Natsiri Sangthammathorn 2009: Production of Electricity from Wastewater Using Microbial Fuel Cell. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Assistant Professor Narumol Vongthanasunthorn, D.Eng. 92 pages.

The study investigated the electrical current generation from 3 types of wastewaters including synthetic, distillery and canteen wastewater, using double chamber microbial fuel cells (MFCs). The biochemical oxygen demand (BOD) concentrations of influent were varied as 125, 250, 400, 600, 800 and 1000 mg L^{-1} . pH of influent was fixed at 7. The wastewater was fed into a half-cell anode chamber with fixed flow rate of 0.35 mL min⁻¹, while the oxygensaturated distilled water was fed into a half-cell cathodic chamber with a fixed flow rate of 5 mL min⁻¹. The circuit resistance was fixed at 10 ohms. The results showed that maximum current output obtained from the synthetic wastewater, distillery wastewater and canteen wastewater of King Mongkut' University of Technology North Bangkok with the BOD concentration of 1000 $mg L^{-1}$ were 0.92 0.78 ltas 0.7 mA, respectively. The produced electrical currents were directly proportional to the BOD concentrations in the influent for all types of wastewater, whereas BOD and COD removal efficiencies were dependent on the types of wastewater. The BOD removal efficiencies of synthetic, canteen and distillery wastewaters were 76, 67 and 63%, respectively, while removal efficiencies of synthetic, canteen and distillery wastewaters were is 76, 50 and 30%, respectively. In this study, MFCs can produce the electrical energy of 0.145 kW-hr.