These detectors coupled with their high cost have led to Lithium-ion (Li-Ion) batteries leading as the predominant battery for EVs. Lithium-ion batteries’ price is constantly decreasing, thus, making electric vehicles more affordable and attractive on the market. The power of a vehicle’s electric motor, as in other vehicles, is measured in kilowatts (kW). 100 kW is roughly equal to 134 horsepower, but electric motors can deliver their maximum power across a much wider range. This means that the performance of a vehicle with a 100 kW electric motor exceeds that of a vehicle with a 100 kW internal combustion engine, which can only deliver its maximum torque within a limited range of engine speed. Energy is lost during the process of converting the electrical energy to mechanical energy. Approximately 90% of the electrical energy in the battery is converted to mechanical energy, the losses being in the motor and drive train. Usually, direct current (DC) electricity is fed into a DC/AC inverter where it is converted to alternating current (AC) electricity and this AC electricity is connected to a 3-phase AC motor. For electric trains, forklift trucks, and some electric cars, with a wide range of cases, universal motors are used, and then AC or DC may be employed. In recent production vehicles, various motor types have been used in a single configuration; induction motors within Tesla Motor vehicles and permanent magnet machines in the Nissan Leaf and Chevrolet Bolt.

Electric Vehicle Trends in India

I feel very proud that our SVERI’s College of Engineering (Polytechnic) has endeavored to come up with this “Tech-Explorer” quarterly news bulletin which explores the hidden potential of our students. SVERI’s Polytechnic is growing day by day and reaching the heights of success with the exceptional performance of our students. Recently, this college has been recognized as the best campus in Maharashtra and Goa. “Tech-Explorer” is a platform through which our students explore their ideas, thoughts as well as skills. I feel delighted to say that our students have shown excellent performance in recent MSBTE examination as well as in extra-curricular activities, particularly sports.

I appreciate the students and faculty members who have taken much efforts to bring this “Tech-Explorer” quarterly news bulletin in existence.

I wish you all Happy Independence Day!

Message From Principal

In the project competition, the winners of various sports event, smartphone applications for fast travel, Cyber security system, and education, etc. The app works both in online and offline mode. Officers and police can make phone calls to personally informed about instructions and attendance of each and every on duty official. In case of any emergency, duties can be rearranged as per the availability of the reserve staff. Each staff is personally informed about instructions or notifications without being present physically at the duty allocation spot as during Wazi reaching the duty allocation spot itself is a challenge for the staff due to non-availability of any mode of fast travel. Officers and policeman can make phone calls to each other for information sharing.

The app works both in online and offline mode therefore in case of network congestion there is no problem in operators sharing. The power of a vehicle, which can only deliver its maximum power within a limited range of engine speed. Energy is lost during the process of converting the electrical energy to mechanical energy. Approximately 90% of the electrical energy in the battery is converted to mechanical energy, the losses being in the motor and drive train. Usually, direct current (DC) electricity is fed into a DC/AC inverter where it is converted to alternating current (AC) electricity and this AC electricity is connected to a 3-phase AC motor. For electric trains, forklift trucks, and some electric cars, with a wide range of cases, universal motors are used, and then AC or DC may be employed. In recent production vehicles, various motor types have been used in a single configuration; induction motors within Tesla Motor vehicles and permanent magnet machines in the Nissan Leaf and Chevrolet Bolt.

Electric Vehicle Trends in India

An electric vehicle, also called an EV, uses one or more electric motors or traction motors for propulsion. An electric vehicle may be powered through a collector system, directly from an off-vehicle source or may be self-contained with a battery, solar panels or an electric generator to convert fuel to electricity. EVs include but are not limited to road and rail vehicles, surface and underwater vessels, electric aircraft and electric spacecraft.

EVs first came into existence in the mid-19th century, when electricity was among the preferred methods for motor vehicle propulsion, providing a level of comfort and ease of operation that could not be achieved by the gasoline cars of the time. Modern internal combustion engines have been the dominant propulsion method for motor vehicles almost for a century. But electric power has remained common place in other vehicle types, such as trains and smaller vehicles of all types.

