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Mon-Mo-Po1.06-04 [66]: A Study on a New Structure Ferrite Magnet Motor with Improved Output Density and Mechanical Stability

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Recently, much research has been conducted on non-rare-earth magnet motors due to limited reserves and high prices of rare-earth materials. Among them, a magnetic flux concentrating motor using a ferrite magnet is being commercialized in many parts. However, it is disadvantageous to high-speed operation due to the structure of the rotor. In this paper, we propose a hybrid structure of a magnetic flux concentrating and an axial motor to solve this problem and named it FC-AFPM motor. In the axial direction motor, the axes for generating torque and centrifugal force are separated from each other to ensure mechanical stability. FC-AFPM can increase the power density by using ferrite magnets, and is excellent in mechanical stability and suitable for high-speed high-torque applications. Double-sided and Single-sided FC-AFPM motor were designed and evaluated, and the validity of the proposed new structure was verified.

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