

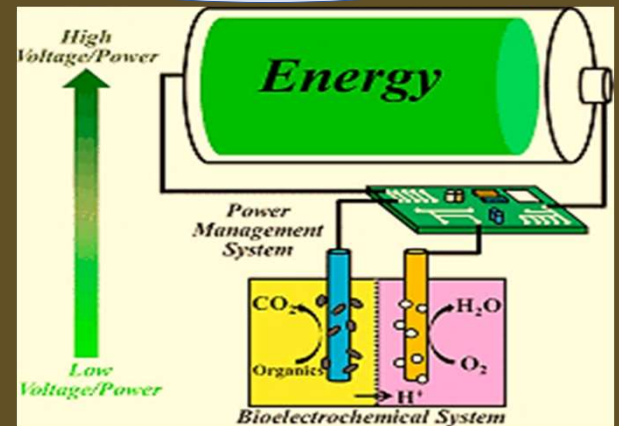
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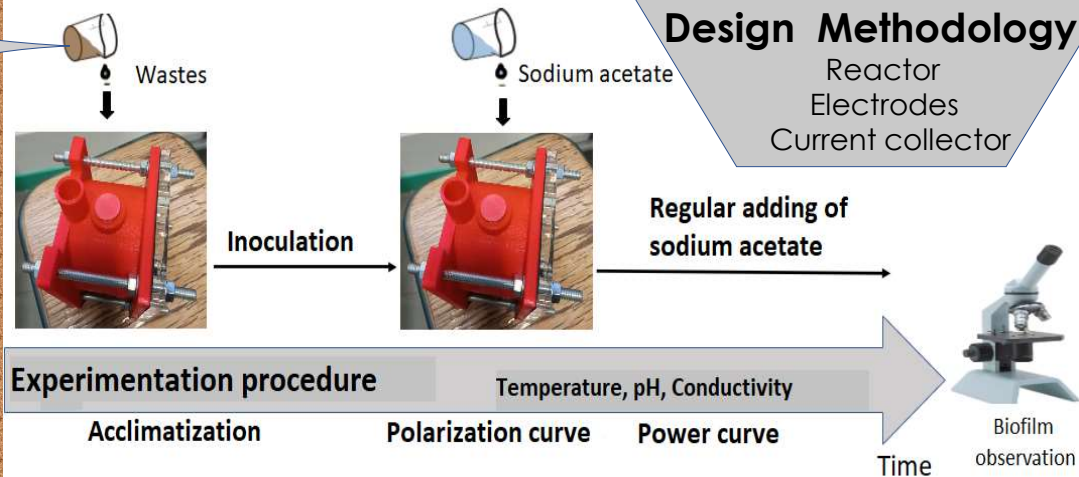
Introduction

Over the years, increasing energy demand, rising energy prices and climate change concerns have gained more attention. Also, remote areas in developing countries do not have access to electricity and they mostly depend on traditional biomass for cooking, heating and lighting. This biomass is source of CO_2 emissions and pollution. Microbial fuel cell (MFC) is a device that converts chemical energy of organic matter into electrical energy by the use of microorganism [1] and simultaneously treats wastes [2]. With the use of the human and/or animal faeces, the domestic or industrial wastes in MFC can be a potential energy source for powering low devices.

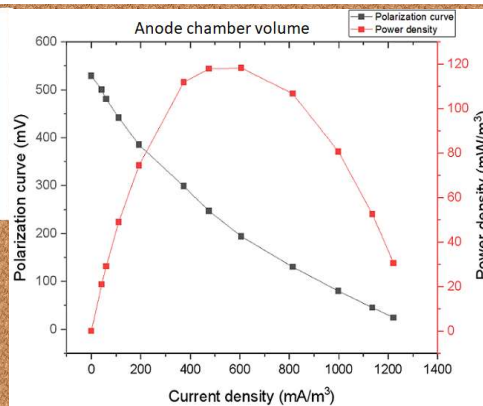
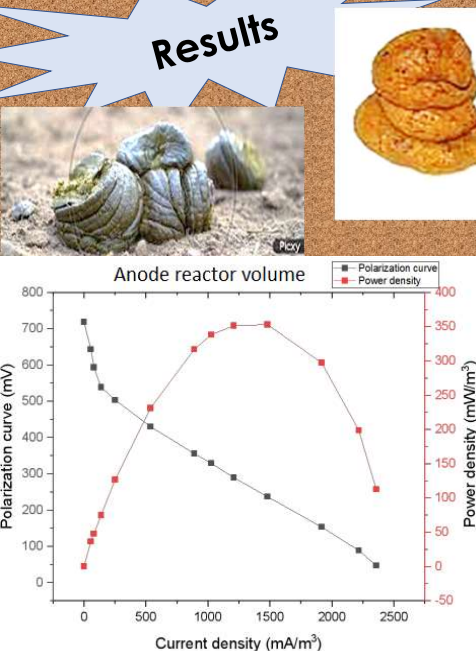
Theoretical working principle of Microbial fuel cell



Organic Wastes



Results



Conclusion

Cow dung produced $353 mW/m^3$ of energy more than human faeces ($118.3 mW/m^3$) under same operational conditions through the use of MFC. By putting six MFCs with cow dung in stack unit, we were able to power a LED. However, we used a power management system to store this energy in a battery for efficient use.

Advantages of MFC

- Bio & renewable
- Reliable & sustainable
- Direct production
- Low maintenance
- Can be implemented everywhere
- Bio fertilizer production

Applications

- Power source
- Wastewater treatment
- Hydrogen production
- Biosensor

References

- [1] B. E. Logan and K. Rabaey, 2012
- [2] W. Li et al, 2013