

# Steam turbine generator cooling air

How do turbines cool steam?

Turbines also vary in how they cool the steam that passes through them. Condensing turbines (used in large power plants to generate electricity) turn the steam at least partly to water using condensers and giant concrete cooling towers.

How does a gas turbine cooling system work?

The cooling system operates in series with the reheater, with gas turbine cooling steam returned to the steam cycle cold reheat line. Air extracted from the compressor discharge is cooled using water from the IP economizer. The cooled air is readmitted to the gas turbine and compressor to cool compressor wheels and

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.

How does a LP steam turbine cool a gas turbine?

In addition to providing start-up cooling steam supply to the gas turbine cooling steam circuit, the HP steam extraction after the first superheater pass is used to cool the LP steam turbine from ~70% speed until steam turbine loading is underway. Figure 2 includes a diagram of the three-pressure, reheat HRSG.

How does a condensing steam turbine work?

A condensing steam turbine's processes produce the maximum mechanical power and efficiency from the steam supply. However, the power output of condensing steam turbines is sensitive to ambient temperature. Condensing steam turbines are expensive, large, complex and less suitable for mechanical drive applications.

What are the benefits of cooling turbine inlet air?

The direct consequence of cooling the turbine inlet air is power output augmentation. It may also improve the energy efficiency of the system. This technology is widely used in hot climates with high ambient temperatures that usually coincides with on-peak demand period.

A steam turbine or steam turbine engine is a machine or heat engine that extracts thermal energy from pressurized steam and uses it to do mechanical work on a rotating output shaft. Its modern manifestation was invented by Charles ...

Steam turbines in combined cycle applications are specifically developed as multi-pressure condensing types, using water cooling provided from a cooling tower or air cooler, and direct ...

???????????????????????????????????? (History of Steam Turbine) ?????????????????? ???? Steam turbine

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???????????????????? Dr. Gustaf de Laval ???? ...

In general, a steam turbine is a rotary heat engine that converts thermal energy contained in the steam to mechanical energy or electrical energy. A steam turbine consists of a boiler (steam ...

increased heat rates due to higher ambient temperatures is precooling the combustion turbine inlet air. 9, 10. Owners/operators employ inlet air cooling techniques that generally fall into two ...

In the Power industry, hydrogen is mainly used as a heat transfer fluid for turbine generators. Hydrogen's unique characteristics allow a turbine to move in a low friction environment, while removing heat at the same time. By using hydrogen ...

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