

# Press Publication Materials



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Akita University  
Akita Prefectural University

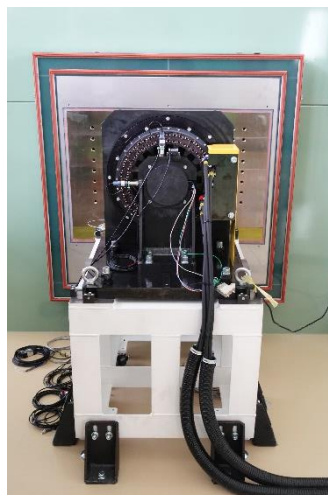
## Succeeded in developing a prototype high-power aircraft propulsion motor (Halbach motor).

Akita University (President: Dr. Fumio Yamamoto) and Akita Prefectural University (President: Dr. Junichi Kobayashi) established the Joint Research Center for Electric Architecture with the support of the Cabinet Office under the Subsidy for Regional University & Regional Industry Creation Project in April 2021.

The Center is promoting research and development with the main target of the aircraft system electrification market (motor, inverter).

The Center has now succeeded in developing a prototype high-power aircraft propulsion motor (Halbach motor) through joint research with IHI Corporation, and collaboration with MARC Research Institute, Inc. and local companies in Akita Prefecture (Kobayashi Industry Co., Ltd., Sanei Machine Co., Ltd., Miyakoshi Seiki Co., Ltd., and Yokote Seiko Co., Ltd.).

A Halbach motor is a motor that maximizes the efficiency of magnet utilization by arranging permanent magnets based on the Halbach arrangement, and is expected to achieve high output (high efficiency), miniaturization, and weight reduction.



※Halbach motor (Photo from the side, with cover)    ※Halbach motor (Front view photo, no cover)

This prototype motor achieved a maximum design output of 250kW as a result of characterization using one of the largest Motor Characteristic Evaluation System in Japan (up to 400kW can be tested) installed in The Evaluation Laboratory for Next Generation Motors operated by Akita University (renovated the former Akita Municipal Tanehira Elementary School in Yuwa, Akita City in April 2022).

This output is comparable to a 3-liter turbo engine for passenger cars.

This prototype motor has a compact design with a volume of about 3 liters, with a core consisting of a permanent magnet and an iron core.

We will continue to bring together the technical capabilities of local companies and start studying mass production.

Additional prototyping to improve performance and the design of the motor cover considering wiring and waste heat will be carried out from now on.

**【Contact Information】**

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