

Generator rotor air supply method





Overview

What is a generator rotor?

The generator rotor represents an excellent combination of electrical, mechanical and manufacturing skills in which the field coils are well insulated, supported and ventilated in a compound structure rotating at very high speed (typically 1800 or 3600 rpm).

Which type of rotor is used in induction generator?

But nowadays a kind of wound rotor, doubly-fed induction generator, has begun to be used more. Both, the synchronous generator with rotating DC magnetic field and the induction generator, have similar fixed stator winding arrangement, which, when energized by a rotating magnetic field, produces a three-phase (or single phase) voltage output.

How does a rotating armature AC generator work?

In the rotating armature AC generator as illustrated in Figure 1, the stator provides a stationary electromagnetic field. The rotor, acting as the armature, rotates in the field, cutting the lines of force and producing the desired output voltage. The output voltage is taken from the rotor by the slip rings and brushes.

How do you supply DC power to a rotor?

A DC current must be supplied to the field circuit on the rotor. Since the rotor is rotating, a special arrangement is required to get the DC power to its field windings. There are two common approaches to supplying this DC power: Supply the DC power from an external DC source to the rotor by means of slip rings and brushes.

What materials are used in a generator rotor?

The rotor slot insulation, turn insulation and other materials in contact with the winding are full Class F materials. The generator rotor contains the field



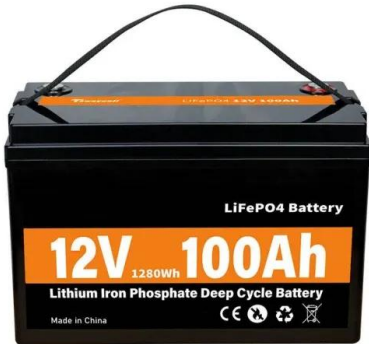
windings that produce the magnetic flux, which, in turn, produces the stator current and voltage.

How does a synchronous generator work?

In a synchronous generator, a DC current is applied to the rotor winding, which produces a rotor magnetic field. The rotor of the generator is then turned by a prime mover, producing a rotating magnetic field within the machine. This rotating magnetic field induces a three-phase set of voltages within the stator windings of the generator.



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Detection of Faults in Rotor-Windings of Turbogenerators

excited rotor during operation a sinusoidal alternating voltage is applied to the air-core coil that is permanently attached to a stator tooth as shown in figure 2.

An overview of various faults detection methods in ...

Rotor eccentricity is a mechanical fault in rotational machines related to the rotor. Generally, the air gap is distributed homogeneously, but the rotor eccentricity is defined as asymmetric air-gap that exists between the ...



Synchronous machines (generator and motor) in a ...

On larger generators and motors, brushless exciters are used to supply the DC field current to the machine. A brushless exciter is a small AC generator with its field circuit mounted on the stator and its armature circuit ...

Methods for Determining Losses and Parameters of ...

This paper presents the analytical and numerical application of a method to determine the parameters and power losses in the core of two medium-power synchronous generators. These generators are used as ...



GE Generator Rotor Design, Operational Issues, and ...

The generator rotor represents an excellent combination of electrical, mechanical and manufacturing skills in which the field coils are well insulated, supported ...



Identification of Geometry and Dynamic Properties of Hydro Generators ...

Generators Based on Signal Analysis of Air Gap
Ozren Oreskovic - Veski Ltd. Earl Goodeve - Qualitrol-Iris Power
ABSTRACT This paper describes the application and implementation of ...



Synchronous Generator , Working Principle, Types

Figure 3 shows a large three-phase synchronous generator that can produce up to 75 MVA of power. This is an example of a rotating-field generator that uses an exciter to provide field ...





A Thorough Procedure to Design Surface-Mounted ...

This paper sets forth a thorough procedure to design surface-mounted permanent magnet synchronous generators. Since synchronous generators generate the majority of electrical energy, their relevance in society ...

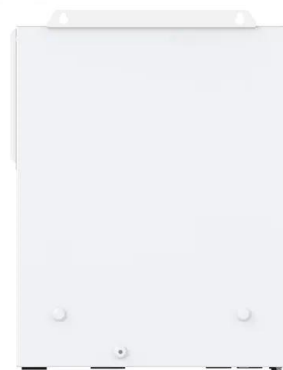


[How Does Rotor Testing Work for Generators?](#)

Rotors deal with a variety of challenges during operation, including thermal, electrical, and mechanical stresses. Over time, these stresses can lead to the degradation of rotor ...

