World Academy of Science, Engineering and Technology
International Journal of Energy and Environmental Engineering
Vol:9, No:10, 2015

Active Power Control of PEM Fuel Cell System Power Generation Using Adaptive Neuro-Fuzzy Controller

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Abstract : This paper presents an application of adaptive neuro-fuzzy controller for PEM fuel cell system. The model proposed for control include a fuel cell stack model, reformer model and DC/AC inverter model. Furthermore, a Fuzzy Logic (FLC) and adaptive neuro-fuzzy controllers are used to control the active power of PEM fuel cell system. The controllers modify the hydrogen flow feedback from the terminal load. The validity of the controller is verified when the fuel cell system model is used in conjunction with the ANFIS controller to predict the response of the active power. Simulation results confirmed the high-performance capability of the neuo-fuzzy to control power generation.

Keywords : fuel cell, PEMFC, modeling, simulation, Fuzzy Logic Controller, FLC, adaptive neuro-fuzzy controller, ANFIS
Conference Title : ICREE 2015 : International Conference on Renewable Energy and Environment
Conference Location : Chicago, United States
Conference Dates : October 08-09, 2015