

# Energy Harvesting from Footsteps with Real-Time Output Visualization

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**Abstract:** *Urban energy demands continue to rise, with much of daily human movement going untapped as a resource. To explore alternative energy sources, this project introduces an "Electricity Generation from Footsteps with Real-Time Output Display" system utilizing piezoelectric plates and Arduino UNO, offering an innovative and eco-friendly way to capture and visualize energy generation from human steps. This system aims to convert mechanical pressure into usable electric power and display the output in real time, ultimately enhancing energy awareness and micro-power harvesting potential.*

*For energy generation, piezoelectric sensors are embedded beneath a footstep platform to capture mechanical stress and convert it into electrical signals. The output from these sensors is rectified, regulated, and sent to the Arduino, which calculates the voltage produced and displays it on an LCD screen. This allows real-time tracking of energy output with every footfall, helping to educate users about renewable energy. The display system is powered by the same harvested energy stored in a rechargeable battery, ensuring smooth and independent operation. This project presents a cost-effective and modular approach to sustainable power generation in public or high-footfall zones. By integrating low-cost hardware and simple interfacing algorithms, the system provides a practical method for converting physical activity into usable energy. It highlights the potential of piezoelectric energy harvesting as a reliable source in compact and crowded environments. The inclusion of a real-time display not only measures output effectively but also encourages user interaction and awareness of sustainable energy literac..*

**Keywords:** Footstep Energy, Piezoelectric Sensor, Arduino Uno, LCD Display, Energy Harvesting

