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Fabrication hydrogen generation system from CNT/Al application backup power of PEMFC stacks

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This research fabrication hydrogen generator and effects of hydrogen gas from aluminum and hydrogen production the reaction between activated aluminum and water has been investigated. The effect of different parameters such as water aluminum ratio, CNT and the activation of NaOH into the aluminum particles and pellets nanotubes/aluminum composite with pressure ratio. Reactor hydrogen generation consists of NaOH tank outside diameter 8 cm thick 0.5 cm high 15 cm reactor tank, filter cylinder and gas replaces the water tank. By each part wide 3 cm long 4 cm high 8 cm.
The result rate and yield of hydrogen production from the reaction between activated aluminum and water has been investigated. The effects of different parameters such as water, aluminum ratio and aluminum particle size are being experimented with. The in-house developed aluminum activation method involves 0-5 v% CNT of the NaOH-based activator which is diffused into the aluminum particles. Hydrogen production rates in the range of 500- 700 ml/min/g Al, at a yield of about 90.01%, depending on operating parameters, were demonstrated. The work studied the application in proton exchange membrane (PEM) fuel cells in order to generate green electric energy, demonstrating theoretical specific electric energy storage.

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