

Research on High speed Hybrid AC Motor

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1986 Fiscal Year Final Research Report Summary

Research 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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1985 – 1986

Keywords

High-speed motor / Frequency changer / Harmonics / 周波数変倍器

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)

All Other

All Publications (12 results)

[Publications] 別所一夫: 電気学会論文誌. 104-B. 87 (1984)



[Publications] 別所一夫: Proc.of Symposium on Electromechanics and Industrial Electronics Applied to Manufacturing Processes. 129-132 (1985)



[Publications] 山田外史: IEEE Transaction on Magnetics. MAG-22. 967-969 (1986)



[Publications] 山田外史: 日本応用磁気学会論文誌. 11. (1987)



[Publications] 山田外史: IEEE Transactions on Magnetics. MAG-23. (1987)



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[Publications] K. Bessho, S.Yamada: "Research on High-speed Hibrid AC Motor" Institute of Electircal Engineering in Japan. 104 B. 87 (1984)



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[Publications] S.Yamada A.Takeuchi T.Sudani K.Bessho: "High-speed AC Motor Including the Function of a Magnetic frquency Tripler" IEEE Trans. Magnetics. MAG 22. 967-969 (1986)



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