

Robustness of the Fuzzy Adaptive Speed Control of a Multi-Phase Asynchronous Machine

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Abstract : Fuzzy controllers are a powerful tool for controlling complex processes. However, its robustness capacity remains moderately limited because it loses its property for large ranges of parametric variations. In this paper, the proposed control method is designed, based on a fuzzy adaptive controller used as a remedy for this problem. For increase the robustness of the vector control and to maintain the performance of the five-phase asynchronous machine despite the presence of disturbances (variation of rotor resistance, rotor inertia variations, sudden variations in the load etc.), by applying the method of behaviour model control (BMC). The results of simulation show that the fuzzy adaptive control provides best performance and has a more robustness as the fuzzy (FLC) and as a conventional (PI) controller.

Keywords : fuzzy adaptive control, behaviour model control, vector control, five-phase asynchronous machine

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