



EC-Tech Chronicle

2019-20

Department of Electronics and Communication Engineering



PRAGATI ENGINEERING COLLEGE (AUTONOMOUS)

Approved by AICTE, New Delhi & Permanently Affiliated to JNTUK, Kakinada & Accredited by NAAC with 'A' Grade

Vision of the College

To Emerge as a Premier Institution for Technical Education in the Country through Academic Excellence and to be Recognized as a Center for Excellence in Research & Development, catering to the needs of our Country.

Mission of the College

To realize a strong Institution by consistently maintaining State-of-art-infrastructure and building a cohesive, World Class Team and provide need based Technical Education, Research And Development through enhanced Industry Interaction.

Vision of the Department

To be an acknowledged Leader in providing quality education, training and research in area of Electronics and Communication Engineering to meet the industrial and Societal needs.

Mission of the Department

M1	To facilitate students with a state-of-the-art infrastructure, learning environment and value-based education to improve technical knowledge and skills for continuous learning process.
M2	To impart high quality education with well qualified faculty and enable students to meet the challenges of the industry at global level
M3	To promote innovation and active industry institute interaction by facilitating the students to improve their leadership and entrepreneurship skills with ethical values.

Program Educational Objectives (PEOs)

PEO 1	To prepare Graduates with sound foundation in fundamentals of mathematics, science and engineering to assist them exhibit strong, independent learning, analytical & problem solving skills in Electronics and Communication Engineering domain.
PEO 2	To facilitate learning in the core field with effective use of modern equipment and programming tools to solve real life, multi-disciplinary problems with professional, ethical attitude and also to make them aware of their social responsibilities.
PEO 3	To assist and enable individuals to imbibe lifelong learning in thrust areas related to research & innovation to have Progressive Careers or Entrepreneurs.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO-1	The ability to apply concepts in electronics and communication engineering, to design and implement complex systems in the areas related to analog and digital electronics, communication, signal processing, VLSI & ES.
PSO-2	Ability to provide discerning solutions based on their expertise in electronics and communication courses in competitive examinations for successful employment, higher studies and research.

PROGRAM OUTCOMES (POs)

1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2	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.
3	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.
4	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.
5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7	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.
8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10	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.
11	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 multidisciplinary environments.
12	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.

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AUTOMATIC MOBILE RECHARGER STATION

An automatic mobile charger is one of easiest ways to recharge our mobile anywhere at any time. In this, an automatic mobile recharger the concept is that the person who want to recharge his mobile within a short time, simply enter the amount in the form of note to connect his mobile through the cord then he will get corresponding balance of that particular amount within a minute in the form of text message on his screen.

Another advantage of this system is that one can recharge mobile without having any topic of bank accounts, ATM, VISA etc. This type of recharge is very easy in aspect to handle it. It can be easily handled by illiterate person also because of simplicity in its handling.

