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BMS INSTITUTE OF TECHNOLOGY & MANAGEMENT
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PRODUCT/ WORKING MODEL

1. **Product Name:** Movable Smart Road Divider

Road dividers are often used to divide the road further and closer traffic. This helps to maintain the continuity of traffic. In this case, there are an equal number of routes in both incoming and outgoing traffic. Be that as it may, in some areas, such as industrial or shopping malls for a large part of the broadcast a one way to the first half in the morning or at night and another road is unpaved. It consumes more time of the public and leads to time loss. It means assembling a smart road divider up to that point a moving or moving motor separator a method that links the rise of the acceleration hour grid. Such the type of traffic frame part sets the time as and fuel. It can include one other route based on traffic at a certain source. And very smart application listed below, hand-based reliance as well the relationship of manual traffic has diminished. Microcontroller, IR sensors and boards are used. The sensors are mounted on dividers heard the continuation of traffic according to which the divider moves to other lane having less traffic density. It provides a high level of feedback on the road issue.

Faculty Mentors: Dr. Lalit Kumar Gupta



2. **Product Name:** Sustainable Smart Pavement for Electric Energy Production

In the present scenario, electrical energy is a major need for mankind. Without the electricity it is highly impossible to carry-out the routine works. In-addition the scope for electrical vehicles in India is a game changing scenario as recently addressed by honourable transport minister of India. In this regard, there is a huge requirement for the electrical energy. The present study aims to generate electrical energy through footway pavement by using smart innovative technology. This is a novel approach in order to produce the electrical energy.

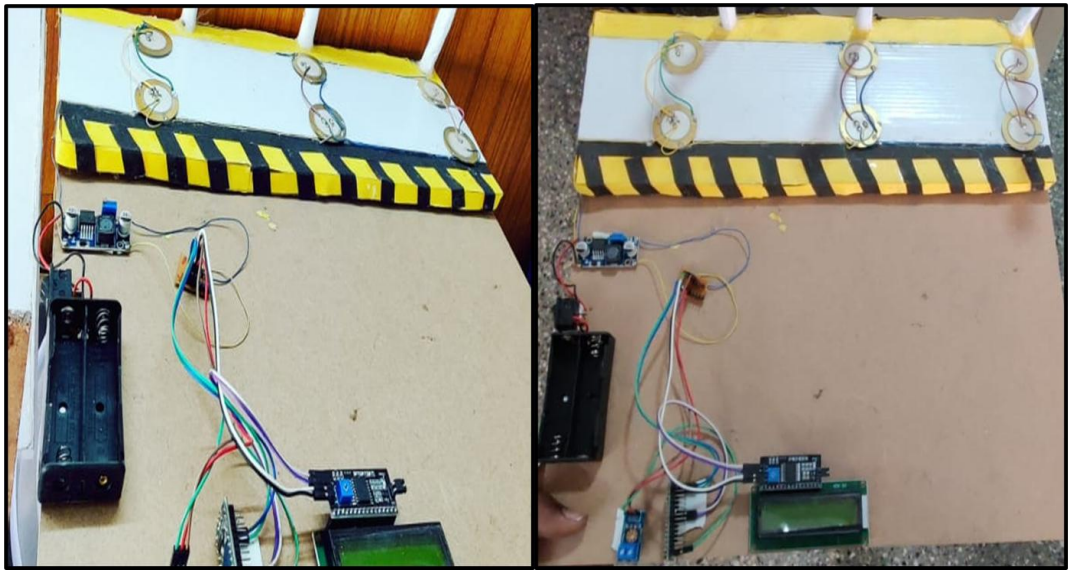
The present work is conducted to evaluate the feasibility of electrical energy production using solar panels and piezoelectric cells. For this purpose, we prepared a prototype. In this study, an attempt was made to show the production of electrical energy using abundantly available solar energy and energy produced by Piezoelectric concept by utilizing load exerted on the footway pavement due to Pedestrian Traffic.

