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J. Coronado, M. Perrier, B. Tartakovsky

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PULSE – WIDTH MODULATED EXTERNAL RESISTANCE INCREASES THE MICROBIAL FUEL CELL POWER OUTPUT

J. Coronado^a, M. Perrier^a and B. Tartakovsky^{b*}

^a*Departement de Génie Chimique, École Polytechnique Montréal, C.P.6079 Succ., Centre-Ville Montréal, QC, Canada H3C 3A7*

^b*National Research Council of Canada, 6100 Royalmount Ave., Montréal, QC, Canada H4P 2R2*

This study describes MFC operation with a pulse-width modulated connection of the external resistor (R-PWM mode) at low and high frequencies. Analysis of the output voltage profiles acquired during R-PWM tests showed the presence of slow and fast dynamic components, which can be described by a simple equivalent circuit model suitable for process control applications. At operating frequencies above 100 Hz a noticeable improvement in MFC performance was observed with the power output increase of 22-43% as compared to MFC operation with a constant external resistance.

Keywords: MFC; periodic operation; pulse-width modulation; power output maximization

* author for correspondence
phone:1-514-496-2664; fax:1-514-496-6265;
e-mail: Boris.Tartakovsky@nrc-cnrc.gc.ca

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