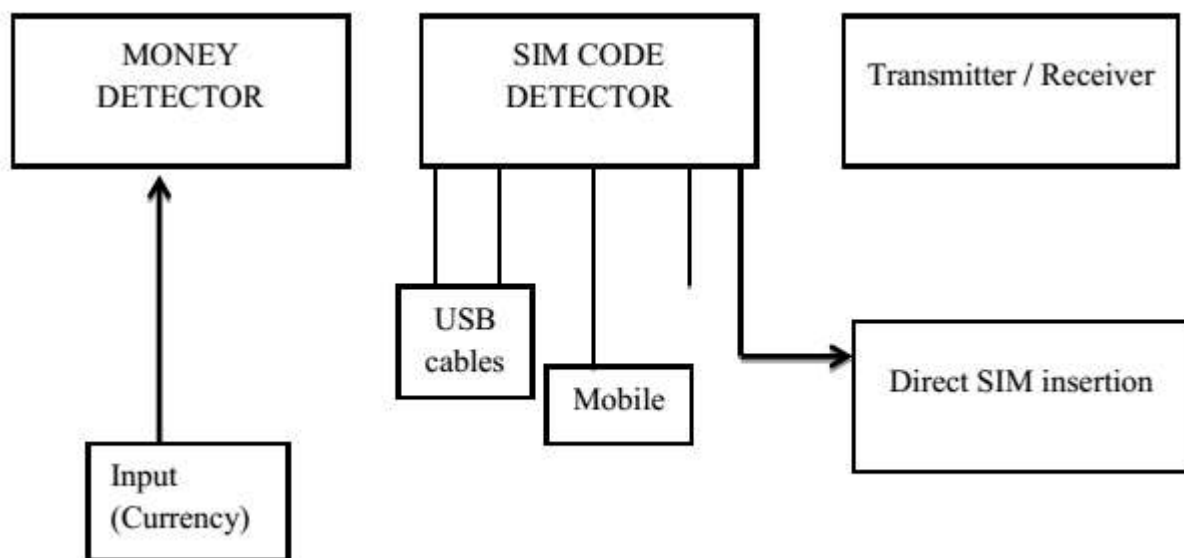


Figure:1 Architecture of Mobile Recharge

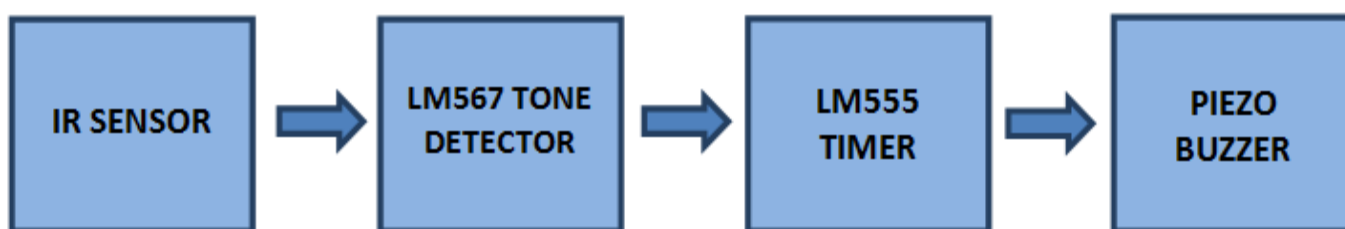
The above shown block diagram is tentatively requiring blocks in this mainly used block is money detector. Then SIM detector with USB cables, these cables are used to connect the mobile with system. Also this SIM detector is connected with direct SIM insertion block. It is the most important block and it contains one block of transmitter and receiver. The Indian currency with silver strip can also be detected with the help of the detector.

K.SYAMALA
16A31A04J3
IV ECE



CAR PARKING GUARD CIRCUIT USING INFRARED

Introduction: While parking the car the driver should be more careful because he cannot see the back of the car while parking or taking reverse, if there is any obstacle and ran over it might be get damage to the car. Our project will help the person in the driving seat and give alarm if there is any obstacle or a wall while parking or while driving in reverse.



- The reverse indicator light supply is given to the 7805 regulator to give 5v to the rest of the circuit. The diode D6 is used to eliminate the reverse current and wrong supply polarity.
- When the car is driving in reverse the car battery will provide DC supply the reverse light indicator at the back of the car when this supply came to the reverse light indicator the circuit will have the power supply.7805 will regulate the DC voltage to 5V and give to the IR Sensors through the transistor with 20 KHz modulating frequency of the LM567 (TONE DETECTOR) available at Pin5. The resistor R1 will resist the IR sensor current. At this point the pin8 of LM567 is high which will enable the LM555 timer operating in astable multivibrator mode. The output of the timer is enabled which can be assured by the LED (blinking) and also buzzer will beeps at determined rate given by the resistors R6, R7 and capacitor C7. The timer output also is given to the lamp through a transistor. The lamp will blink as a warning signal because of the PWM signal generated by the timer, transistor will work as a switch and resistor R10 will limit the current. This condition is maintained until the 20 KHz signal is received by the pin3 of the LM567.
- The above condition is when there is no obstacle in the path of the car while taking reverse. If there is a obstacle the IR beam will radiate back to the IR sensor and the 20KHz modulated signal is given to the pin3 of LM567 through photo Darlington transistor, at this point the pin8 of the LM567 is turned to low and also gets locked to detect the 20Khz signal. By this the LM555 is turned low and disabled by this the led will remain lighting and buzzer makes the continuous sound to alert the driver.

