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Mathematical modeling of an oscillation criteria based on second order linear difference equations using fuel cell system for electric vehicle

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Abstract

A fuel cell offers intriguing promise for powering autonomous electric vehicles (AEV). The AEV is designed to do mapping and survey missions on power systems. To reach deep depths, these missions demand a significant amount of electricity. The disadvantages of running a standing power scheme, which was prepared by the scientist at the controlling ability, transport and logistics, ability access and include mobilization costs should be considered. To overcome these problems and operate the AEV running for a long time, oscillation criteria based on second-order linear differential equations fuel cell systems are used in a current storage supply system. This paper presents particular basic circumstances of second-order linear differential equations which lead to the positive that all explanations there oscillatory to zero. However, the mathematical model is constructed in MATLAB 2022a to give an improved knowledge of the scheme's performance. In addition, the model also has a hydrogen gas tank. Finally, oscillation criteria based on second-order linear differential equations and the simulation results demonstrated a DC-DC converter with 6kW output power and 96% efficiency to validate the optimization result. © 2022 Taru Publications.

Author Keywords

AEV; Fuel Cell; Fuel tank; Mathematical modeling; Oscillation-based converter; Primary 93A30; Secondary 49K15

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