

Change of temperature difference between inlet and outlet air of generator

Can Inlet air heating improve gas turbine efficiency?

Inlet air heating (IAH) technology is gradually gaining attention as a favorable means of load regulation. Liu et al. proposed a heating system that used the waste heat of exhaust gas to heat the compressor inlet air. The results showed that an increase in temperature can improve the gas turbine efficiency considerably, for a given load.

What are the requirements for a gas turbine inlet temperature regulator?

The gas turbine inlet temperature regulator has strict requirements for the resistance of the air flow outside the tube. Generally, the operating resistance is required to be controlled below 150 Pa, which requires that the air flow speed should not be too high.

How does air filtration affect a gas generator?

moist air (due to humidity) to the allowable temperature. This fuel increase will increase the gas generator speed and compensate for the loss in air density. Inserting air filtration, silencing, evaporative coolers or chillers into the inlet or heat recovery devices in the exhaust causes pressure losses in the system.

How does compressor inlet temperature affect turbine output and heat rate?

The ambient effect curve (see Figure 9) clearly shows that turbine output and heat rate are improved as compressor inlet temperature decreases. Lowering the compressor inlet temperature can be accomplished by installing an evaporative cooler or inlet chiller in the inlet ducting downstream of the inlet filters.

How does fuel increase affect a gas generator?

This fuel increase will increase the gas generator speed and compensate for the loss in air density. Inserting air filtration, silencing, evaporative coolers or chillers into the inlet or heat recovery devices in the exhaust causes pressure losses in the system. The effects of these pressure losses are unique to each design.

What is the optimum inlet air temperature for a gas turbine?

Under the gross output of 360 MW and ambient temperatures of 5, 15, and 25 °C, the optimum inlet air temperature of the compressor decreased from 32.0, 31.6 to 28.8 °C, respectively for Scheme C2 to ensure the highest gas turbine load rate and GTCC efficiency. 7.

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