PADALA RAJAREDDY

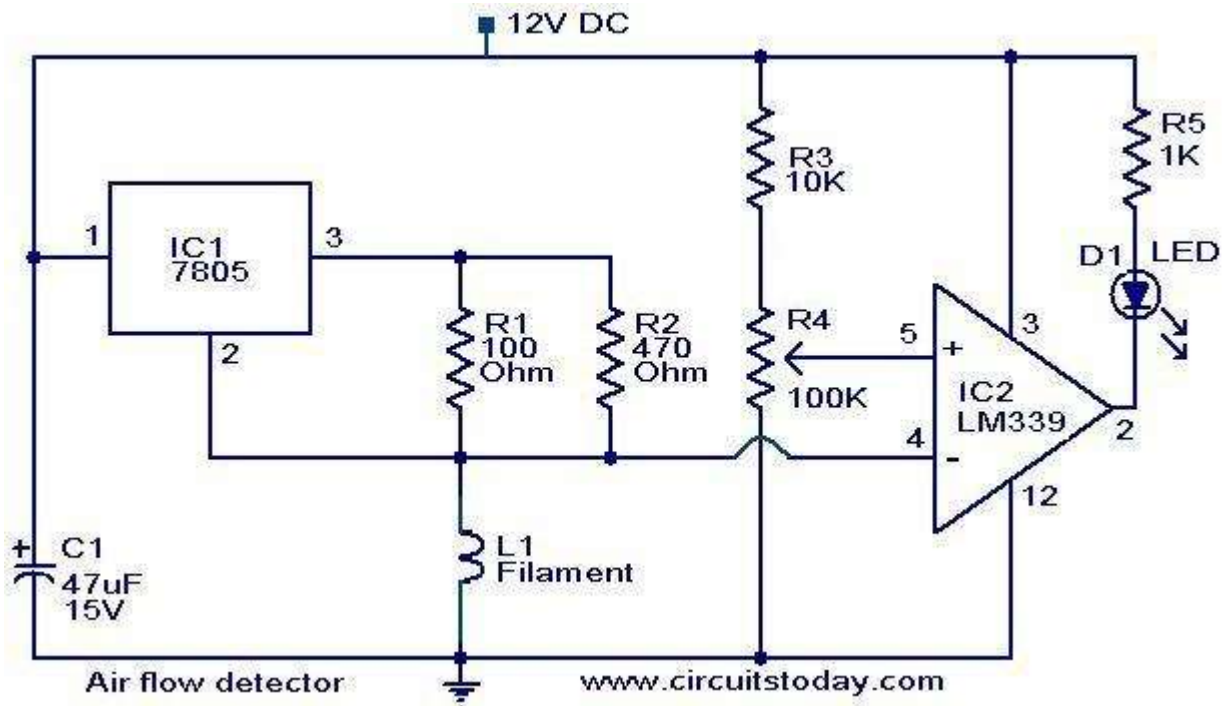
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AIR FLOW DETECTOR CIRCUIT

This circuit can give a visual indication of the rate of air flow. It can be also used to check whether there is air flow in a given space.

The filament of an incandescent bulb is the sensing part of the circuit. When there is no air flow the resistance of the filament will be low. When there is air flow the resistance drops, because the moving air will remove some of the heat generated in the filament. This variation in the resistance will produce variation of voltage across the filament. These variations will be picked up by the opamp (LM339) and the brightness of the LED at its output will be varied proportionally to the airflow.

