Reseach on High speed Hybrid AC Motor

メタデータ	言語: jpn
	出版者:
	公開日: 2022-11-07
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	キーワード (En):
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URL	https://doi.org/10.24517/00068046

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1986 Fiscal Year Final Research Report Summary

Reseach on High speed Hybrid AC Motor

Research Project

Project/Area Number
60460116
Research Category
Grant-in-Aid for General Scientific Research (B)
Allocation Type
Single-year Grants
Research Field
電力工学
Research Institution
Kanazawa University
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Project Period (FY)
1985 – 1986
Keywords
High-speed motor / Frequency changer / Harmonics / 周波数逓倍器
Research Abstract

The research deals with the development of a new type high-speed AC motor. The motor has the magnetic combination of the magnetic tripler and the AC motor in structure. We call it "hybrid motor". When only a commercial source at 60Hz is applied, motor can rotate near 10,800rpm. We have summarized the results as follows,

(1) High-speed hybrid single-phase motor

The motor has the combination of the shading-coil type induction motor and a magnetic tripler. The application of a single-phase commercial source enables the rotation near 10,800rpm. The motor has no semiconductor device. The torque-speed characteristics of the motor is similar to that of a conventional single-phase induction motor. The maximum torque is 1.0kgcm on the tested motor. But the motor has some problems, that is, starting torque. capacity of the motor, power factor and efficiency.

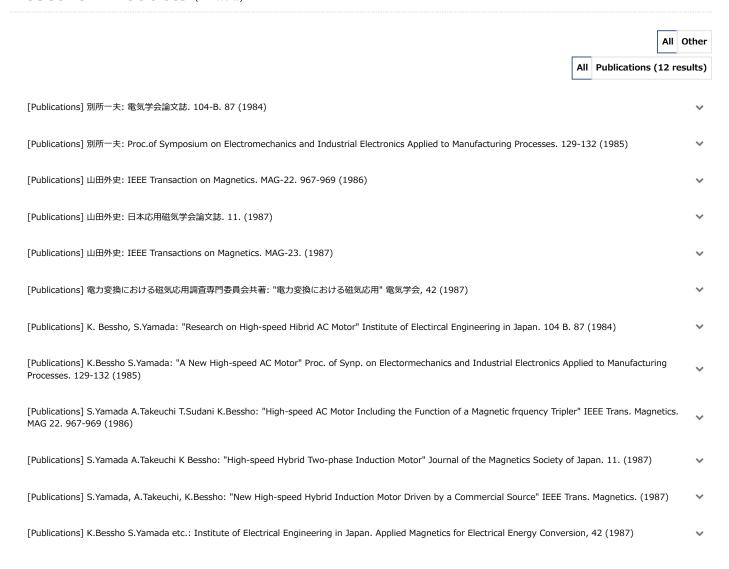
(2) High-speed hybrid two-phase motor

The motor has the combination of the rotating-field type induction motor and a two-phase magnetic tripler which two proposed. The motor can improve the starting torque and the efficiency compared with the the hybrid single-phase motor. The tested motor has the maximum output power 158W, efficiency 12.5% and the power/weight ratio 14W/kg.

(3) High-speed hybrid synchronous motor

The structure of the motor is the combination of the two-phase magnetic tripler and a reluctance motor. The synchronous speed is 10.800rpm. The maximum torque is 1.5kgcm on the tested motor.

Research Products (12 results)



URL: https://kaken.nii.ac.jp/report/KAKENHI-PROJECT-60460116/604601161986kenkyu_seika_hokoku_

Published: 1988-11-09