

Effects of gas humidity and temperature on the CO tolerance of 40W-class PEMFC stack

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A 40W-class small PEMFC stack to be integrated with miniaturized fuel reformer for the applications to the small electronic devices was developed and tested on the CO tolerance of the stack at different gas humidity levels and stack temperatures. When the simulated reformed gas containing 10 ppm of CO was fed into the stack, the stack stability was critically dependent on the stack operating conditions. The low stack temperatures below 60°C or low gas humidity levels below 100% RH could not maintain the stack performance stably under the 10 ppm of CO conditions. For the stable stack operations under the simulated reformed gas conditions, it was needed to make the high stack temperature as well as the high RH level of fuels. If we cannot make the stack operating conditions so favorably air bleeding operation can also be a good strategy for the stable stack operation under reformed feed streams.