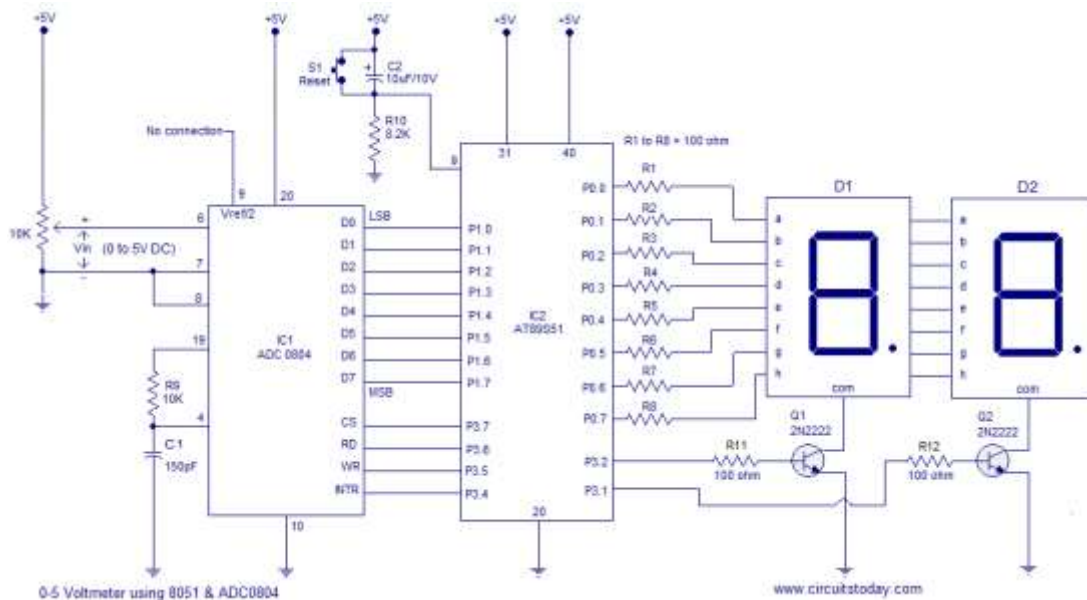


G.Sree Lakshmi
Asst.Prof/ECE



VOLTMETER USING 8051

A simple 0-5V voltmeter using 8051 is shown in this article. This digital voltmeter has a sensitivity of 200mV which is a bit low but this project is meant for demonstrating how an ADC and seven segment display can be interfaced to 8051 to obtain a digital readout of the input voltage. A 3 1/2 digit high end voltmeter will be added soon. ADC0804 is the ADC and AT89S51 is the controller used in this project. Before attempting this project, go through these projects Interfacing ADC to 8051 and Interfacing seven segment display to 8051 which will give you a good idea on the basics.



S.VIVEK

16A31A04H0



WHITE LED BASED EMERGENCY LAMP AND TURNING INDICATOR

White LEDs are replacing the conventional incandescent and fluorescent bulbs due to their high power efficiency and low operating voltage. These can be utilised optimally for emergency lamp and vehicle turning indication. Presented here are white LED based emergency lamp & turning indicator circuits for the purpose.

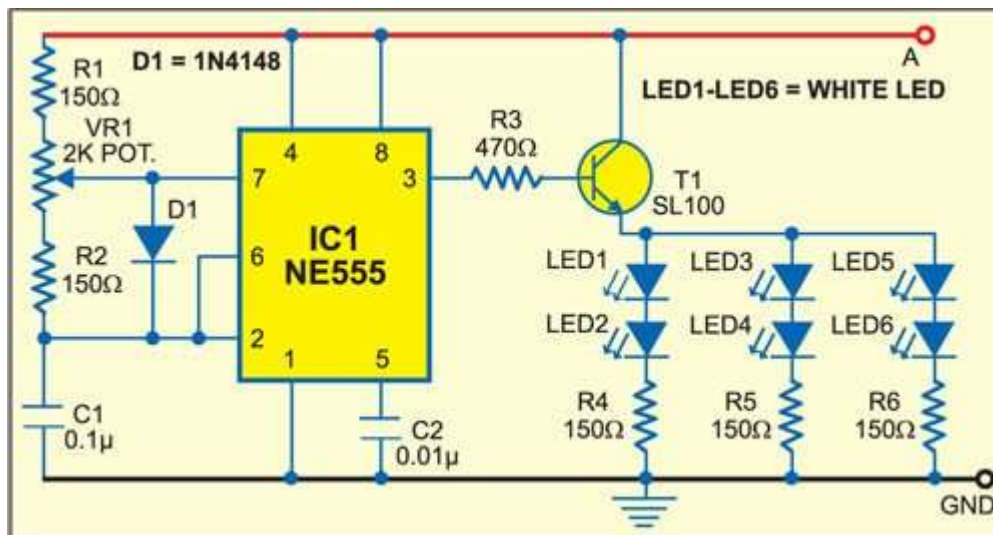


Fig. 1 shows the circuit of a white-LED based emergency lamp. You can also use arrays of white LEDs as daytime running lamps in automobiles.