How rotating magnetic field works in AC machines

The speed of rotation of the rotor will therefore depend on the number of magnetic poles present in the stator and in the rotor. The magnitude of the torque produced in ...



GE Generator Rotor Design, Operational Issues, and Refurbishment

The two primary methods currently used by GE for two-pole generators are radial flow cooling and diagonal flow cooling, as shown respectively in Figure 6 and Figure 7. Generator Rotor ...



DC Generator: Types, Working, Parts , Electric Machines

In a DC generator, the rotor assembly includes the shaft and armature coils, which are the coils that produce power in a motor or generator. The core, case, rotor, and air gap are all part of the magnetic circuit for the stator. use a ...



GENERATOR COMPONENTS, AUXILIARIES, AND EXCITATION: THE ROTOR

Figure 13.1 illustrates a sectional view of a large generator. Hydrogen is used to cool most generators having a rating larger than 50 MW. THE ROTOR The rotor is made ...

Design of a brushless rotor supply for a wound rotor ...

Design of a brushless rotor supply for a wound rotor The study of integrated starter generator (ISG) applications leads to make comparisons between different machines structures : ...

12.8V6Ah

- Nominal voltage (V):12.8
- Nominal capacity (Ah):6
- Rated energy (Wh):76.8
- Maximum charging voltage (V):14.6
- Maximum charging current (A):6
- Floating charge voltage (V):13.6-13.8
- Maximum continuous discharge current (A):10
- Maximum peak discharge current @ 10 seconds (A):20
- Maximum load power (W):100
- Discharge cut-off voltage (V):10.8
- Charging temperature (°C):0-+50
- Discharge temperature (°C):-20-+60
- Working humidity: <95% RH (non condensing)
- Number of cycles (25 °C, 0.5c, 100%DoD): >2000
- Cell combination mode: 32700-4s1p
- Terminal specification: T2 (6.3mm)
- Protection grade: IP65
- Overall dimension (mm):90*70*107mm
- Reference weight (kg):0.7
- Certification: un38.3/muds



How Does A Generator Work? , Learn How Electricity Is Generated

The size of the engine is directly proportional to the maximum power output the generator can supply. There are several factors that you need to keep in mind while assessing the engine of ...



Multi-objective optimization of the generator air cooler based on

Under the long term operation of a full air-cooled hydro-generator, due to the repeated magnetic and thermal stress on the rotor yoke, the rotor yoke ducts are deformed.



Experimental investigations on effects of axial clearance on high ...

Bearing-rotor system dynamic characteristic is the key influence on high-speed power equipment stability. The experimental investigations focus on the dynamic ...

15A02504 ELECTRICAL MACHINES-III LECTURE NOTES

Field flux waveform can be made as much sinusoidal as possible by the following methods:
1. Small air gap at the pole centre and large air gap towards the pole ends
2. Skewing: skew the ...



Direct liquid cooling for an outer-rotor direct-drive ...

For comparison, forced-air-cooled generators of similar power have tangential stresses in the range 40-50 kPa. Table 1 lists the pertinent general data obtained by analytical ...



GENERATOR INSPECTION AND MAINTENANCE: GENERATOR ...

Following removal of the rotor from the generator, the stator core should be examined for evidence of damage or breakdown in the core plate insulation. The flow ...



GENERATOR ROTOR TESTING

AC impedance test. The AC impedance test is used to find indications of shorted rotor turns. The test is performed by means of applying an AC voltage across the field winding and raising it in 10-volt steps up to 100-120 volts, or till the ...

Application & Installation Guide Generator Systems

In Cat generators, the rotor (the source of the magnetic field) rotates inside a stationary armature called a stator. One reason for using a stationary armature and a rotating magnetic field is the ...



Research on Relativity of Flow Rate Distribution Inside the Rotor

The main objective of this paper is to elucidate the effect of rotor end structures of a largescale air-cooled turbo-generator on the flow rate distribution and fluid flow pattern in ...



(PDF) Design and Analysis of a Synchronous Generator Using ...

The independent changes in speed and rotor currents provide more possibilities to control the active and reactive power outputs of the machine both in motor and ...



Nonlinear vibration of a generator rotor with unbalanced magnetic ...

2.1 Unbalanced magnetic pull and unbalanced mass excitation. Figure 1 shows the air-gap of a motor with an eccentric rotor. ($O_{\text{mathrm{s}}}$) is the geometrical center of the ...

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