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Piezo Electric Smart Road

Prof Jaanaki S M, Gautham R, Ballam Bharath Reddy, Gowtham R, Charan M
Department of Electronics and communication
East Point College of Engineering and Technology, Bengaluru, Karnataka, India
smjaanaki.ece@eastpoint.ac.in, gauthamravindra@outlook.com
bharathreddyb17@gmail.com, ruvgowtham@gmail.com, cherrycharan1209@gmail.com

Abstract: *The integration of piezoelectric materials in the development of smart roads represents a promising innovation to enhance the efficiency and sustainability of modern infrastructure. This concept involves embedding piezoelectric sensors and generators within road surfaces to capture mechanical energy from vehicle traffic, which can then be converted into electrical energy. This energy can be used to power roadside systems such as traffic lights, street lamps, and road sensors, as well as contribute to the broader electrical grid. Additionally, piezoelectric sensors embedded in the road can monitor vehicle speed, weight, and traffic flow in real-time, providing valuable data for traffic management systems and enabling more responsive, data-driven infrastructure management. The key benefits of piezoelectric smart roads include reduced reliance on traditional energy sources, real- time monitoring capabilities, and the potential to create self-sustaining transportation systems.*

Keywords: Piezoelectric Effect, Smart Roads, Energy Harvesting, Sustainable Energy, Infrastructure

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