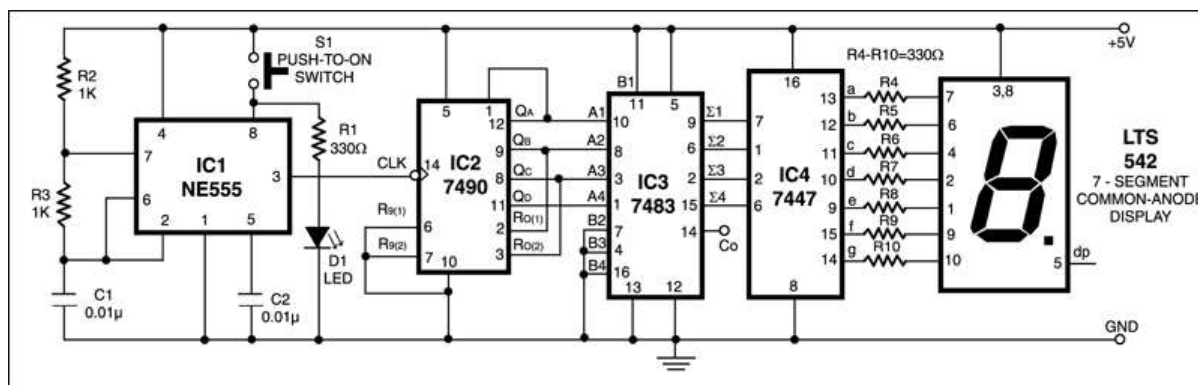
In the emergency lamp, seven 1.2V AA-size Ni-Cd cells giving 8.4V have been used as the power source. The brightness is controlled by duty-cycle variation of an astable multivibrator working at 1 kHz. The astable multivibrator is built around IC1. Its output is connected to LED-driver transistor T1.

P Vishnu Murthy
Asst.prof/ECE



NUMERIC DISPLAY DIGITAL DICE

Using different connections for pins 2, 3 (reset to zero inputs Ro(1) and Ro(2)) and the binary output pins 12, 9, 8 and 11 of IC 7490, various count ranges can be set. For the given circuit the count range is set as 0 to 5 by connecting QB and QC outputs to Ro(1) and Ro(2) inputs, respectively.



At the count of 6, QB and QC outputs of IC2 go high and counter is reset. The binary output pins of the counter IC2 are connected to corresponding input pins of 4-bit binary adder IC3 (7483) which is wired to give binary output equal to binary input+1. Thus the output of the dice ranges from 1 to 6. For obtaining other dice ranges, reset pins 2 and 3 connections may be made as per Table I.

TABLE I

Dice range	Connect pin 2 to	Connect pin 3 to
1 to 2	pin 9	+5V
1 to 3	pin 9	pin 12
1 to 4	pin 8	+5V
1 to 5	pin 8	pin 12
1 to 6	pin 8	pin 9
1 to 8	pin 11	+5V
1 to 9	pin 11	pin 12

M Srinivas

Asst.Prof/ECE



VOICE OVER LTE

VOLTE, voice over LTE is an IMS-based specification. Adopting this approach, it enables the system to be integrated with the suite of applications that will become available on LTE. When 3GPP started designing the LTE system, prime focus was to create a system which can achieve high data through put with low latency and at the same time it has the capability to guarantee an end to end quality of service (QOS). LTE is an all IP network and during the initial phases of its development, the ability to carry traditional service like the voice was not given much importance.

Therefore, the LTE network to carry traditional circuit-switched voice calls, a different solution was required. This solution to carry voice over IP in LTE networks is commonly known as VOLTE. Basically VOLTE systems convert voice into the data stream, which is the transmitted using the data connection. In the VOLTE solution with voice services now sharing the data pipe with other data enabled services like web browsing, video streaming and social media, the ability to manage the speed, quality and volume of data along with associated signaling is critical for providing a positively differentiated user experience.

This is achievable in the LTE network by way of exploiting capabilities of the IMS infrastructure, which provides a definite framework for ensuring end to-end QOS for different applications including voice.



