The temperature difference of the air inlet on both sides of the generator is large

What if a generator is oversized?
Oversized for a typical 20o C rise over ambient for the internal cooling circuit. Example: 40o ambient + 30o C = 70o C internal air. Ambient air temp remains constant. Typically the internal generator inlet air temp will be ambient + 20o Cso the generator needs 35 - 40% over-sizing to equal an ODP. TEAWC (CACW). Has cooling water inlet and outlets.

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

How much incoming air does a generator need?
Typically the internal generator inlet air temp will be ambient + 20o Cso the generator needs 35 - 40% over-sizing to equal an ODP. TEAWC (CACW). Has cooling water inlet and outlets. Flow; 1 gpm / kW loss. For typical 32o C water there is no de-rate for single-wall application. Ex: 32oC water + 8o C = 40o C incoming air.

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.

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 calculate the fluid field and temperature field of a generator?
Through setting the boundary conditions and adding corresponding heat density to the new stator calculation model,the fluid field and temperature field of the generator are calculated by simulating fluid flowing via standard k - e equationand using the FVM based on the commercial software "FLUENT".

On the other hand, temperature differences of inlet and outlet of hot side also plays very important role on the efficiency. Both inlet and outlet temperature variation of hot side was collected, inlet temperature was changed from 45 °C to 85 °C and the outlet was from 35 °C to 75 °C. The temperature on the cold side was kept at 35 °C.

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The counter-flow heat exchanger has three significant advantages over the parallel flow design. First, the more uniform temperature difference between the two fluids minimizes the thermal stresses throughout the exchanger. Second, the outlet temperature of the cold fluid can approach the highest temperature of the hot fluid (the inlet temperature).

where A is the total heat exchange area based on the air side, m 2; DT m is the logarithmic average temperature difference, ?; h w is the water side heat transfer coefficient, w m -2 o? -1) For convective heat transfer in three-dimensional deformed tube, the formula in the literature is adopted, and the Dittus-Boelter empirical formula is adopted for the circular tube; ...

The effects of some key factors, such as topology of TEMs, heat source temperature, cooling water temperature and velocity, on the generating performance are studied. The TEG achieved a temperature difference of 65.98 °C across the two ends of the TEM, resulting in an output power of 17.89 W at an open-circuit voltage of 133.35 V.

The air-gap inlet of the second solid model is set as "velocity-inlet", in which the velocity is 61.56 m/s and the temperature is 44 ?. The stator radial air outlet of the second ...

Find the temperature difference on the left side of the heat exchanger, DT 1. Obtain the temperature difference on the right side of the heat exchanger, DT 2. Subtract the temperature difference, DT 2 from DT 1. Divide the resultant with the natural log of the ratio of temperature difference. Mathematically that"s:

When the air temperature became 25 °C, the v air and TE-leaf length affected the output power performance in a similar way of T air = 6 °C, as shown Figure S8 (Supporting Information). Figure 2f shows air temperature dependent output power of the 10-leaf-TEG with two TE-leaf length of 5 and 10 mm at a given v air = 1.0 m s -1.

The "poor radiator may be so poor that its coolant temperature may rise to the boiling point resulting in engine overheating. Temperature Differential . The difference between the radiator average core temperature and the temperature of the cooling air is the driving force behind the transfer of heat from the coolant to the cooling air.

The air inlet temperature and relative humidity at room conditions were maintained at approximately 30 °C and 68% (dew point temperature of 23 °C), respectively, during the testing process. ... The air-side and water-side pressure differences were processed with differential pressure transducers. The measured signals were collected and ...

When a mismatching condition is applied on the hot side of the TEG device, the temperature-dependent electrical resistance has lower values, deriving in higher voltage results (linear tendency ...

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The internal loads of the test cabinet are 5, 10, 13.5 and 15 kW. The ten loads placed on both sides of the precision air-conditioning and each side of the load arrangement is balancing. ... the inlet air temperature of the cabinet tends to be stable under the standard of 27 °C, and the return water temperature is also stable in a certain ...

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 d = 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 the ground-wall ...

Martínez et al. [30] studied the effect of excess air with respect to the turbine inlet temperature and hence the power and efficiency of the gas turbine at different pressure ratio and excess ...

The temperature difference was maintained at 10 °C across the sides of the TEG for all tests. To study the effect of the temperature, rise on the internal resistance, the 10 °C temperature difference was maintained with both sides" temperature raising in steps of 10 °C above room temperature as shown in settings 1-4 Table 5. Rising the ...

GE offers both heavy-duty and aircraft-derivative gas turbines for power generation and industri-al applications. The heavy-duty product line con-sists of five different model series: MS3002, MS5000, MS6001, MS7001 and MS9001. The MS5000 is designed in both single- and two-shaft configurations for both generator and mechanical-drive ...

The hot side of the thermoelectric generators will observe the waste heat energy of a vehicle, and cool side of the thermoelectric generator is cooled with air coolant, and the energy produced ...

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