SOLAR-POWERED WATER PURIFICATION SYSTEM

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Abstract

Brief overview of the project This project utilizes solar energy to power a water purification system, providing a sustainable and eco-friendly solution for clean drinking water. It combines solar panels, filtration technology, and UV or thermal disinfection to remove contaminants efficiently. Ideal for remote areas, disaster relief, and off-grid communities, this system offers a cost-effective and low-maintenance way to ensure safe water access.

2. INTRODUCTION

The global water crisis and the need for clean drinking water

Introduction to solar-powered purification technology

Benefits of using solar energy

3. OBJECTIVES

To design an efficient and cost-effective solar water purification system

To analyze different purification methods (UV, RO, distillation)

To evaluate the efficiency of solar energy in water purification

4. LITERATURE REVIEW

Previous research on solar water purification

Comparison of different solar-based purification methods

Case studies on existing systems

5. METHODOLOGY

System components: solar panels, filters, storage tanks

Working principle (solar distillation, UV treatment, etc.)

Experimental setup and testing

6. SYSTEM DESIGN

Block diagram and working model

Solar panel specifications and power requirements

Water purification stages

7. ADVANTAGES & CHALLENGES

Advantages: Eco-friendly, cost-effective, scalable

Challenges: Initial cost, efficiency limitations, maintenance issues

8. APPLICATIONS

Rural areas and remote locations

Disaster relief and emergency situations

Industrial and agricultural uses

9. RESULTS & DISCUSSION

Performance analysis of the system

Efficiency of solar energy utilization

Quality of purified water

10. CONCLUSION & FUTURE SCOPE

Summary of findings

Potential improvements and future enhancements

11. REFERENCES

Cite books, research papers, and websites used

Follow APA or IEEE citation format

12. APPENDICES

Additional tables, figures, and data

Technical specifications

Experimental readings