



EcoBioGas: Food Waste to GreenEnergy

CHE : Waleed Alghamdi MSE : Osama Alharbi ICS : Omar Alotaibi ISE : Ahmed Aldhaif EE : Jasem Youdef ME : Zyad Alowais

Introduction

Saudi Arabia's 3.9M tons of annual food waste burdens both environment and economy. Our solution: anaerobic digestion for biogas and fertilizer production. Sensor tech and a mobile app enable efficient waste management, tackling the crisis

1. Project Impact

The project slashes waste collection costs by up to 50%, offers affordable cooking gas from biogas, and fosters awareness of responsible waste disposal. It reduces methane emissions, promotes a circular economy, and boosts soil health, potentially increasing biodiversity.

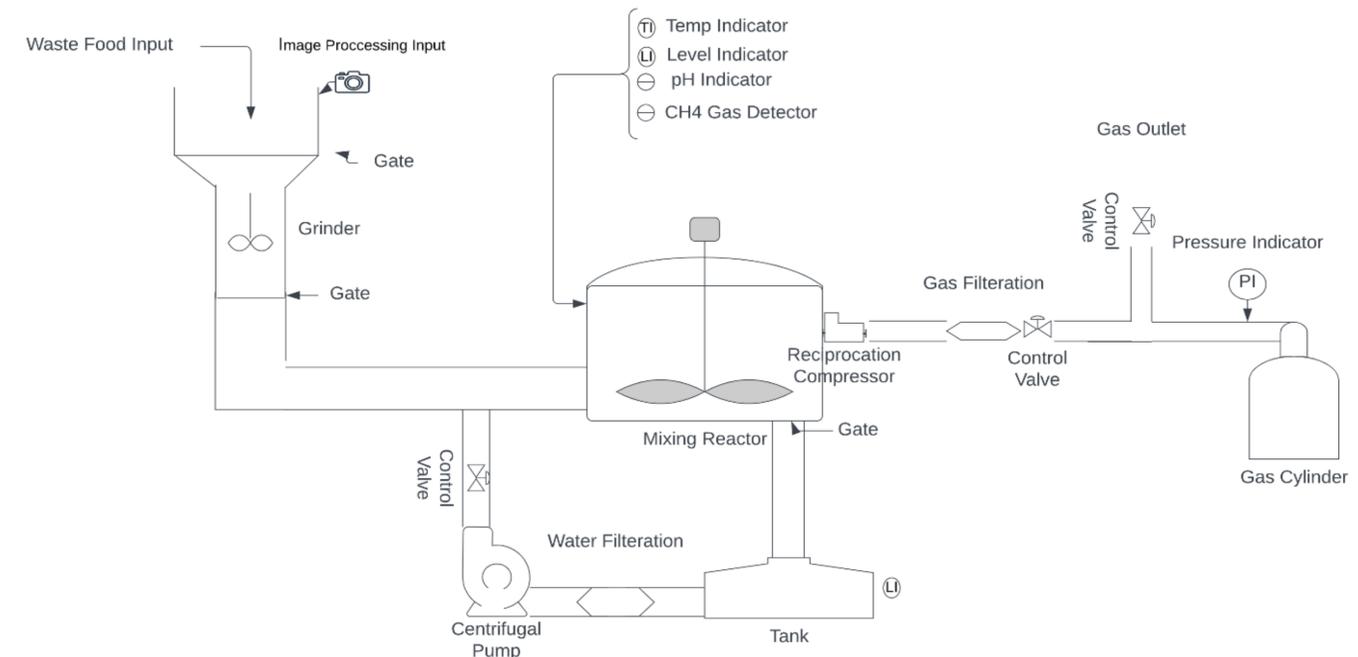
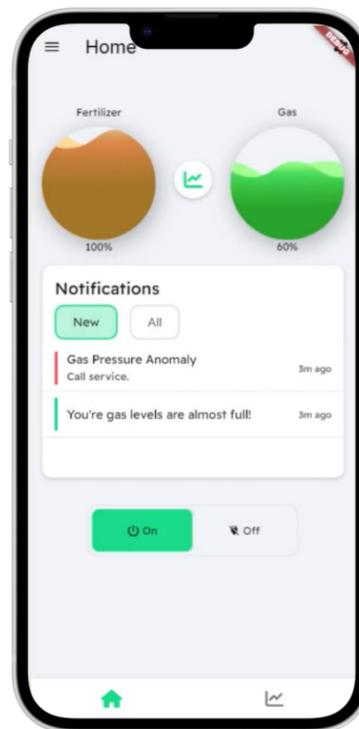
2. Constraints

- Low Water Usage
- No odors
- Corrosion Resistance
- Easy to Use

3. Specifications

- pH (6 – 7.5)
- Temperature (25 – 40)
- System Width (70 – 90)

System Design



Validation

- NaOH Injection System to Control pH Levels
- Two Heater Connected to the Main Reactor
- System Width (66cm) to Ensure Safe Movement in Public Places

Conclusion

The project addressed the issue of food waste in Saudi Arabia, successfully reducing wasted food by a significant amount through the utilization of the anaerobic digestion process. A feasibility study conducted on a larger scale hub indicated an estimated annual revenue of 82,653,300 SAR. This demonstrates the ease with which sustainable energy can be produced.