ANTI-ICING SYSTEMS

ADVANTAGES

- Reduced risk of foreign object damage to the turbines
- Increased availability and reliability
- Ensures continuous operations in cold conditions

Application	Air treatment system for gas turbines, industrial air compressors and diesel & gas engines in environments with risk of ice formation.
Installation Options	Anti-icing by mixing the ambient air with hot air: 1. Hot air from the gas generator compressor bleed: In this case, hot air is sent through pipes from the compressor bleed into a reservoir tank, and is distributed through anti-icing nozzle in the opposite direction of the air flow. Taking hot air from the compressor affects the turbine output, usually to a maximum of 2%. This type of system can be offered with silencing to meet noise reduction requirement. - Hot air from the GT enclosure cooling air exhaust: Ducting brings the hot air in front of the filter and it's distributed through the ducting. A bypass damper is installed to redirect the air when the anti-icing is not required, per example in the summer. -Anti-icing with a steam or hot water coil: Using an inlet heat exchanger upstream of the filters can also been done with a coil if there is steam or hot water available or with glycol if another source of heat is available. As this system obstructs the air flow, it has the inconvenience of adding permanent pressure drop to the system. -Anti-icing with electric resistance: Using electric resistance heating upstream of filters – usually consisting of tightly pack aluminum fins or other conductive material. As with above, this also adds permanent pressure drop to the system.

Anti-icing mechanisms are generally used on gas turbine inlets when the air temperature is between -5 to 5°C and the relative humidity is above 70%. Raising the inlet air temperature diminished the risk of ice formation in the turbine bell mouth to avoid damages to the equipment internals.

On static system, they are also used to lower icing risk on the filters. Icing on the filters raises the pressure drop of the system, diminishing the power output and can lead to the turbine shutting down. As pressure drop increases, turbine efficiency and power output drops. A differential of 100 Pa (0.40'' water) lowers power output by approximatively 0.2% at full load or raise fuel consumption by 0.1% at part load. In order to offer a viable defence against static filter icing inlet, air must be heated by at least 7-8°C

2024-05-30