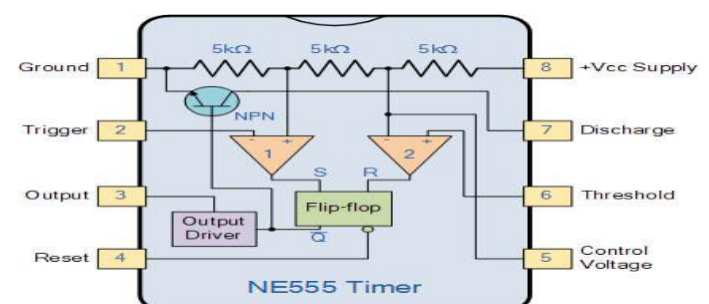
resistance, the terminal voltage of a cell that is discharging is smaller in magnitude than the open-circuit voltage and the terminal voltage of a cell that is charging exceeds the open-circuit voltage. An ideal cell has negligible internal resistance, so it would maintain a constant terminal voltage of until exhausted, then dropping to zero. If such a cell maintained 1.5 volts and stored a charge of one Coulomb then on complete discharge it would perform 1.5 Joule of work. In actual cells, the internal resistance increases under discharge, and the open circuit voltage also decreases under discharge. If the voltage and resistance are plotted against time, the resulting graphs typically are a curve; the shape of the curve varies according to the chemistry and internal arrangement employed.

An electrical battery is one or more electrochemical cells that convert stored chemical energy into electrical energy. Since the invention of the first battery (or "voltaic pile") in 1800 by Alessandro Volta, batteries have become a common power source for many household and industrial applications. According to a 2005 estimate, the worldwide battery industry generates US\$48 billion in sales each year, with 6% annual growth. There are two types of batteries: primary batteries (disposable batteries), which are designed to be used once and discarded, and secondary batteries (rechargeable batteries), which are designed to be recharged and used multiple times. Miniature cells are used to power devices such as hearing aids and wristwatches; larger batteries provide standby power for telephone exchanges or computer data centers.

BLOCK DIAGRAM



555 TIMER BLOCK DIAGRAM



CONCLUSIONS

Ackermann's Steering Mechanism With perfect Ackermann, at any angle of steering, the center point of all of the circles traced by all wheels will lie at a common point. But this might be difficult to rearrange in practice with simple linkages. Hence, modern cars do not use pure Ackermann steering, partly because it ignores important dynamic and compliant effects, but the principle is sound for low speed maneuvering the turning circle of a car is that the diameter of the circle described by the surface wheels when turning on full lock. There is no hard and fast formula to calculate the turning circle but you'll get accessible using this. We make this project entirely different from other projects. Since concepts involved in our project is entirely different that one unit is employed to varied purposes, which isn't developed by any of other team members. The project administered by us made an impressive task within the field of automobile industries. It is very usefully for driver while driving the vehicle. This project has also reduced the value involved within the concern. Project has been designed to perform the entire. It shouldn't be confused with four-wheel drive during which all four wheels of a vehicle are powered. With the assistance of this technique, the rear wheels can also be turned with reference to the direction of front wheels whenever required. Thus, the vehicle can be controlled more effectively especially during cornering, parking or when we get into a congested or narrow area.

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