European Solar and Energy Storage Solutions

Air temperature on both sides of the air-cooled generator

Overview

The tooth temperature in the ground-wall insulation non-shelling side is 8 °C higher than that in the ground-wall insulation shelling side under the ground-wall insulation shelling δ = 1.0 mm. Monitoring the temperature difference of the teeth on the both sides of the ground-wall insulation or the highest temperature of the strands can define .

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To effectively dissipate heat, a well-designed cooling structure is necessary for the generator, whose stator and rotor both have high losses. The design includes simultaneous air intake on both sides and an axial-radial hybrid ventilation cooling structure for the stator windings.

Taking a 2-pole 150 MW air-cooled turbo-generator as the research object, the surface heat transfer coeficient distribution of the stator radial ventilation duct and stator temperature field are investigated. The actual structure and basic parameters of the generator are shown in Fig. 1 and Table 1, respectively.

The stator main insulation is the key component of turbo-generator, which is related to the thermal aging of turbo-generator. It is vital to accurately judge the generator aging by calculating the temperature distribution under main insulation normal operation and fault operation.

Taking a 250 MW air-cooled hydro-generator as an example, the air velocity of each air cooler was measured and the inlet air velocity of the rotor support was calculated. By calculating the average temperature of the excitation winding in the steady state, the measured value and the simulation result were compared, and the correctness of the . Can a two-pole air-cooled turbine generator be used as a test generator?

With regard this, it takes a 150 MW, two-pole air-cooled turbine generator as a

test generator, as shown in Fig. 1, stator temperature fields under the ground-wall insulation shellings are investigated. The basic data of the generator is shown in Table 1. Table 1 Generator Basic Data.

How to simulate stator temperature field of air-cooled turbo-generator?

Thin in the middle and thick on both sides of the stator core segment. The coupling mathematical model of fluid flow and heat transfer is used to simulate stator temperature field of the air-cooled turbo-generator . Solid and solid contact surfaces, solid and fluid contact surfaces are defined wall boundaries.

How does a 150 MW air-cooled turbine generator ventilation system work?

According to the practical structure of the ventilation system of the 150 MW air-cooled turbine generator, as shown in Fig. 2, a global flow resistance network is set up to determine the flows and pressures of the inlet and the outlet of the air cooling ventilation system.

How to investigate the heat transfer law of a turbine generator?

To investigate the heat transfer law of the studied turbine generator, it is necessary to analyze the temperature distributions, expecially the heat transfer of the air-gap. 1. Temperature distribution in the axial cross section of the turbine generator.

Do large scale turbine generators have heat transfer in air-gap?

Thus, the heat transfer in air-gap of large scale turbine generators is followed with interest. The investigation is performed on a 150 MW air cooling turbine generator with single channel ventilation cooling system, and realized via the thermal-fluid coupling field studying.

What is the difference between a generator and a cooler?

The water flow in the original cooler makes two tube-passes for each tube-bundle. On the other hand, the water flow in the new cooler makes one tube-pass for each tube-bundle. The design and operating conditions of the generator keep the air flow rate $\dot{m}_a$ for both coolers nearly fixed at an average value of 9.3 kg/s.

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Heat transfer coefficient distribution in inner surface of stator

Taking a 2-pole 150 MW air-cooled turbo-generator as the research object, the surface heat transfer coefficient distribution of the stator radial ventilation duct and stator ...

Air-cooled large turbine generator with multiple-pitched ventilation

In the ventilation design of a air-cooled turbo-generator rotor with air-inlet at the end arc section and air-compensation at the straight section, in order to investigate the effect ...

What Are the Differences Between Air-Cooled and ...

Understanding Air-Cooled Generators. Air-cooled generators are a popular choice for homeowners due to their simplicity and efficiency. To answer how does a generator work, especially in air-cooled models, it helps to ...

Heat transfer analysis of an air-cooled turbine generator ...

maining life of the generator and safe operation

of power system. With regard this, it takes a 150 MW, two-pole air-cooled turbine generator as a test generator, as shown in Fig. 1, stator ...

Analyzing regularity of interpolar air motion and heat dissipation

Taking a 250 MW air-cooled hydro-generator as an example, the air velocity of each air cooler was measured and the inlet air velocity of the rotor support was calculated. By ...

Heat transfer analysis of an air-cooled turbine generator Stator ...

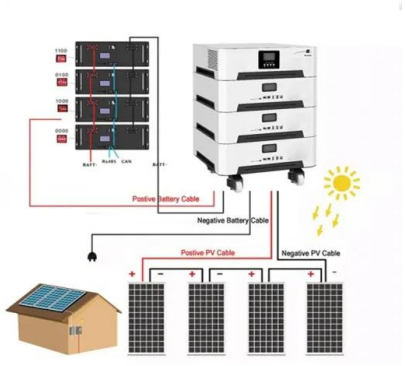
Velocity and temperature profiles are modelled in the air gap of a high-speed test machine. Local and mean heat transfer coefficients and total friction coefficients are attained ...

Heat transfer analysis of an air-cooled turbine generator Stator ...

Strands temperature distributions in the both sides of row insulation along the radial height under the further shelling of ground-wall insulation. taking a 150 MW air-cooled ...

Generac 26/22.5kW Guardian Air-Cooled Generator with 200A SE ...

The Generac 26/22.5kW Guardian Air-Cooled Generator with 200A SE ATS (Not CUL) is crafted by the leading manufacturer of backup power solutions. It has an innovative alternator design ...



Comparing Generator Cooling Systems: Air-Cooled ...

Generac Air-Cooled Generator: Around 66-70 dBA at 7 meters (23 feet). Cummins Liquid-Cooled Generator: Around 60-65 dBA at the same distance. The noise level comparison provided earlier generally applies to residential ...

Generator cooling air duct of air-cooled diesel generator set

A kind of generator cooling duct of air-cooled diesel generator set comprises casing 1 and base 2, and the position at the close generator front end of the left sideboard 1-1 of casing 1 and right ...

Coupled Electromagnetic-Fluid-Thermal Analysis of a ...

With the continuous increase in the capacity of the pumped storage generator motor, the overheating of the rotor area is becoming increasingly severe, which has a significant effect on the safe and reliable ...

Why Prefer Liquid-cooled Diesel Generators (instead of air-cooled...

Most commonly, generators are either air-cooled or liquid-cooled, depending on their size and make, and these coolants play an important role in their functioning. Air Cooled Systems in ...

Generac 22/19.5 KW Air-Cooled Standby Generator, ...

The Generac 22/19.5 KW Air-Cooled Standby Generator, Aluminum Enclosure, 200SE (not CUL) Updated with NEW EPA Certification is among the most powerful air-cooled generators available today. It offers whole-house backup ...

Heat transfer coefficient distribution in inner surface of stator

Taking a 2-pole 150 MW air-cooled turbo-generator as the research object, the surface heat transfer coeficient distribution of the stator radial ventilation duct and stator temperature field ...

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 ...

Why Prefer Liquid-cooled Diesel Generators (instead ...

Most commonly, generators are either air-cooled or liquid-cooled, depending on their size and make, and these coolants play an important role in their functioning. Air Cooled Systems in Portable Generators. Air-cooled generators utilize ...

Water-Cooled vs. Air-Cooled Diesel Generators: Pros and Cons

Posted on September 10th, 2023. When it comes to selecting a diesel generator for your power needs, one of the critical decisions you'll face is choosing between water-cooled and air ...

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