

Design of Semi-Autonomous Street Cleaning Vehicle

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Abstract : In the pursuit of cleaner and more sustainable urban environments, advanced technologies play a critical role in evolving sanitation systems. This paper presents two distinct advancements in automated cleaning machines designed to improve urban sanitation. The first advancement is a semi-automatic road surface cleaning machine that integrates human labor with solar energy to enhance environmental sustainability and adaptability, especially in regions with limited access to electricity. By reducing carbon emissions and increasing operational efficiency, this approach offers significant potential for urban sanitation enhancement. The second advancement is a multifunctional semi-automatic street cleaning machine equipped with a camera, Arduino programming, and GPS for an autonomous operation aimed at addressing cost barriers in developing countries. Prioritizing low energy consumption and cost-effectiveness, this machine provides versatile cleaning solutions adaptable to various environmental conditions. By integrating solar energy with autonomous operating systems and careful design, these developments represent substantial progress in sustainable urban sanitation, particularly in developing regions.

Keywords : automated cleaning machines, solar energy integration, operational efficiency, urban sanitation systems

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