

# Microfuel Cell for Sustainable Energy and Water Management

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## ABSTRACT

The generation of wastewater steadily rising due to increasing population, higher living standards, and economic growth. Annually, an estimated 380 m<sup>3</sup> of wastewater is generated worldwide. Asia contributes the largest share, accounting for 42% from the total, with India leading among South Asian countries. In urban parts of India, where 35% of the country's population resides, wastewater generation was estimated at 72,368 million litres per day in the year 2020-21 according to Central Pollution Control Board (CPCB). Despite this, the current installed sewage treatment capacity is 31,841 MLD, with an operational capacity of 26,869 MLD which is significantly lower than the generated volume in India. Bio-electrochemical systems (BES) has been recognised as a promising solution for wastewater treatment with simultaneous bioelectricity generation. Microbial fuel cell (MFC) is one of the extensively studied BES system for industrial and domestic wastewater treatment. The device is driven by microbial metabolism which are mainly identified as electrogens, which facilitate in reduction of COD via oxidation and generation of bioelectricity. These electrogens contains a special characteristic for electron transfer which facilitate them for efficient treatment of wastewater and electricity generation. Integration of MFC with other conventional technologies can bring sustainable solution for energy and water management.

**Keywords:** Wastewater treatment, Electrogens, Bioelectricity

## How to Cite

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