

Project Title: SmartCity EnergyDash™

Team ID: 3013

Team Members:

- Hammad
- Meesam

Problem Statement:

This project is based on SFHS CODE HACK's Subtheme #4 - **Smart Cities Security and Resilient Urban Infrastructure.**

Focusing more on the latter - Resilient Urban Infrastructure - with rapid development of "Smart Cities" these days, this unprecedented growth rate makes it challenging to easily monitor the exponentially growing number of smart infrastructure projects at a glance.

Proposed Solution:

SmartCity EnergyDash™ is a web-based dashboard designed to provide real-time insights into the city's smart infrastructure. By aggregating data from various IoT devices and systems, the platform offers a centralized view of energy consumption, asset performance, and potential anomalies. Key features include:

- **Real-time monitoring:** Track energy usage, system status, and performance metrics in real-time.
- **Anomaly detection:** Identify unusual patterns or deviations from normal behavior to enable proactive maintenance and troubleshooting.
- **AI-Enabled Suggestions:** Uses state-of-the-art Artificial Intelligence to generate suggestions for improvement based on available data.
- **Audit log:** maintains a log of events such as updating devices - secured with passwords.

Target Audience:

- City administrators and engineers
- Energy managers
- Infrastructure maintenance teams

Technology Stack:

- Frontend: HTML, CSS, JS
- Backend: NodeJS, Amazon Web Services, MongoDB, OpenAI GPT-4o-mini



Pitch:


SmartCity EnergyDash™ empowers municipalities to monitor their smart infrastructure at a glance, and enables them to pinpoint anomalies and fix them faster. With real-time monitoring and anomaly detection, our platform helps optimize energy consumption, improve asset management, and enhance overall city resilience.





Societal Impact and Practicality:

Our project tackles real-world problems that India stands to face in the future. Live monitoring and anomaly detection enables maintenance workers to identify and fix problems faster, thus improving urban infrastructure and making our cities more secure and reliable.

Multiple Device APIs can be integrated into this project, making it a one-stop solution for infrastructure maintainers.

Some screenshots are attached on the next page.

 **Dashboard**


• **Everything Operational**

Total Devices
8


Online Devices
8


Offline Devices
0


Devices

 SolarPowerCo_EnergyGenerator |


• Online


 229kW

 0.48


 WindEnergyCorp_Turbine |


• Online


 1200kW



 SunEnergy_SolarCell |

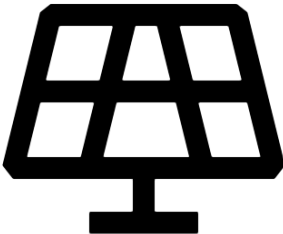
• Online

 567kW

 0.84

 **Dashboard**



Name
SolarWorld_PowerStation

Power Production
511kW

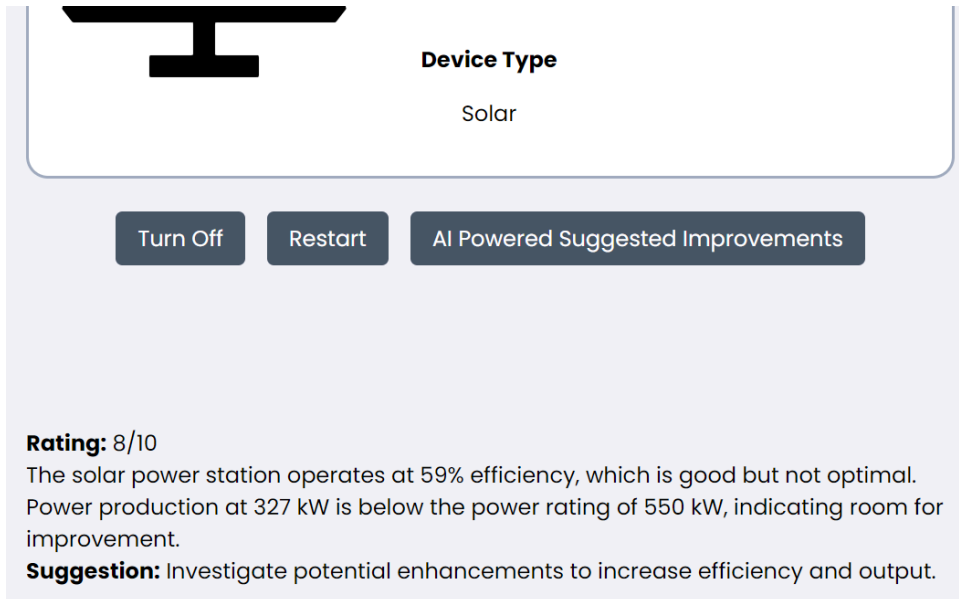
Device Type
Solar

Turn Off

Restart

AI Powered Suggested Improvements

The screenshot below shows **AI-powered** suggestions based on live data (displayed once you click the AI powered suggested improvements button)



The screenshot shows a user interface for a solar power station. At the top, there is a large black icon of a solar panel. To its right, the text "Device Type" is displayed above the word "Solar". Below this, there are three buttons: "Turn Off", "Restart", and "AI Powered Suggested Improvements". The "AI Powered Suggested Improvements" button is highlighted. Below the buttons, the text "Rating: 8/10" is shown, followed by a paragraph: "The solar power station operates at 59% efficiency, which is good but not optimal. Power production at 327 kW is below the power rating of 550 kW, indicating room for improvement." Below this paragraph, the text "Suggestion: Investigate potential enhancements to increase efficiency and output." is displayed.

Device Type
Solar

Turn Off Restart AI Powered Suggested Improvements

Rating: 8/10
The solar power station operates at 59% efficiency, which is good but not optimal. Power production at 327 kW is below the power rating of 550 kW, indicating room for improvement.
Suggestion: Investigate potential enhancements to increase efficiency and output.

RESOURCE LINKS ARE GIVEN ON THE NEXT PAGE

GitHub Repositories:

ORGANIZATION: <https://github.com/SFHS-3013>

The above organization contains two repositories:

- Repository For FrontEnd (webUI): <https://github.com/SFHS-3013/Frontend>
- Repository For BackEnd: <https://github.com/SFHS-3013/Backend>

Both repositories given above contain the final project video.

Additionally, a link to the video is also given below for convenience.

Link to Video:

[SFHS Project Video | Team 3013](#)