

Axial Flux Permanent Magnet Motor Design and Optimization by Using Artificial Neural Networks

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Abstract : In this study, the necessary steps for the design of axial flow permanent magnet motors are shown. The design and analysis of the engine were carried out based on ANSYS Maxwell program. The design parameters of the ANSYS Maxwell program and the artificial neural network system were established in MATLAB and the most efficient design parameters were found with the trained neural network. The results of the Maxwell program and the results of the artificial neural networks are compared and optimal working design parameters are found. The most efficient design parameters were submitted to the ANSYS Maxwell 3D design and the cogging torque was examined and design studies were carried out to reduce the cogging torque.

Keywords : AFPM, ANSYS Maxwell, cogging torque, design optimisation, efficiency, NNTOOL

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