عنوان مقاله:

Torque Profile Optimization in a Three-Phase ۱۲ by ۸ Switched Reluctance Motor by Using Genetic Algorithm in the Gate Pulse Generation

محل انتشار:

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خلاصه مقاله:

Despite a large number of advantages, Torque Ripple (TR) is the most important drawback of Switched Reluctance Motor (SRM). In the presented study, TR is reduced by optimizing the value of the gate pulse angle which plays a leading role in the generated torque profile of SRM. For the Optimization, one of the best strategies of the Genetic Algorithm (GA) which was named Non-dominated Sorting Genetic Algorithm II (NSGA-II) is used. Its duty was to detect the best solution (gate pulse angle) which forces the machine to generate the highest value of torque with the least rate of TR. The proposed control algorithm was run in a simulation process of a three-phase ۱۲ by ۸ SRM. Then, the statistical results were compared with the results of a custom GA and the traditional control method of SRMs. The comparison proves that by using the presented algorithm, not only the generated TR of the selected SRM is significantly reduced by roughly ۲۱۰%, but also the generated torque profile of the machine is improved as well. In addition, the presented method is a low-cost strategy with less complication in comparison with other similar torque profile correction techniques.

کلمات کلیدی:

Genetic algorithm, SRM, TR, Torque

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