Due to increase in the consumption of electrical energy, non-renewable energy resources are depleting day by day. This major concern has to be addressed through the field of science and technology in order to bring the revolution to use naturally available resources for the purpose of electrical energy generation. In this regard, present study focused on utilizing pedestrian foot energy is having significant impact on highly populated countries like India.

If the footway pavement is equipped with piezoelectric technology, then the electrical energy produced by the pedestrian traffic is absorbed by the piezoelectric sensors and converted to an electrical charge by piezoelectric transducers. This source of electricity produced can be used mainly for the

purpose of street lighting and charging electrical vehicles. In this paper an attempt was made to interface solar panels with piezoelectric technology for the purpose of producing electricity.

Faculty Mentors: Dr. Marsh M. Bandi



3. **Product Name::** Design of Speed Breaker Using Non-newtonian Fluid - A Case Study Approach

A speeding vehicle can be a threat to other road users particularly on the roads where connection between motorized, non-motorized, and pedestrian traffic is high, such as residential, educational, and business zones where there is a high flow movement of persons. Even though speed limit signs are located, some of the drivers are not following the driving ethics and violating the traffic rules. Hence, controlling vehicular speed is an important outcome in traffic management strategies.

Thus, one way of controlling speed is to use speed breaker which produces distress while driver experiences during crossing over it. It plays a

decisive role in implementing speed limits, thereby preventing over-speeding of vehicles. It considerably assists to the overall road safety objective through the prevention of road accidents.

Non-Newtonian fluid speed breaker reduces the speed of any over-speeding vehicles travelling on a roadway. It is formed by at least one hollow band of ductile material. Vessel is filled with dilatants shear thickening fluid. If the vehicle travels at a low speed, the fluid has a low viscosity and the strip is easily deformed, if the speed of the vehicle is high, the viscosity of the fluid is high and as a result has great resistance to deformation, thus forming a rigid obstacle to the movement of the vehicle.

Drivers must slowdown when driving over the conventional speed breaker to prevent damage to their vehicle. However, the Non-Newtonian fluid speed breaker is sensitive to the speed of the vehicle. The vehicle needs to slow down only if it is over speeding.

In the present study, an attempt was made to design and develop a prototype of the Non-Newtonian speed breaker and the performance of vehicles was tested for different scenarios at a selected road strength in Bangalore city.

Faculty Mentors: Dr. Marsh M. Bandi





4.Product Name:: Environmental and Climate Quality Monitoring System (ECQMS)

ECQMS has been successfully deployed in BMSIT campus on 15th August 2025. It is installed on the first electric pole along the double road, near the two-wheeler parking area. The system was designed and implemented by Dr. Rajesh Gopinath, Professor in the Civil Engineering Department. Powered by Raspberry Pi 5 and industry grade sensors, the device continuously measures environmental parameters such as *Carbon Monoxide, Suspended Particulate Matter (PM_{10}, $PM_{2.5}$, PM_1), Temperature, Humidity and National Air Quality Index (NAQI)* at regular intervals.

Faculty Mentor: Dr. Rajesh Gopinath



4. **Product Name::** Improvised Rainwater Filter (under BIS funding)

This product involves development of an integrated rainwater filtration system designed for diverse rooftop environments and sustainable groundwater recharge applications. The system was developed to address challenges associated with rooftop runoff contamination, hydraulic instability, and recharge suitability under varying flow conditions. Emphasis was placed on optimizing filter media interaction, maintaining stable hydraulic behavior, and improving treated water quality for managed aquifer recharge. The design approach focused on balancing flow regulation, pollutant retention, and operational simplicity across residential, commercial, industrial, and rural settings. The proposed filtration framework supports decentralized water management and promotes sustainable urban and rural water conservation practices.



Faculty Mentor: Prof Archana K, Prof Shimna M and Dr. Rajesh Gopinath