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A Study on the Auto-MTPT Algorithm to Make the Speed-based Current-map of IPMSM for Traction of Inwheel

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Theoretical IPMSM control technique is complicated, and reliability is low, because of the changing parameters. Further, in case of general look-up table designing method which obtains torque characteristics (according to current and speed) or torque characteristics (according to magnetic flux through the entire control region), obtaining a precise result can be difficult and has the disadvantage taking too much time to establish a current look-up table. In this paper, the new auto maximum torque point tracking (MTPT) algorithm that automatically finds the optimum stator d-q axis electric current reference through the entire speed region is devised; consequently, it could establish a 3D look-up table with torque characteristics according to current and speed. In the case of using the devised auto MTPT algorithm, the result value detailed was obtained in comparison with the generalized look-up design technique, and checked to reduce the current look-up table establishment time.

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