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Automatic Street Light Using Green Energy

Prof. D. T. Rahane[1], Dudhawade Nilesh Namdeo[2], Gore Vaibhav Bhaskar[3], Jambukar Ranjit Rajendra[4], Kale Saurabh Ramdas[5], Sojwal Sharad Bomble[6]

[1] Associate Professor, Department of Civil Engineering
[2,3,4,5,6] Research Scholars, Department of Civil Engineering
Amrutvahini College of Engineering, Sangamner, A.Nagar, MH

Abstract: *The Automatic Street Light Using Green Energy system is an innovative, eco-friendly solution designed to harness renewable wind energy to power street lighting, thereby reducing dependency on traditional grid electricity and minimizing environmental impact. This system operates autonomously and integrates several key components, including a wind turbine (connected to a DC motor for electricity generation), a battery for energy storage, a DC-to-DC converter for voltage regulation, LEDs for efficient lighting, and a Light Dependent Resistor (LDR) for automatic switching based on ambient light levels. As wind turns the turbine blades, the DC motor converts the mechanical energy into electrical energy, which is then stabilized by the converter and stored in the battery. The stored energy powers the LEDs during low-wind periods or at night, ensuring continuous illumination. The LDR enables automatic operation by detecting day/night conditions and switching the lights on or off accordingly. This system not only offers a cost-effective and sustainable alternative to conventional street lighting but also contributes significantly to energy conservation and carbon footprint reduction. Designed for low maintenance and long operational life, it serves as a practical and scalable solution for municipalities aiming to implement green infrastructure in urban and rural environments.*

Keywords: Wind energy, Automatic street light, Renewable energy, Light Dependent Resistor (LDR), Energy-efficient lighting

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