Simulation of a Multi-Program Fuzzy Logic Controlled DC-DC Buck and Boost Converter

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Abstract

In this paper, the proponent introduced the use of Excel VB macro program as a programming tool to simulate and to monitor the effectiveness of fuzzy logic in controlling dc-dc buck and boost converters. The fuzzy logic controller was designed to serve as an intelligent controller for propose. The fuzzy control algorithm was derived and its corresponding membership functions were constructed using Matlab Fuzzy Logic Toolbox. The DC-DC Converter System® is macro programmed. It consists the dc-dc converter control limits database and the membership function templates for boost and buck converters. In addition, the control chart for each parameter is created and updated automatically, so as to monitor the effectiveness of the fuzzy logic in real time. The fuzzy results using excel macro is compared with the results obtained using DevCpp. It was verified that the application of fuzzy logic can further be implemented in other programming language such as DevCpp and Excel Macro Program.