R. JYOTHSNA

16A31A04K0



ELECTRONIC PILLS AND THEIR APPLICATIONS

Electronic pills are the holy grail of health care technology. Ever since the past microelectronic pill was developed by Prof. Jon Cooper and Dr. Erik Johansson from Glasgow University in 1972. An electronic pill is a multichannel sensor use for remote biomedical measurements in the body. They can specifically deliver drugs to certain parts of the body to target different types of cancer, stimulated damage tissues, tract gastric problems and measure biomarkers.

CURRENT PRODUCTS ON THE MARKET:

- **Philips intelligent pill:** This electronic pill is a plastic capsule which is usually taken with solid food or water. Normally. It is meant to be transported through the digestive system in a natural manner. This is usually done within 24 hours and as this is done, the drug is dispensed to different parts of the body. The size is about that of a plump multivitamin and the drug can even carry out specialized actions based on the pH level of the patient.
- **Intellicap drug:** It is rightly described as an electronic pill acting as a drug delivery and a monitoring device. It is made up of a drug reservoir, wireless communication systems, electronic controllers, sensors and a delivery pump. It takes a very minuscule form and upon ingestion, it travels through the gastro intestinal tract. The presence of onboard electronics means that the drug delivery is both precise and flexible.

CHEBOLU SAILAJA

17A31A0406



SMART HOMES: AN EAR TO INTERNET

Technology is the campfire around which we tell our stories! Houses have been getting progressively **smarter** for decades, but the next generation of smart homes may offer two cases what scientists are calling an **Internet of Ears**. Today's smart home features appliances, entertainment systems, security cameras and lighting, heating and cooling systems that are connected to each other and the Internet. They can be accessed and controlled remotely by computer or smart-phone apps.

The technology of interconnecting commercial, industrial or government buildings, someday even entire communities, is referred to as the "Internet of Things," or IoT. We are using principles similar to those of the human ear, where vibrations are picked up and our algorithms decipher them to determine your specific movements. That's why we call it the **Internet of Ears**. There is actually a constant 60 Hz electrical field all around us, and because people are somewhat conductive, they short out the field just a little. So, by measuring the disturbance in that field, we are able to determine their presence, or even their breathing, even when there are no vibrations associated with sound. They expect the system could provide many benefits. • The first advantage will be energy efficiency for buildings, especially in lighting and heating, as the systems adjust to how humans are moving from one room to another, allocating energy more efficiently. • Another benefit could be the ability to track and measure a building's structural integrity and safety, based on human occupancy, which would be critical in an earthquake or hurricane. Also on the disadvantage we are trying to predict if there is going to be structural damage because of the increased weight or load based on the number of people on the floor or how they are distributed on that floor.

S.MUKESH KRISHNA REDDY

17A31B0454



E-MOBILITY

The importance of e Mobility is increasing rapidly for the automotive industry and for people who want to **go green**. In 2018 there were 3.3 million battery electric vehicles on the streets worldwide. One of those measures is the Clean **Hydrogen Fuel Cell** which provides clean electricity and reduces dependency on diesel generators. The Hydrogen (H₂) is made from water in an electrolyser, powered by 100% renewable energy (from a wind farm or solar panels), so it does not pollute the atmosphere with fumes or carbon dioxide. The fuel cell combines hydrogen with oxygen from the air to create **150kW** of electrical energy, which then powers the electric cars. The automotive industry has certainly been getting a lot of flak in recent decades for being one of the primary contributors to environmental degradation, particularly in **air pollution**. And one of their moves is to produce more environment-friendly vehicles.

Electric cars are seen to be one of the best solutions, and this spurred the introduction of electric mobility – or e-mobility – technologies. Even a 1979 vintage Volkswagen Bull-E showcased at the festival runs on electric power.

“That supports the way we want to live - happily, sustainably and in harmony,” Benefits of E-mobility:

- E-mobility will help reduce the amount of energy required and utilized by the transportation sector.
- E-mobility challenges car makers and manufacturers to think outside the box. As the threat of competitors’ coming out with more efficient electric vehicles increase, they are also likely to put in more effort and resources into making vehicles that are better – more energy-efficient, lighter, and offer higher performance.
- E-mobility will create employment opportunities. The automotive industry will be more confident in the development
- Globalized standards and e-mobility technology will minimize barriers to trade, allowing for harmonious working relationships among manufacturers and among nations.

VANAPALLI ANUSHA

17A31A0425