

Why is air gap important in a rotor PMSM?

The air gap is the main place for electromechanical energy conversion of external rotor PMSMs, and air gap magnetic field determines the output performance of motors. On one hand, for an inner rotor PMSM, the external stator is the radiator of electromagnetic noise.

What are air gap magnetic field characteristics of external rotor permanent magnet synchronous motors?

In this study, the air gap magnetic field characteristics of external rotor permanent magnet synchronous motors (PMSMs) under both the stator and rotor coordinate systems considering low-order current harmonics and high-order sideband current harmonics are analysed. A direct measurement technique (DMT) for air-gap magnetic field is proposed.

What is air gap?

In the context of rotating electrical machines, air gap is the physical separation between the rotor and stator core. The role of air gap is not as simple as fi

How to measure air gap flux in axial flux motor?

In , a Hall sensor that can be attached to the stator surface was used to measure the air gap flux of an axial flux motor. In , 36 Hall flux sensors were installed in the air gap to detect the rotor fault and eccentricity of the rotor.

How to measure air gap magnetic field distribution?

The direct measurement mainly uses a linear Hall-effect flux sensor to directly detect the air gap magnetic field distribution. In , a Hall sensor that can be attached to the stator surface was used to measure the air gap flux of an axial flux motor.

What is the spatial order of air gap magnetic density?

The main conclusions are as follows: (i) In stator static coordinate system, the spatial order of air gap magnetic density of external rotor PMSMs with PWM technique is n_p , v_m and , the frequency characteristics are n_f , n_c , and . New spatial orders are introduced by the stator slotting effect.

This paper takes a fully air-cooled 145 MW (generating)-170 MW (pumping) pumped storage generator motor as an example, and the 2D transient electromagnetic field and 3D fluid-thermal coupled field of the ...

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Three types of MSSs exist, namely, flywheel energy storage (FES), pumped hydro storage (PHS) and compressed air energy storage (CAES). PHS, which is utilized in pumped hydroelectric power plants, is the

most popular MSS.

Semantic Scholar extracted view of "Effect of static/dynamic air-gap eccentricity on stator and rotor vibration characteristics in doubly-fed induction generator" by Yu-Ling He et al. ...

In this study, an improvement method for double-fed asynchronous motor-generators (DFAMG) design with open slots is proposed to reduce the capacity demand of rotor converter for the first time. The proposed ...

Air gap design has evolved beyond uncomplicated mechanical distance into the consideration of a combination of various physical restrictions, electrical factors, and performance criteria. ...

The rotation of an enclosed flywheel creates a complex air flow within the air-gap, resulting in heat generation due to frictional losses. The flow characteristics are dependent on ...

Flywheel energy storage system (FESS) has significant advantages such as high power density, high efficiency, short charging time, fast response speed, long service life, ...

Calculation and Analysis of Unbalanced Magnetic Pull of Rotor under Motor Air Gap Eccentricity Fault. Due to various factors such as manufacturing, assembly and operation, the motor air ...

This paper presents a fast current control scheme for a dual air-gap axial flux permanent magnet (AFPM) machine based on model predictive control (MPC) approach. This AFPM machine functions as both motor and ...

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