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## Development of Solar Based Street Light for College Utility

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Abstract: Solar streetlights have emerged as a sustainable and efficient solution for outdoor lighting, offering numerous advantages over traditional grid-powered lights. This paper presents a comprehensive study on solar streetlights equipped with Light Dependent Resistors (LDR) sensors, focusing on their design, operation, and benefits. The solar street light system consists of photovoltaic panels, a rechargeable battery, LED lamps, and an LDR sensor. Throughout the daytime, the solar panels transform sunlight into electric power, which charges the battery for night time use. LED lamps provide illumination, offering a cost-effective and environmentally friendly alternative to conventional lighting sources. The inclusion of an LDR sensor enhances the efficiency and functionality of solar streetlights by enabling automatic on/off operation based on ambient light levels. When ambient light levels decrease below a certain threshold, indicating dusk or darkness, the LDR sensor triggers the LED lamps to illuminate. Conversely, when ambient light levels increase above the threshold, signaling dawn or daylight, the LDR sensor turns off the LED lamps, conserving energy. The design and implementation of solar streetlights with LDR sensors require careful consideration of various factors, including solar panel orientation, battery capacity, LED luminaire efficiency, and sensor sensitivity

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