

Title (en)

METHOD, SYSTEM AND APPARATUS FOR DIAGNOSTIC TESTING OF AN ELECTROCHEMICAL CELL STACK

Title (de)

VERFAHREN, SYSTEM UND VORRICHTUNG ZUR DIAGNOSEPRÜFUNG EINES ELEKTROCHEMISCHEN ZELLENSTAPELS

Title (fr)

PROCEDE, SYSTEME ET APPAREIL POUR TEST EN DIAGNOSTIC D'UNE PILE A ELEMENTS ELECTROCHIMIQUES

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Application

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Abstract (en)

[origin: WO2006096956A1] Embodiments of the pertinent invention relates to apparatus, systems and methods for diagnostic testing of an electrochemical cell stack, such as a fuel cell stack or an electrolyzer cell stack. According to one embodiment, the apparatus comprises a multiplexer for switching current to one or more cells in the electrochemical cell stack, a voltage monitor for monitoring the voltage between the anode plate and the cathode plate of one or more cells, a power supply module for supplying power to the multiplexer and a gas supply module for supplying fuel gas and non-fuel gas to the electrochemical cell stack. The apparatus further comprises a control module electrically connected to and configured to control the multiplexer, the voltage monitor, the power supply module and the gas supply module to conduct automatic diagnostic testing of the electrochemical cell stack. The control module is further configured to determine, through the diagnostic testing, whether the electrochemical cell stack has one or more gas leaks. If one or more gas leaks is detected, the control module determines which of the one or more cells is affected by the gas leak. The control module is further configured to determine a degree of crossover of electrochemical reactant through the membrane of each cell and whether any of these cells is likely to be shortcircuited.

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