

## European Solar and Energy Storage Solutions

# The impact of low air temperature on air-cooled generators



## Overview

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What are the disadvantages of air cooled condensers?

A drawback of air-cooled condensers (ACC) is that their performance can decline as ambient temperatures increase and result in loss of steam turbine power output. Increased ambient temperature reduces the heat transfer (heat rejection) rate during steam condensation leading to rise in turbine back pressure.

How does thermal analysis affect the aging of a hydro generator?

C. Hatiegan presented the modeling and simulation of the thermal analysis on the stator winding of the hydro generator. Once the temperature of the insulating material was increased, many molecules of the insulation produced chemical reactions accelerating the insulation aging .

What causes aging in a generator?

Insulation aging in large generators is one of critical fault sources for machines. About 1/3 of generator faults are caused by critical temperature under stator winding insulation faults, especially stator ground-wall insulation shelling fault.

Do air cooled condensers lose efficiency if ambient temperature rises?

Since air cooled condensers operate with the ambient dry bulb temperature as the theoretical minimum attainable temperature, their efficiency can drop by about 10% when ambient temperatures rise (Gadhamshetty, Nirmalakhandan, Myint, & Ricketts, 2006; Nirmalakhandan, Gadhamshetty, & Mummaneni, 2008).

Can Inlet air cooling improve gas turbine performance?

Inlet air cooling has been widely studied and established as means of improving the performance of gas turbine power plants (in both simple and combined cycle configurations) operating in arid and tropical weather

conditions (Mohanty & Paloso, 1995).

Why is hydrogen a good cooling medium for a turbine generator?

For the cooling medium of a large turbine generator, the cooling effect of hydrogen is much better than that of air, while it requires additional hydrogen supply equipment and is prone to hydrogen leakage accidents for hydrogen cooling turbine generator .

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### Heat transfer coefficient distribution in inner surface of stator

Heat transfer coefficient Distribution on the inner surface of air flow passage of air-cooled turbine generator stator. Based on the calculation results of the fluid flowing and ...

### Water-Cooled vs. Air-Cooled Diesel Generators: Pros ...

We are a nationwide e-commerce diesel generator distributor and dealer specializing in high-quality products, including the NSL1200WC 10KW Diesel Water-Cooled Generator 60Hz, the NSL1200W 10KW Diesel Air ...



### Effect of Ambient Design Temperature on Air-Cooled Binary ...

Air-cooled binary plants are designed to provide a specified level of power production at a particular air temperature. Nominally this air temperature is the annual mean or average air ...

### (PDF) Thermal modelling of a low speed air-cooled ...

The temperature on the busbars of electric

generators in the end-winding region needs to be monitored continuously. High temperature is associated with curvatures, seams, and poor ventilation.



### Impact of excitation windings with different cooling ...

Impact of excitation windings with different cooling structures on cooling performance and cost of a full air-cooled pumped storage power generator/motor Dan Li1,2 · Weili Li 1 Received: 27 ...

### Air Cooled vs Liquid Cooled Generator: What's the ...

FAQs about Liquid Cooled vs Air Cooled Generator Q1. Which is better amongst air cooled vs liquid cooled generators? Air-cooled generators are less expensive and simpler while a generator water cooled or liquid-cooled ...



### Heat transfer coefficient distribution in inner surface of stator

temperature field for air-cooled turbine generator The coupling mathematical model of fluid flow and heat transfer is used to simulate stator temperature field of the air-cooled turbo-generator [22]. ...

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

With the development of the combined gas-steam cycle power plant, the stator ground-wall insulation of large scale air cooled turbine generator suffers frequent starting and ...

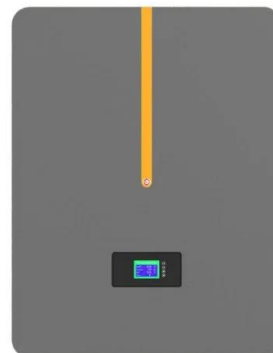


## Recent endwinding vibration problems in air-cooled turbine generators

SUMMARY The endwinding region of large turbine generator stator windings is one of the most complex parts of a generator to design and fabricate. During normal operation, the ...

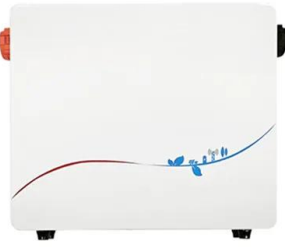
## High Ambient Temperature Effects on an Engine/Generator ...

1.2 COOLING - Generator systems, above 15kW usually incorporate water-cooled prime movers, gasoline, gaseous or diesel. Water used to take away engine heat is cooled by fans pushing ...



## Comprehensive numerical and experimental analysis the impact ...

The performance of a refrigeration unit in a temperate, subtropical temperature zone was experimentally studied by Yang et al. [9], utilizing an air-cooled chiller in conjunction with an ...



## Full article: Performance evaluation of a combined ...

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## Why Electric Generators Need Proper Air Circulation

Electric generators use two main types of cooling systems: air-cooled and liquid-cooled. Air-cooled systems: In an air-cooled system, the generator is cooled by drawing in air through the ventilation system and ...

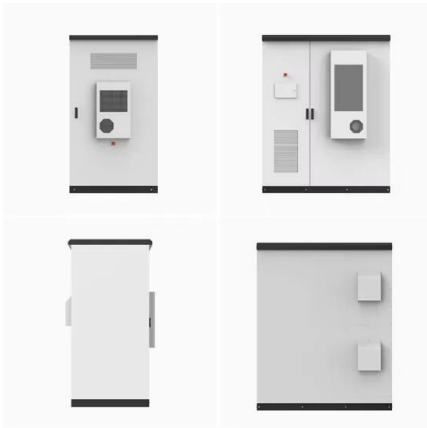


## Research on Stator Main Insulation Temperature Field ...

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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 ...





## The influence of gas temperature on ozone generation and decomposition

The ozone synthesis and decomposition processes in a heated ozone generator (10-70 °C) in a pulse discharge was investigated. Concentrated ozone (up to 200 g Nm<sup>-3</sup>) ...

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