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## USING PHOTOSYNTHETIC MICROBIAL DESALINATION CELL (PMDC) TO PRE-TREAT HIGH COD AND SALT CONCENTRATION IN LANDFILL LEACHATE

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**W**astewater (industrial & leachate) contains a high amount of organic matter which makes it a potential energy storage that actually represents almost 10-fold the energy (chemical) invested in wastewater treatment plants worldwide. Taking into accounts the huge energy demand and operation costs in landfill leachate treatment, the concept of using wastewater to produce electricity is a very sustainable idea. For the purpose of this study, an improved Photosynthetic Microbial Desalination Cell (PMDC) was used reduce high COD and salt concentrations in real landfill leachate and simultaneously generate electricity. The study was initiated with a performance-study where operating factors

were analysed to determine their significance to performance. PMDC proved to be capable of pre-treat 1L of leachate of 95% COD removal, 50-75% desalination and generate 0.7V electricity simultaneously. In spite the few challenges, biofouling, just as other membrane technologies, PMDC has demonstrated to be a sustainable green technology capable of pre-treating wastewater to improve the efficiency of conventional biological treatment processes which are not efficient due to high pollutant concentration. And produce bioenergy as well.

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