

## EFFECT OF DC-DC CONVERTERS ON DIRECT METHANOL FUEL CELL OUTPUT

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### ABSTRACT

This paper presents an analysis of direct methanol fuel cell (DMFC-mesh and DMFC-foam) systems interfaced to DC-DC converters. The output voltage characteristics of six systems are compared. Experimental results show that DMFC systems present variable, non linear impedance as a function frequency. It is shown, through experimental results, that DMFC systems do not exhibit predictable output as function of duty cycle alone. Consequently, output voltage control through pulse width modulation (PWM) techniques cannot be employed for DMFC systems. The motivation for this analysis is a preliminary investigation into the use of DMFC's as a power source for a prototype Martian Uninhabited Aerial Vehicle (UAV).

**KEYWORDS:** DC-DC Converter, Direct Methanol Fuel Cell, Duty Cycle, Switching Frequency, UAV