How to get air into the air-cooled turbine generator

How does an air cooled turbine generator work?
An air-cooled turbine generator is commonly open ventilated,taking its air from the surroundings,and discharging warm air to the surroundings. Closed-circuit air-cooled machines and hydrogen-cooled generators dissipate heat absorbed by the gas,through coolers to a circulating water system. Air cooling is relatively simple.

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.

What is turbine inlet air cooling?
Turbine inlet air cooling is a group of technologies and techniques consisting of cooling down the intake air of the gas turbine. The direct consequence of cooling the turbine inlet air is power output augmentation. It may also improve the energy efficiency of the system.

What are the advantages of air cooling system in large-scale turbine generators?
Comparing with the hydrogen and water cooling system,the air cooling system has of the advantages of low-maintenance,easy-operation and simple cooling structures,which is considered for use in large-scale turbine generators. Thus,more and more air cooling system is adopted in large-scale turbine generators.

How to select the optimal inlet air cooling system for intercooled gas turbines?
It is important to note that the optimal inlet air cooling system for intercooled gas turbines can be selected through a thermo-economic analysisthat factors in different ambient temperatures and the ISO relative humidity level of 60%. Fig. 9. Required cooling capacity for an inlet air cooling system. 6.2. Inlet air temperature drop

Output of the largest turbine generator manufactured by Fuji Electric is 706 MVA, and hydrogen is used as a coolant in this generator. Based on the design and manufacturing technology of this ...

Some research has been conducted on exotic techniques for turbine discs as using pre-swirl nozzles to swirl the cooling air in the direction of the rotating discs. The increase in kinetic energy reduces the effective ...

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For case study, a 150 MW, 3000 r/min air cooling turbine generator with single channel ventilation system is selected to investigate the heat transfer in the air-gap and its ...

In the process, water is heated in a boiler to create steam, which is then pumped into the turbine to spin turbine blades. After, the steam is often cooled back into a liquid state and then used to create more steam. Much like in a gas turbine, ...

Shanghai Electric has two different kinds of air cooled turbine generators, which are of 80MW and 150MW. They adopt turn- to - turn insulation structure to prevent the short circuit of rotor. ... Air cooled turbine generator had got a lot ...

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 is a turbine? A turbine is a spinning wheel that gets its energy from a gas or liquid moving past it. A windmill or a wind turbine takes energy from the wind, while a waterwheel or water turbine is usually driven by ...

On the air-cooled turbine generators, windage loss is the substantial factor of generator losses. One solution for the windage loss reduction is to minimize the amount of coolant air with the ...

The rotating blades perform a dual function: they drive the compressor to draw more pressurized air into the combustion section, and they spin a generator to produce electricity. Land based ...

The physical model of the air-cooled turbo-generator is presented in Figure 1. The turbo-generator is mainly composed of components such as stator, rotor, fan and casing. ...

The turbines power the generator while the steam is evacuated and transformed back into liquid form in a water-cooled condenser. Pressurized water reactors work on the same principle. The cycle is performed in two ...

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