In the 21st century, EVs saw resurgence due to technological developments and an increased focus on renewable energy. A great deal of demand for electric vehicles developed and a small core of do-it-yourself (DIY) engineers began sharing technical details for doing electric vehicle conversions. Government incentives to increase adoptions were introduced which including in the United States and the European Union. Most electric vehicles use Lithium-ion batteries (Li-Ions or LIBs). Lithium ion batteries have higher energy density, longer life span and higher power density than most other practical batteries. Complicating factors include safety, durability, thermal breakdown and cost. Li-ion batteries should be used within safe temperature and voltage ranges in order to operate safely and efficiently. Increasing the battery’s life span decreases effective costs. The technology is to operate a subset of the battery cells at a time and switching these subsets.

In the past, Nickel Metal Hydride batteries were used among EV cars such as those made by General Motors. These battery types are considered out-dated due to their tendencies to self discharge in the heat. Also the batteries’ memory effect was held by Chevrolet, which created a problem for their widespread development.

(Contd. on page no.4)
Police Duty Management Android App  

Mr. S. A. Zambare (Project Head)

Pandharpur is known as the South Kashfi of India, where there are total four Wari (Quarterly Pilgrimage) held every year in Pandharpur. The pilgrims from all over Maharashtra as well as from different states of India visit Pandharpur. So, handling the Wari without any inconvenience is the biggest challenge before the administration and Police Department.

Therefore, Solaipur Rural Police sponsored one of the first Android App for Pandharpur. The system which is named as BAAS (Bandobast Alloca- tion and Attendance System). According to their requirement, a website and an Android App are developed for Pandharpur. After that, it has been used in various Police Bandobast like General Election-2019, Magh Wari, Chaitra Wari and recently this application is used in holiest Wari of Maharashtra i.e. Ashadhi Wari 2019 and there was successful execution of BAAS. In the month of March 2019, MSBTE organized State Level Project Competition at Sanjay Ghodawat Polytechnic Kolhapur.

Amazon Web Services (AWS)  

-Mr. Gauri Pratiksha (TY CO)

Amazon Web Services provides services from online servers to mobile devices. It provides services from dozens of data centers spread across availability zones (AZs) in regions across the world. An AZ represents a location that typically contains multiple physical data centers, while a region is a collection of AZs in geographic proximity connected by low-latency network links. An AWS customer can spin up virtual machines and replicate data in different AZs to achieve a highly reliable infrastructure that is resistant to failures of individual servers or an entire data center. The AWS technology is implemented at server farms throughout the world, and maintained by the Amazon subsidiary. Fees are based on a combination of usage, the OS/software/networking features chosen by the subscriber, required availability, redundancy, security, and service options.

RCC-The Remarkable Construction Technology

Roller compacted concrete (RCC) is of great importance due to its advanced procedures which has been used for past 25 years all over the world. As frequently being used the most economical way to build safe dams, concrete is the second largest material consumed by human beings after food and water as per WHO. RCC has three key properties that make it better suited for dam’s economy, performance and high speed construction. American Concrete Institute (ACI) defines Roller compacted concrete (RCC) as concrete compacted by roller compaction. In the quarter century, since Willow Creek dam considera- ble research and experimen- tation has yielded innumer- able improvements in concrete mix design. Currently the highest dams of this type is Longtan Dam in China at 216m with Diemer Basha dam in Pakistan planned at 272m. The repair of the collapsed intake tunnel of terbeba dam proved that the material had more adequate strength and durability. Diemer Basha dam with a height of 272 meters cost of US $13.684 billion dollar would generate 4500 MW. Electricity and store over 8.1 million. Acre feet of water to meet country’s growing pow- er and irrigation needs are being built on Indus River, about 315 km upstream of Tarbela Dam.